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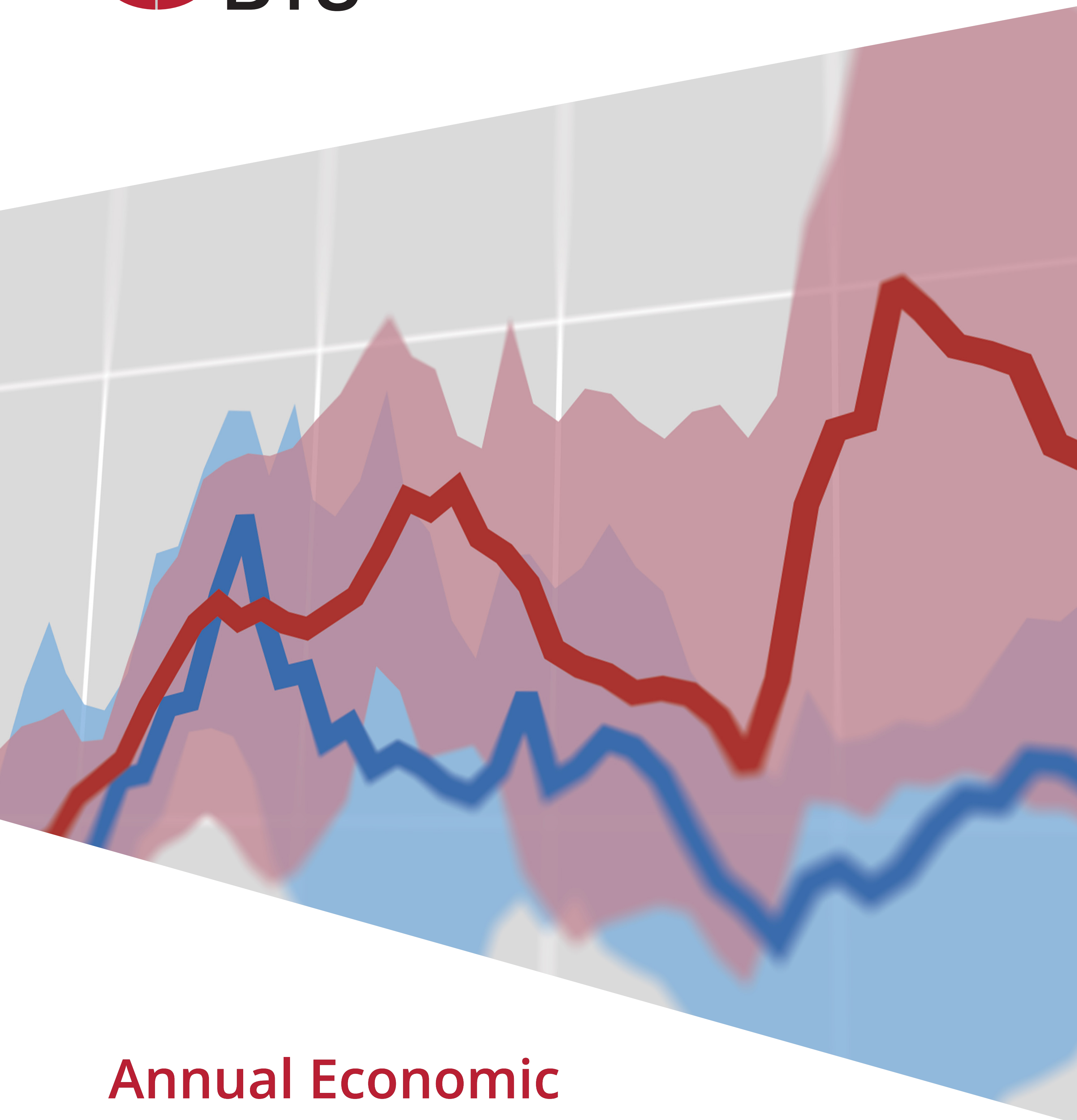

Annual Economic Report

June 2026

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Graphs

This Report went to press on 22 June 2026 using data available up to 29 May 2026.

A section in the endnotes containing detailed explanations for the graphs and tables is included at the end of each chapter.

Conventions used in the Annual Economic Report

std dev	standard deviation
σ^2	variance
$	US dollar unless specified otherwise
'000	thousands
mn	million
bn	billion (thousand million)
trn	trillion (thousand billion)
% pts	percentage points
bp	basis points
bbl	barrel
lhs, rhs	left-hand scale, right-hand scale
pa	per annum
sa	seasonally adjusted
saar	seasonally adjusted annual rate
mom	month on month
yoy	year on year
qoq	quarter on quarter
…	not available
.	not applicable
–	nil or negligible

Components may not sum to totals because of rounding.

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Country codes

AE	United Arab Emirates	FR	France	MY	Malaysia
AL	Albania	GB	United Kingdom	NG	Nigeria
AM	Armenia	GE	Georgia	NI	Nicaragua
AR	Argentina	GG	Guernsey	NL	Netherlands
AT	Austria	GI	Gibraltar	NO	Norway
AU	Australia	GR	Greece	NZ	New Zealand
AW	Aruba	GT	Guatemala	PA	Panama
AZ	Azerbaijan	HK	Hong Kong SAR	PE	Peru
BA	Bosnia and Herzegovina	HN	Honduras	PH	Philippines
BB	Barbados	HR	Croatia	PK	Pakistan
BE	Belgium	HU	Hungary	PL	Poland
BG	Bulgaria	ID	Indonesia	PT	Portugal
BH	Bahrain	IE	Ireland	PW	Palau
BM	Bermuda	IL	Israel	PY	Paraguay
BO	Bolivia	IN	India	QA	Qatar
BR	Brazil	IS	Iceland	RO	Romania
BY	Belarus	IT	Italy	RS	Serbia
CA	Canada	JE	Jersey	RU	Russia
CH	Switzerland	JP	Japan	SA	Saudi Arabia
CL	Chile	KR	Korea	SE	Sweden
CN	China	KW	Kuwait	SG	Singapore
CO	Colombia	KY	Cayman Islands	SI	Slovenia
CR	Costa Rica	KZ	Kazakhstan	SK	Slovakia
CY	Cyprus	LB	Lebanon	SV	El Salvador
CZ	Czechia	LT	Lithuania	TH	Thailand
DE	Germany	LU	Luxembourg	TM	Turkmenistan
DK	Denmark	LV	Latvia	TR	Türkiye
DO	Dominican Republic	MA	Morocco	TW	Chinese Taipei
DZ	Algeria	MD	Moldova	UA	Ukraine
EA	euro area	ME	Montenegro	US	United States
EC	Ecuador	MK	North Macedonia	UY	Uruguay
EE	Estonia	MN	Mongolia	UZ	Uzbekistan
EG	Egypt	MO	Macao SAR	VE	Venezuela
ES	Spain	MT	Malta	VN	Vietnam
EU	European Union	MU	Mauritius	ZA	South Africa
FI	Finland	MX	Mexico		

Currency codes

AED	UAE dirham	KRW	Korean won
ARS	Argentine peso	KWD	Kuwaiti dinar
AUD	Australian dollar	MAD	Moroccan dirham
BRL	Brazilian real	MXN	Mexican peso
CAD	Canadian dollar	MYR	Malaysian ringgit
CHF	Swiss franc	NOK	Norwegian krone
CLP	Chilean peso	NZD	New Zealand dollar
CNY (RMB)	Chinese yuan (renminbi)	PEN	Peruvian sol
COP	Colombian peso	PHP	Philippine peso
CZK	Czech koruna	PLN	Polish zloty
DKK	Danish krone	RON	Romanian leu
DZD	Algerian dinar	RUB	Russian rouble
EUR	euro	SAR	Saudi riyal
GBP	pound sterling	SEK	Swedish krona
HKD	Hong Kong dollar	SGD	Singapore dollar
HUF	Hungarian forint	THB	Thai baht
IDR	Indonesian rupiah	TRY	Turkish lira
ILS	new shekel	USD	US dollar
INR	Indian rupee	VND	Vietnamese dong
JPY	Japanese yen	ZAR	South African rand

Advanced economies (AEs): Australia, Canada, Czechia, Denmark, the euro area, Hong Kong SAR, Israel, Japan, Korea, New Zealand, Norway, Singapore, Sweden, Switzerland, the United Kingdom and the United States.

Major AEs (G3): the euro area, Japan and the United States.

Other AEs: Australia, Canada, Czechia, Denmark, Hong Kong SAR, Israel, Korea, New Zealand, Norway, Singapore, Sweden, Switzerland and the United Kingdom.

Emerging market economies (EMEs): Algeria, Argentina, Brazil, Chile, China, Colombia, Hungary, India, Indonesia, Kuwait, Malaysia, Mexico, Morocco, Peru, the Philippines, Poland, Romania, Russia, Saudi Arabia, South Africa, Thailand, Türkiye, the United Arab Emirates and Vietnam.

Global: all AEs and EMEs, as listed.

Depending on data availability, country groupings used in graphs and tables may not cover all the countries listed. The grouping is intended solely for analytical convenience and does not represent an assessment of the stage reached by a particular country in the development process.

From resilience to robustness?

The past year saw investment in artificial intelligence (AI) ecosystems help global growth to withstand the blow from major tariff hikes. Yet geopolitical headwinds and rising fiscal and financial fragilities remain. Reinforcing the foundations of effective macroeconomic and financial policies is increasingly critical. Such foundations include fiscal sustainability, an unambiguous commitment to price stability and congruent prudential policies across the financial system. Progress on each of these dimensions bolsters trust in the capacity of economic policies to deliver on their mandates. Building on the *resilience* of the past year, the challenge for authorities is to work towards greater *robustness* and thus to contribute to sustainable growth going forward.

The year in review

Growth held up well in 2025, despite significant headwinds from higher tariffs and geopolitical uncertainty. Three factors stand out. First, the drag from higher trade barriers was lessened by effective tariff rates that were lower than initially anticipated, trade diversion and firms' willingness to absorb costs through lower margins. Second, a wave of optimism about AI spurred a surge in capital expenditure on AI infrastructure, lifting investment in the United States with spillovers along global supply chains. Third, animal spirits about AI lifted stock valuations, sustaining favourable global financial conditions.

Yet this resilience was soon tested in early 2026, when the closure of the Strait of Hormuz delivered a major shock to global energy supplies. Rising energy prices once again pushed inflation well above central banks' targets, echoing the post-Covid-19 inflation surge. Although the recent conflict in the Middle East seems to have abated, the economic effects of the Hormuz disruption may linger as the full restoration of physical energy supply takes time and the initial price increases propagate through supply chains. The closure of the Strait of Hormuz has raised the costs of manufacturing and agriculture inputs, with potentially dire consequences for food prices and food security among the poorest countries. Despite these challenges, financial markets have remained buoyant, reflecting expectations that the disruptions would be short-lived and the AI boom would continue.

Looking forward, four pressure points demand attention.

First, inflation has risen. The energy supply shock has been substantial, and its effects may propagate through supply chains. Global headline inflation picked up shortly after the conflict in the Middle East began, and prices of plastics and fertilisers – key inputs – have risen by 30% and 50%, respectively. The central question is whether these initial price increases will broaden and persist, as during 2021–23. On the one hand, mitigating factors limit second-round effects. Greater slack in the labour market may help to contain wage pressures. And policy rates are higher now than in 2022. On the other hand, memories of the post-pandemic inflation surge are still fresh. Given that it will take several quarters to purge the imbalances in oil physical markets, further volatility in energy prices could arise. In turn, inflation expectations could de-anchor more quickly than in the past.

Second, the optimism surrounding AI may not last, despite its promise of future productivity gains. The current surge in capital expenditure could prove unsustainable if supply bottlenecks restrain production. Intense competition for market leadership may fuel overinvestment further, as seen in previous innovation waves, increasing the risk of a sharp reversal if AI payoffs disappoint.

Third, financial vulnerabilities persist. Easy financial conditions could tighten and become a potent amplifier in adverse scenarios where interest rates rise and AI payoffs disappoint. Compressed risk premia and stretched valuations highlight the scope for unwinding. Increasingly opaque financing of AI activities, high leverage in core markets and the growing footprint of private credit further undermine the resilience of financial markets. The current tension between exuberant risk appetite and elevated macroeconomic risks could unwind abruptly.

Fourth, fiscal pressures are mounting. With already high debt levels, governments face rising demands for spending amid energy shocks and geopolitical tensions. These rising pressures coincide with a less benign financial environment than the one prevailing in the aftermath of the Great Financial Crisis. Moreover, GDP growth has also slowed from post-pandemic peaks. Consequently, interest payments as a share of GDP have risen across many countries. Compounding these fiscal challenges, the financial structure of sovereign bond markets has become more fragile, as explored in detail in Chapter II.

Old and new fiscal-financial stability nexus

In recent decades, fiscal policy has expanded aggressively during downturns but has often failed to adjust sufficiently during recoveries, especially in the face of rising public debt. Fiscal challenges are now compounded by mounting pressures from population ageing, defence spending and climate change. The resulting ratcheting up of public debt, coupled with structural changes in sovereign debt markets, poses a growing risk to financial stability in many economies.

While the traditional bank-sovereign nexus remains important, new vulnerabilities have emerged, due in part to the increasing role played by hedge funds in intermediating government debt in several core bond markets. These hedge funds employ highly leveraged strategies that rely on short-term financing on favourable terms, creating risks of fire sales and deleveraging feedback loops in response to shocks.

This evolving landscape has given rise to a novel fiscal-financial stability nexus. Financial stresses can now propagate quickly and broadly through funding markets, across borders and between banks and non-banks. Government bond market liquidity may seem ample for extended periods but can vanish abruptly, driving up borrowing costs. As a result, fiscal space can shrink well before public debt reaches limits suggested by long-run fundamentals.

Against this backdrop, central banks confront three challenges: more frequent fiscal risk repricing, more complex monetary policy transmission and more common market dysfunction.

More frequent repricing of fiscal risk and fragile liquidity would make sovereign yields more volatile. Such repricing can tighten financial conditions quickly and weigh on demand. The effects on inflation are more uncertain. While weaker demand is disinflationary, a reassessment of fiscal risk may become inflationary if it triggers exchange rate depreciation or disrupts inflation expectations.

Higher public debt also interferes with monetary policy transmission, making it more complex. When public debt is high, rate hikes raise government interest payments and transfer income to bondholders. At the same time, they reduce the net worth of financial intermediaries that hold long-term bonds, potentially curbing their lending capacity. The net effects on aggregate demand and inflation will be hard to assess.

Finally, market dysfunction may become more common, prompting central banks to intervene. But repeated interventions (and expectations of them), through large-scale asset purchases or lending operations, risk creating moral hazard for both financial markets and sovereigns. They can encourage excessive risk-taking by financial intermediaries and undermine fiscal discipline. And, in an inflationary environment, such interventions could complicate the task of stabilising inflation.

Policy implications

Central banks have demonstrated notable resolve in recent years, decisively addressing challenges such as the post-pandemic inflation surge and episodes of financial stress. However, significant challenges remain.

In the near term, monetary policy must be vigilant to anchor inflation expectations. This is crucial in a world with more frequent supply shocks. Policymakers must also assess AI's impacts on growth, financial stability and inflation. Monetary policy strategies should be robust across a wide range of scenarios.

Challenges could also arise from increasingly interwoven fiscal and monetary policies in a context of high public debt. Persistent adverse supply shocks not only complicate the task for central banks, they also intensify pressures on public spending. In this environment, prioritising medium-term price stability remains key, even where policy actions may have near-term adverse fiscal implications. A firm commitment to price stability, underpinned by central bank independence, helps to anchor long-term interest rates and expand fiscal space.

Success in maintaining price and financial stability also hinges on sound fiscal and regulatory foundations. On the fiscal side, putting public finances on a sustainable path is crucial. In the near term, this implies that measures in response to current energy supply shocks, where necessary, should be temporary, targeted and tailored. Over time, it requires restoring symmetry to fiscal policy, with consolidation during good times anchored by credible medium-term frameworks. The composition of consolidation matters as much as its pace, and spending should prioritise areas that boost growth, expand the tax base and attract private capital. Structural reforms should accompany these efforts to enhance productivity, including in transforming AI's promises into durable and widely shared gains.

Turning to financial stability policies, "congruent regulation" is essential to address new risks from non-bank financial institutions (NBFIs). Safeguards must counter excessive leverage, liquidity mismatches and vulnerabilities in sovereign debt markets. Regulatory frameworks must adapt to AI-driven risks, including cyber threats, to enhance financial system resilience. Central bank liquidity backstops remain critical tools, but they must be temporary, targeted and reversible. Expanding access to NBFIs could enhance market stability but requires robust regulation to mitigate risks.

By delivering on their mandates, policies reinforce each other. Disciplined fiscal policy underpins monetary credibility and financial stability. Robust regulation strengthens market resilience, preserves fiscal space and limits the need for frequent central bank interventions. Credible monetary policy anchors inflation expectations and helps to contain sovereign and exchange rate risk premia, thus strengthening both fiscal sustainability and financial stability.

Stablecoins and beyond

Trust is the foundation of money. What matters most is that money is accepted for payment with no questions asked. By combining central bank money – the ultimate safe settlement asset – with private sector intermediation, the two-tier system has delivered that trust. It ensures that all forms of money are redeemable at par, liquidity is supplied elastically, and integrity is upheld in everyday use. As discussed in Chapter III, these properties remain the benchmark for judging new technologies and instruments that aspire to be money.

The current system is robust. But it struggles with fragmentation across legacy systems, increasing costs, rising operational risks and limited competition. Innovative proposals include rebuilding the underlying infrastructure using new technologies, such as distributed ledger technology and tokenisation. In this context, stablecoins have emerged as money-like instruments on public permissionless blockchains.

Today's stablecoin arrangements face a number of shortcomings. They aim to maintain a stable value relative to an asset (typically the US dollar), but their value fluctuates in practice. Moreover, the current infrastructure of public permissionless blockchains exhibits fragmentation and cannot be scaled up easily. In addition, the use of so-called unhosted wallets without know-your-customer checks raises fundamental financial integrity concerns.

If stablecoins were widely adopted, a range of macro-financial implications could follow. Credit provision, financial stability, monetary policy transmission and fiscal space could all be affected. For instance, greater household demand for stablecoins could make banks' funding more expensive and less stable. This could dampen credit supply and increase risks to financial stability. At the same time, greater demand for sovereign bonds from stablecoin issuers could reduce government interest expenses and create fiscal space in issuing jurisdictions. The nature and size of these effects are highly uncertain and would depend on the extent of stablecoin adoption, their design and regulation.

In economies with relatively weak macro-financial fundamentals, high demand for foreign stablecoins could foster dollarisation, potentially undermining monetary sovereignty. Macro-financial stability frameworks conducive to ensuring fiscal, price and financial stability will be an important line of defence against such dollarisation risks.

Digital innovation is opening new frontiers for the monetary system, but the guiding principle remains trust in money. This requires progress on two fronts.

First, authorities need to address shortcomings in current stablecoin arrangements in a coordinated manner. They need to mitigate run risk and strengthen financial integrity. Whether stablecoins are to be used as money-like or investment-like assets will influence the appropriate design of regulatory measures. Given the global footprint of digital finance, deeper cooperation among authorities will be needed to support consistent, interoperable outcomes and reduce regulatory arbitrage.

Second, technological innovation should be leveraged to upgrade today's two-tier system. Tokenisation can build on an architecture anchored by central bank reserves, improving functionality through programmable platforms. Project Agorá, a collaboration among eight central banks, the BIS and over 40 private sector institutions, demonstrates how integrating commercial bank deposits and central bank reserves on a programmable platform can enhance cross-border payments.

I. Progress and peril

Key takeaways

- *The global economy displayed surprising resilience despite successive shocks, from tariffs to the Middle East conflict. This was partly driven by optimism around progress in artificial intelligence (AI), which fuelled large AI-related investments and sustained accommodative financial conditions.*
- *But the perils have grown with pressure points around risks of persistent inflation, the sustainability of AI-related investments, growing financial vulnerabilities and weakening fiscal positions.*
- *Safeguarding price stability, restoring fiscal space, strengthening financial stability beyond the banking perimeter and structural reforms are key priorities. Discipline in each area expands the room the others have to act.*

Resilience tested

The 12-month period under review falls into two phases. The first was one of surprising resilience. Global growth and trade held up despite the sharp tariff hikes, supported by easy financial conditions and strong artificial intelligence (AI)-related investment and sentiment. With a few exceptions, most notably the United States and China, inflation stabilised at, or was converging to targets, paving the way for policy easing in many jurisdictions. These benign macroeconomic conditions were, however, jolted by the conflict in the Middle East in late February 2026. In this second phase of the review period, the ensuing crisis of energy supply and other raw materials, following the historic closure of the Strait of Hormuz, cast shadows over the global outlook.

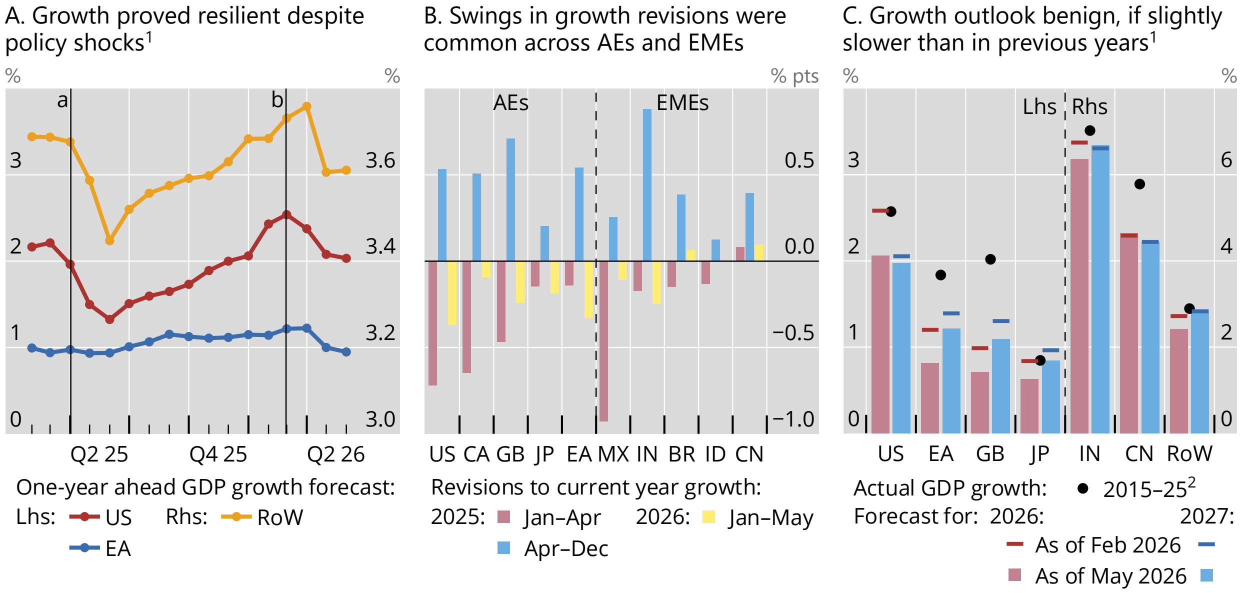
A resilient start

The global economy absorbed the sharp hikes in US tariffs during 2025 – the most significant disruption to the multilateral trading system in decades – with remarkably little damage. Global trade continued to expand, with merchandise volumes growing nearly 5% in the first half of 2025, despite skyrocketing trade policy uncertainty. Growth forecasts, initially cut sharply in response to tariff news especially for the United States, were subsequently revised upward to pre-April 2025 levels (Graph 1.A). The upward revisions were observed in both advanced economies (AEs) and emerging market economies (EMEs) (Graph 1.B). In China, robust exports helped sustain growth despite real estate overhang and subdued domestic demand. By end-2025, global growth ended up close to pre-tariff expectations. Reflecting this underlying resilience, analysts expected output to expand steadily across most jurisdictions, if slower than past averages (Graph 1.C).

Three main factors can explain the relatively muted effects of tariffs. One is their smaller than expected size. Because of exemptions, trade agreements and measured

Global growth proved resilient despite tariff and geopolitical shocks

Graph 1



RoW = rest of the world.

[a] US President Trump announces tariffs (2 April 2025). [b] Start of conflict in Iran (28 February 2026).

[1] See additional notes to graphs for details. [2] Excludes the pandemic years 2020 and 2021.

Sources: IMF; Consensus Economics; LSEG Datastream; national data; BIS.

responses from trading partners that averted escalation, the effective average US tariff rate stabilised at 10% in the second half of 2025, significantly lower than the peak announcement of more than 25% (Graph 2.A). Accounting for this lowers the global output loss by about a third from initial estimates (Graph 2.B, red bars).

Second, trade realignment also mitigated the impact of tariffs. In the case of China, the sharp fall of US-bound exports was compensated by higher exports to other parts of Asia, reflecting substitution and transshipments (see Box A on the adaptability and potential vulnerability of global supply chains). Moreover, China's increased competitiveness in higher value added goods, whose exports grew by 13% in 2025, also helped propel its overall exports.

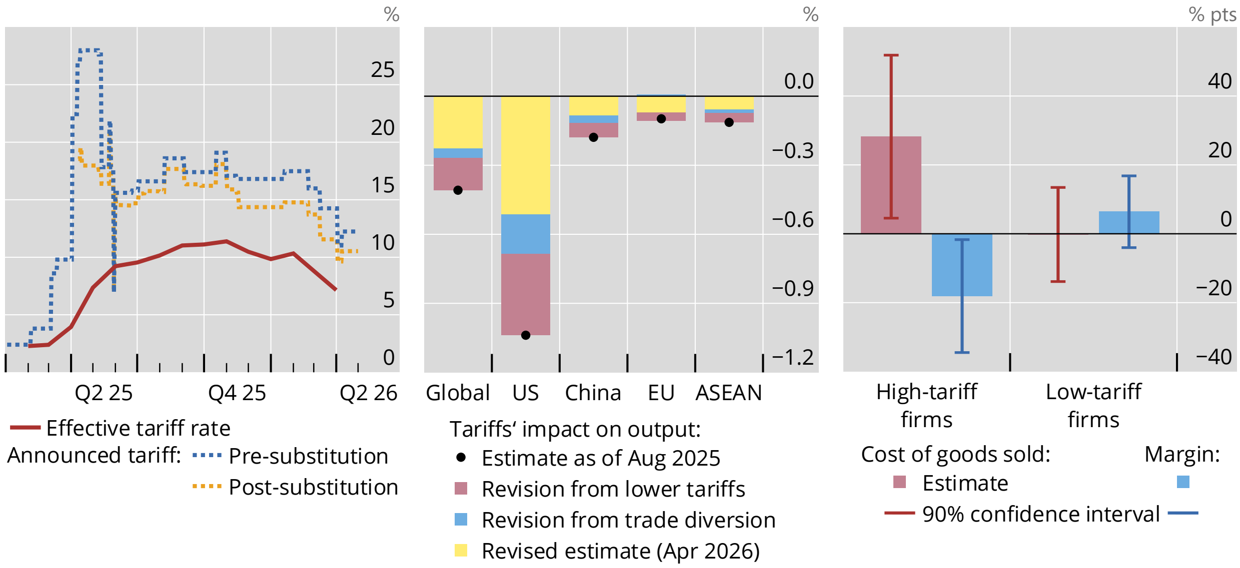
Third, faced with the prospect of higher tariffs, firms adapted their trading strategies. Significant front-loading of trade before tariffs took effect cushioned both exporters and importers. At the same time, US firms accepted compressed margins, which temporarily limited the price pass-through. Estimates for US firms suggest those most affected by the tariffs absorbed about two thirds of the cost increases through lower profits, while only passing on one third to consumers (Graph 2.C). To manage higher trade policy uncertainty, firms may have delayed passing through higher import prices that would have been difficult to reverse.

Several offsets muted the impact of tariffs[1] Graph 2

A. Effective tariff rates fell short of officially announced rates

B. Smaller tariff shocks and trade diversion moderated output impact[2]

C. Margin compression by US firms reduced inflationary impacts[3]



ASEAN = Association of Southeast Asian Nations.

[1] See additional notes to graphs for details. [2] Red and blue bars capture, respectively, upward revisions due to lower realised tariff rates (based on The Budget Lab estimates as of April 2026) and greater cross-country substitution associated with trade diversion. [3] Estimated change in cost of goods sold and operating profits to sales (margin) over Q4 2024–Q4 2025.

Sources: Zhao (2025); Penn Wharton Budget Model; The Budget Lab at Yale; S&P Global Market Intelligence; BIS.

Box A

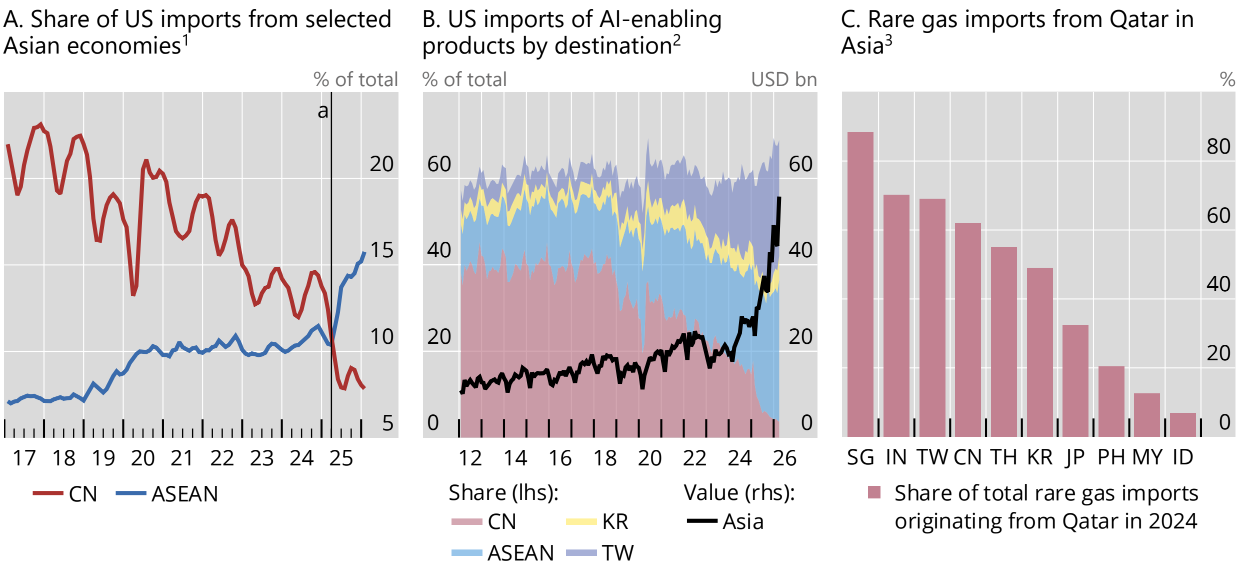
Global supply chains: adaptability and vulnerability

The adaptability of supply chains across Asia has been instrumental in meeting growing global demand, even amidst tariff disruptions. The US tariff increase on Chinese products in 2025 threatened to disrupt the historically pivotal role that Chinese exporters have played in global supply chains. In response, US importers employed mitigation strategies such as front-loading goods before tariffs took effect and rerouting Chinese products through neighbouring regions. But a more transformative response, predating the 2025 tariff hikes, has been the reconfiguration of supply chains across Asia. Since 2017, when the US administration began imposing higher tariffs on a wider range of Chinese goods, many Chinese firms have adapted by investing in production facilities in nearby Association of Southeast Asian Nations (ASEAN) countries to benefit from lower US tariffs. Indeed, China's foreign direct investment in ASEAN nations has more than tripled, rising from $10 billion in 2017 to over $34 billion in 2024. Consequently, as the share of US imports from China has steadily declined, US imports from other Asian economies have grown proportionally (Graph A1.A).

The regional reconfiguration has played an important role in bolstering global economic resilience over the past year. On the one hand, many advanced economies saw a surge in artificial intelligence (AI)-related investments, which helped mitigate the negative effects of tariffs and heightened uncertainty on growth. In the United States, for example, AI-related investments contributed roughly one percentage point to the country's real GDP growth in 2025, by some estimates. This development also led to a sharp rise in US imports of AI-enabling products, including raw materials, processed chemicals, intermediate inputs and equipment.[1] Although US imports of AI-enabling products from China declined, this was largely offset by increased imports from other Asian economies, keeping the regional market share of US imports stable at around 60% (Graph A1.B). These strong exports, in turn, supported robust economic activity in ASEAN economies throughout 2025.

Supply chain reconfiguration supported resilient growth

Graph A1



ASEAN = Association of Southeast Asian Nations.

[a] US President Trump announces tariffs (2 April 2025).

[1] Three-month moving averages of US merchandise import shares. [2] AI-enabling products as defined in Annex A of WTO (2025). Asia includes the ASEAN 10 countries, CN, KR and TW. [3] Rare gas as represented by the harmonised tariff schedule six-digit code 280429: gases, rare; other than argon.

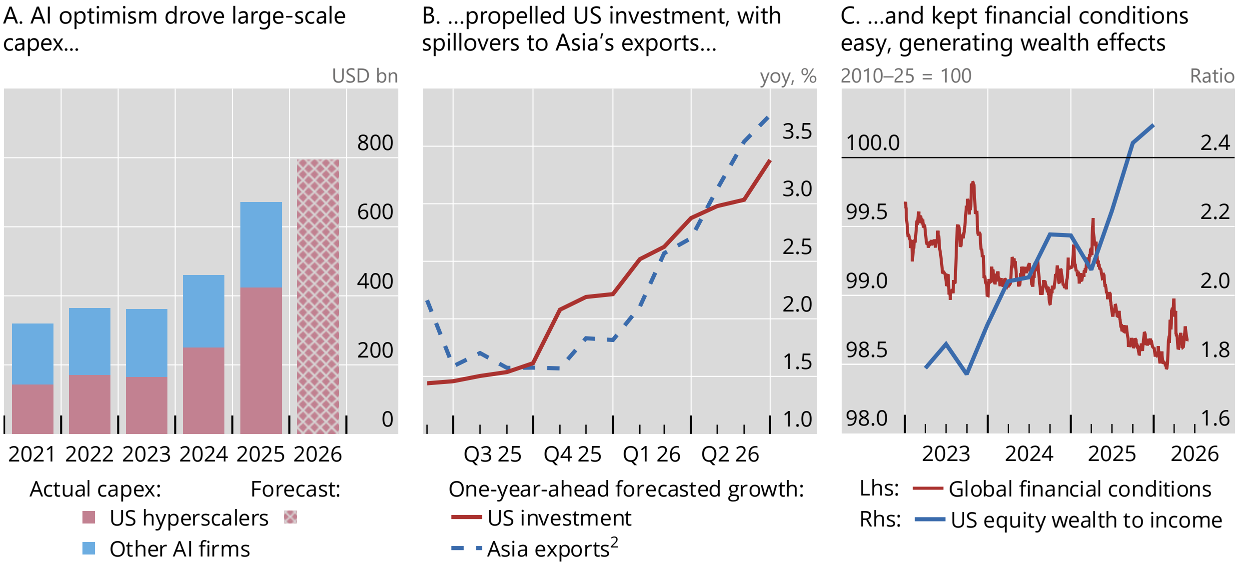
Sources: IMF; UN Comtrade; BIS.

However, global supply chains remain inherently vulnerable to disruptions caused by environmental, geopolitical or economic shocks, which expose the global economy to potential bottlenecks and cost increases through interconnected production networks. In particular, a disruption in the supply of critical inputs, even when their economic values are low, can create a chokepoint and jeopardise the entire supply chain. A recent example is the helium supply disruption caused by the closure of the Strait of Hormuz. This impacted many Asian economies that rely heavily on Qatar for the supply of helium (Graph A1.C), a non-renewable gas extracted from natural gas fields, and which is produced by few other countries (eg Algeria and Russia). Although helium constitutes a small portion of the semiconductor manufacturing value chain, it is indispensable due to its unique properties as a chemically inert and highly conductive cleaning and cooling agent. Some major Asian technology companies stated that their existing inventories are sufficient to avoid immediate production issues, but signalled increasing concerns as the conflict continued.

Recent tariffs and geopolitical tensions have once again highlighted the importance of global supply chain resilience. While the inherent complexity of modern supply chains makes chokepoints inevitable, risk exposure can be mitigated through diversifying the supplier base and reducing reliance on a single international supplier or maritime route. More robust global production networks would help economies weather supply side disruptions that may well become more frequent in the years ahead.

[1] See WTO (2025).

AI exuberance lent support to growth and kept financial conditions loose[1] Graph 3



AI = artificial intelligence; capex = capital expenditure.

[1] See additional notes to graphs for details. [2] GDP-PPP weighted average of KR, MY, SG and TH.

Sources: Rishabh and Shreeti (2026); Board of Governors of the Federal Reserve System; Federal Reserve Bank of St Louis; IMF; Focus Economics; Goldman Sachs Global Investment Research; S&P Global Market Intelligence; companies' communications; BIS.

In addition to the tariffs' weakened effects, AI optimism provided an important tailwind to global growth through capital expenditure (capex) and associated intermediate goods trade. Capex in semiconductor purchases, data centre construction and expansion in power infrastructure surged in the United States, driven by the so-called hyperscalers (Graph 3.A). This spending provided impetus to aggregate investment, which became an important driver of growth surprises in the United States (Graph 3.B). The rest of the world, notably Asia, also benefited from demand spillovers through AI supply chain linkages, from semiconductors to data storage units and digital infrastructure (Box A). In China, investment rotated from the property sector to advanced manufacturing. In Europe, investment helped offset tepid consumption amid weak household confidence.

Monetary policy easing provided further support to economic activity in this first phase. With benign growth and moderating inflation, most central banks had lowered interest rates from restrictive to near-neutral levels, where many have paused since late 2025. In a few exceptional cases, central banks hiked interest rates including in Japan due to low real interest rates, and in Australia and Colombia because of domestic inflationary pressures. Meanwhile, central bank balance sheets remained large in key jurisdictions.

Accommodative financial conditions were also a key factor supporting growth during this phase. Financial conditions eased throughout 2025 (Graph 3.C), as the strong surge in global risk appetite fuelled by AI optimism dominated the effects of trade policy uncertainty. Global stocks enjoyed strong rallies on robust corporate earnings, led by major technology and AI-related stocks. Rising equity values, whose ratio to income has more than doubled since 2010, in turn supported household consumption through wealth effects. Corporate credit spreads continued to narrow in major jurisdictions, with robust primary issuance across the ratings spectrum and record volumes from AI-related firms. Investors' risk appetite was also evident in the private credit space, which contributed to the financing of AI infrastructure build-out.

The conflict and its peril

The start of the conflict in Iran in late February 2026 and subsequent escalation – including attacks on energy infrastructure across the Persian Gulf and the effective closure of the Strait of Hormuz – posed a renewed threat to the global outlook. In early March, the unprecedented blockade of the world's most critical energy chokepoint brought the Strait's traffic to a standstill (Graph 4.A). The supply disruption was historically large in terms of volumes lost, with a cut in crude oil flow of over 10 million barrels a day, equivalent to 13% of normal supply (Graph 4.B). By comparison, supply losses in the 1970s energy crises were around 8%. That said, oil prices increased proportionally less than in previous crisis episodes, cushioned by oil reserve drawdown and market participants' conviction that the crisis would prove short-lived.

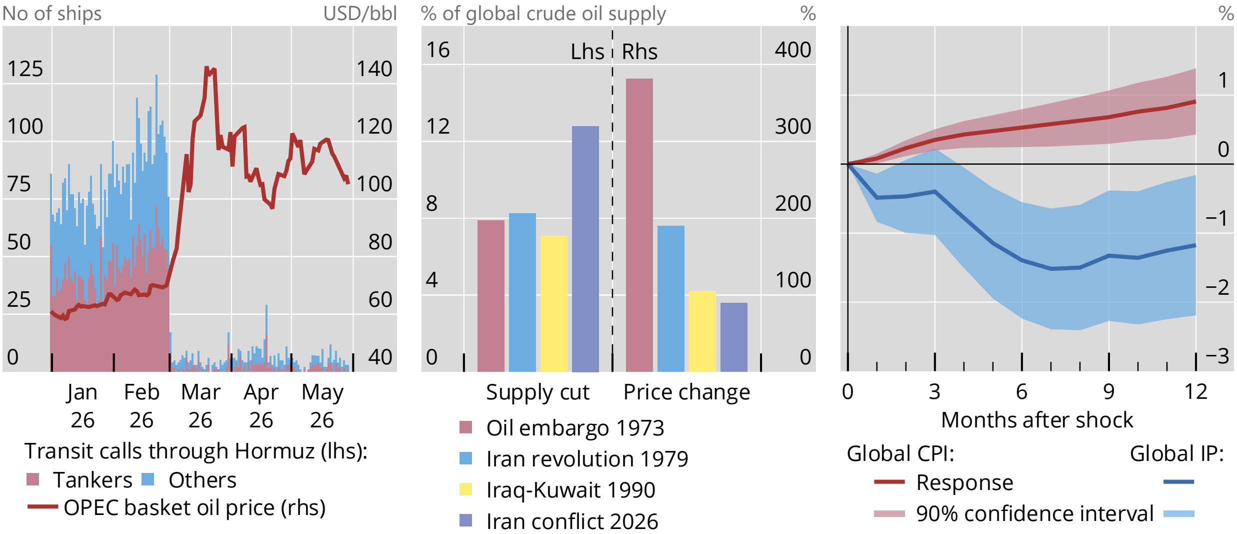
The prolonged disruption to Strait of Hormuz traffic could have persistent global stagflationary effects, given the Strait's vital role. Past interruptions have weighed on global industrial production and lifted global inflation for a sustained period even after their resolution (Graph 4.C). Compounding the supply disruption this time was the severe lack of immediate substitutes. Bypassing the Strait of Hormuz offers only partial offsets – the Saudi East-West pipeline to Yanbu on the Red Sea can reroute five million barrels a day at most for exports and is itself exposed to attacks. The strategic reserve release of 400 million barrels by the International Energy Agency (IEA), the largest in history, covered only 20 days of lost Hormuz flow.

Unprecedented blockade of the Strait of Hormuz disrupted activity[1] Graph 4

A. Strait of Hormuz traffic collapsed, pushing up oil prices

B. Oil supply cut was larger than in previous energy crises

C. Disruptions to Hormuz traffic have global stagflationary effects[2]



[1] See additional notes to graphs for details. [2] Responses of global consumer price index (CPI) inflation and global industrial production (IP) to a one standard deviation negative shock to Strait of Hormuz maritime traffic (equivalent to −50% of usual traffic). See Kharroubi (2026) for details.

Sources: IMF PortWatch; World Bank; US Energy Information Administration; Kpler; LSEG Datastream; LSEG Workspace; Macrobond; BIS.

Asia bore a disproportionate brunt of the Strait's closure. Before the conflict, over 80% of crude and natural gas transiting Hormuz was destined for Asia. Japanese refiners sourced 95% of crude from Gulf states, with 70% shipped through Hormuz (Graph 5.A). Malaysia, Korea and Thailand imported between 60 and 70% of their oil from the Gulf, leaving them similarly exposed to Hormuz closure. Consistent with this, model-based estimates point to significant output losses across Asia, with the euro area also exposed through its reliance on distillate imports from the Gulf (Graph 5.B).

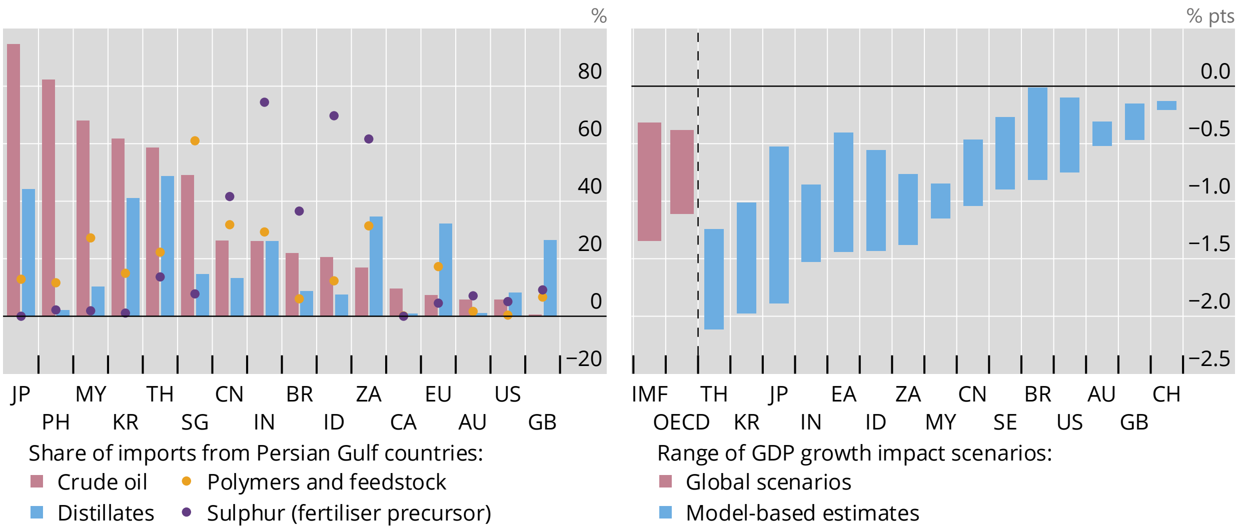
The breadth of the supply shock extended well beyond oil and gas, also affecting fertilisers, petrochemicals, plastics and other critical inputs. The Middle East accounts for around a third of global seaborne exports of liquefied petroleum gas, fertilisers and helium – and close to half of seaborne sulphur, a key fertiliser input. Petrochemical plants in South Korea, Japan and Chinese Taipei faced curtailments as both key feedstock (naphtha) and liquefied natural gas (LNG)-dependent electricity were simultaneously constrained. Fertiliser shortages could have persistent effects on global food supply, as missed planting windows cannot be recovered and weaker harvests constrict the next cycle of working capital. Food insecurity impacts would be most acute in low-income economies.

Physical damage to energy infrastructure means supply losses are likely to persist even after the end of the conflict. By late March, more than 40 energy assets across nine Middle Eastern countries had been severely damaged. In Qatar, damage to LNG facilities cut capacity by 17%, with full recovery expected to take up to five years. Equipment bottlenecks compound the problem, with producers of gas turbines needed for LNG compressors carrying order backlogs of three to five years. Even without a blockade, global oil and gas supply could remain well below pre-conflict capacity for months or even years.

Asia is most exposed to the Hormuz energy supply shock[1] Graph 5

A. Asia displays the largest direct exposure to energy flows from Hormuz…

B. …accounting for larger estimated growth impacts[2]



[1] See additional notes to graphs for details. [2] IMF (2026) scenarios include baseline, adverse and severe (as of April 2026). The two OECD (2026) scenarios include a mild and a prolonged disruption scenario (as of June 2026). Model-based estimates are from: (i) first-round GDP losses implied by standard elasticities; and (ii) estimates from a global oil supply shock applied to the open economy multi-sector DSGE model described in Burgert et al (2025) and Rees (2026). Both (i) and (ii) assume the same size of oil shocks.

Sources: Burgert et al (2025); Rees (2026); IMF; OECD; UN Comtrade; US Energy Information Administration; BIS.

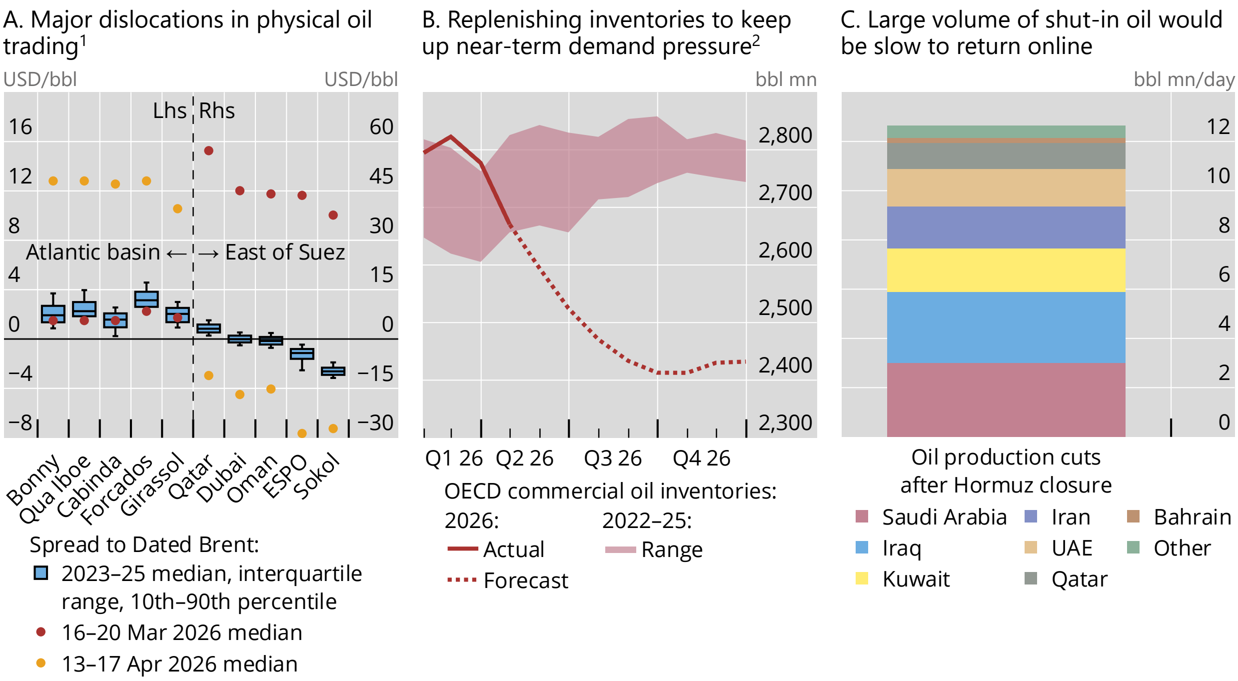
Box B

The persistent economic effects of the Iran conflict

The conflict in Iran has thrown global supply chains into disarray. Disruptions to oil and gas supply have affected downstream sectors far beyond transport and power. Shortages of nitrogenated fertilisers, helium and petrochemical inputs have threatened production of food, semiconductor and manufactured goods. In response, official and commercial reserves have been drawn down and the private sector has tried to adjust. Some farmers switched from corn to soy to cut fertiliser use,[1] airlines trimmed low-margin short-haul flights and US crude and gas liquid exports hit record highs to meet demand from Asia.[2] These mitigation measures have bought time. This box discusses prospective bottlenecks that could delay the full restoration of the supply of hydrocarbon inputs upon the conflict ending, possibly leading to persistent macroeconomic repercussions.

The conflict led to significant dislocations in physical oil markets. Global oil markets entered the conflict with a supply surplus, with February prices near five-year lows and oil stored at sea at record highs. Yet after the conflict began in March, the price of Asian-bound ("east of Suez") oil grades surged to record premiums over Dated Brent, the main global benchmark for physical oil (Graph B1.A, red dots on the right side). As Asian refiners sought alternatives to Persian Gulf supply, Atlantic-basin oil prices also rose sharply. With stress spreading beyond Asia, West African grades that typically would have flowed to Europe traded at large spreads to Brent (yellow dots on the left side). Physical oil markets saw a moderate price pullback in early May, as slowing demand and inventory releases alleviated some of the pressure, and eased further in June, on prospects of a resolution to the conflict.

Closure of Strait of Hormuz has caused unprecedented disruption in oil markets — Graph B1



Bonny = West Africa Bonny Light FOB; Qua Iboe = West Africa Qua Iboe FOB; Cabinda = West Africa Cabinda FOB; Forcados = West Africa Forcados FOB; Girassol = West Africa Girassol FOB; Dubai = Dubai FOB; Qatar = Al Shaheen official selling price; Oman = Oman FOB; ESPO = Russia ESPO Blend FOB; Sokol = Russia Sokol (Sakhalin I) CIF.

[1] Spreads between physical crude oil prices and Dated Brent. [2] OECD commercial crude oil and other liquids inventories; EIA forecasts as of May 2026 (dashed line) assuming flows through Strait of Hormuz slowly start to resume in late May or early June.

Sources: US Energy Information Administration (EIA); Bloomberg; Kpler; LSEG Datastream; BIS.

Despite recent signs of easing geopolitical tensions, risks of stresses in physical crude markets have not entirely gone away. The protracted closure of the Strait of Hormuz has resulted in a large cumulative oil supply deficit. As strategic reserves are being drawn down simultaneously across large consumers (United States, China, Japan and the European Union), the rebuilding of those reserves could keep the physical markets tight for several months, possibly well into 2027 (Graph B1.B).[3] Following the Strait's reopening, uncertainty about the effective resumption of traffic could keep tankers marooned in the Gulf for longer. Clearing the backlog of ships stuck in the Gulf waters alone could add further delay. Ships bound for Asia would take a further three to six weeks to reach unloading terminals.[4]

The prolonged closure of the strait has forced the "shut-in" of existing wells, as Gulf producers ran out of storage space.[5] Shut-ins have curtailed about 12 million barrels per day from a total regional crude oil supply of 21 million barrels per day (Graph B1.C).[6] This supply has been hard to compensate for, not only in volume but also in grade: there are few alternatives for the heavy (dense) and sour (high in sulphur content) grades for which Asian refineries are optimised. Although they are capable of running with lighter and sweeter grades, these refiners may scale down output rather than accept lower margins. Moreover, shut-ins tend to cause structural damage to oil wells, making it costly and slow to restart production fully and safely. Some oil wells, especially the more mature ones, may never recover their pre-conflict productivity, or restarting may not be economically viable.[7]

Damage already done to energy infrastructure could further prolong supply disruptions. Damaged facilities needing repair include not only oil extraction facilities, but also storage, transportation and shipping. The race to repair infrastructure could significantly delay procurement of the needed parts and machinery, as well as technical expertise. Pre-existing bottlenecks could compound these delays – even before the conflict started, producers of gas turbines for liquefied natural gas compressors had order backlogs of three to five years. These logistical bottlenecks, uncertainty about the permanence of conflict resolution and the conditions under which traffic in the Strait of Hormuz could resume, may drive a persistent premium in oil and natural gas prices.

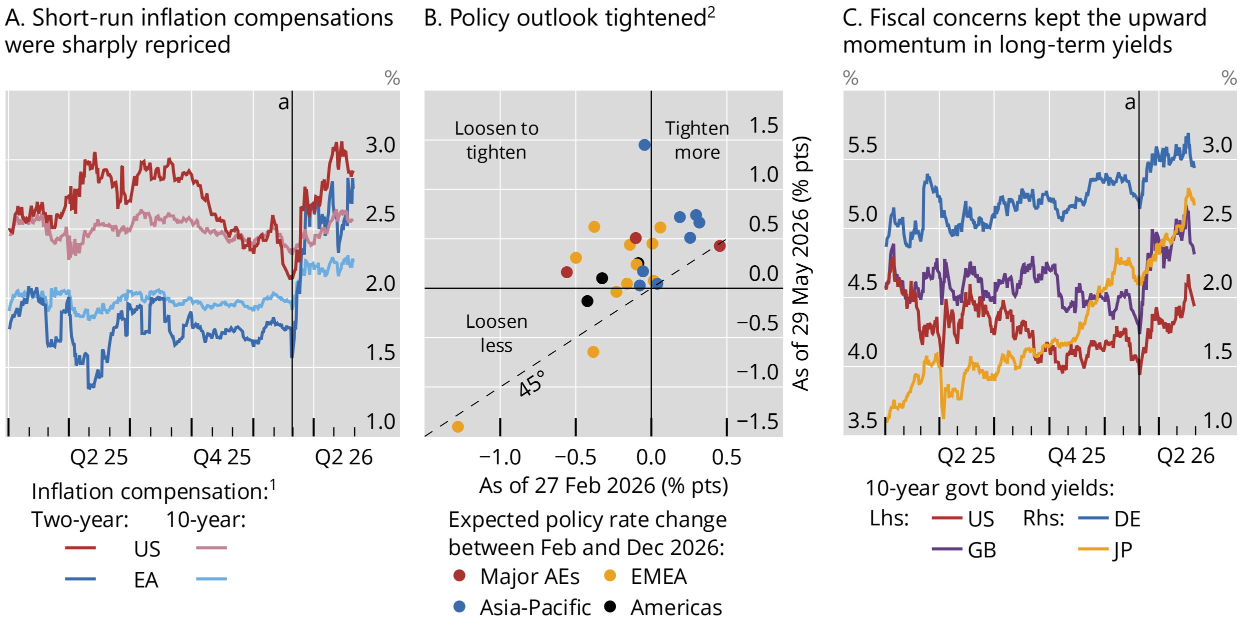
[1] US Department of Agriculture (2026); Food and Agriculture Organization of the United Nations (2026). [2] Dutta (2026). [3] I'Anson (2026). [4] Rystad Energy (2026). [5] In the oil and gas industry, a "shut-in" is the deliberate closure of a well (usually by valves at the wellhead) that completely stops the flow of oil, natural gas and associated fluids from the reservoir to the surface. [6] Falakshahi (2026). See also alternative estimates in Fattouh and Mehdi (2026). [7] Mayer (2020); Garduno and King (2020).

The conflict shifted the perceived inflation and monetary policy outlook. Inflation compensation surged across core markets, particularly in Europe, given its greater exposure to energy supply shocks (Graph 6.A). With looming increases in inflation, market participants started to price in a tighter monetary policy stance across a broad set of countries (Graph 6.B). Central banks that were previously expected to ease or hold rates steady are now expected to raise them, including in the United States, the euro area, the United Kingdom and Canada.

The shift in inflation and policy expectations led to a material increase in nominal yields. The initial adjustment was more pronounced at the short end of the curve, leading to significant flattening in core sovereign markets. But as the conflict dragged on, expectations of higher-for-longer rates and concerns about the fiscal implications raised long-term yields (Graph 6.C). Unwinding in leveraged positions in the cash market may also have contributed to the yield rise, amid the increased presence of non-bank financial intermediaries (NBFIs) in sovereign bond markets (Chapter II). Nevertheless, real short-term rates declined as the nominal rate increase still fell short of the expected pick-up in near-term inflation.

Risk appetite in broader financial markets retreated at the outbreak of the conflict but later recovered strongly. Global equity markets declined 9% from late February to end-March 2026, with the S&P 500 index down 8% over the same period. However, the sell-off was contained relative to previous episodes, such as the 2025 tariff hike (19%), the 1990 Gulf War (17%) or the 1979 Iranian revolution (17%). Even

The conflict shifted inflation and policy outlooks Graph 6



EMEA = Europe, the Middle East and Africa.

[a] Start of conflict in Iran (28 February 2026).

[1] Break-even rates from zero coupon inflation swaps. [2] See additional notes to graphs for details.

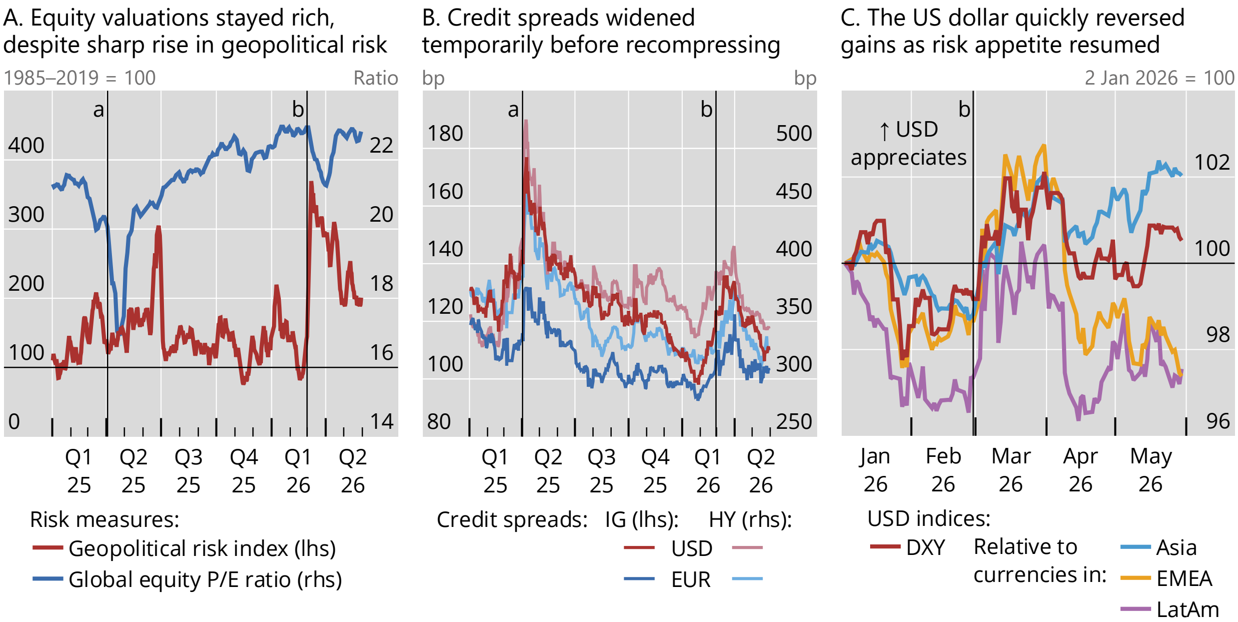
Sources: Bloomberg; LSEG Workspace; national data; BIS.

after accounting for strong earnings, equity valuations remained elevated, in an apparent disconnect with the sharp spike in geopolitical risk (Graph 7.A). Similarly, credit spreads widened initially before compressing to levels that were low by historical standards (Graph 7.B). The US dollar followed a similar pattern: it appreciated at the start of the conflict, before paring back some of these gains as risk appetite returned (Graph 7.C). Terms of trade appeared to influence cross-rate movements, as dollar appreciation proved more persistent vis-à-vis Asian currencies, due to the region's reliance on Middle East energy imports.

The dichotomy between buoyant market sentiment and uncertainty about the conflict's macroeconomic fallout is striking. Expectations of a quick and lasting resolution may have been one factor behind the rapid resumption of risk appetite. Confidence in underlying growth resilience, on the back of AI-related spending, is another. At the same time, there are signs that financial markets may not have fully incorporated attendant downside risks. Market-implied volatility and tail risk indicators have moved back close to pre-conflict levels. This benign view contrasts with lingering uncertainty regarding the persistent ramifications of damage already done, particularly for inflation (see below).

Risk appetite remained high despite the energy crisis[1]

Graph 7



EMEA = Europe, the Middle East and Africa; HY = high yield; IG = investment grade; LatAm = Latin America; P/E = price to earnings.

[a] US President Trump announces tariffs (2 April 2025). [b] Start of conflict in Iran (28 February 2026).

[1] See additional notes to graphs for details.

Sources: Caldara and Iacoviello (2022); Bloomberg; ICE Data Indices; LSEG Datastream; LSEG Workspace; BIS.

Navigating progress and peril

The resilience that characterised the global economy through the review period rested on a specific set of conditions – accommodative financial conditions, synchronised monetary easing and an investment boom sustained by expected transformative technological progress from AI. Each is coming under strain. Four pressure points stand out in particular: risks of persistent inflation, the sustainability of AI-related investment, growing financial vulnerabilities and weakening fiscal positions.

An inflation comeback

The macroeconomic impacts of the Hormuz disruption may not have run their course. The ultimate consequences will depend on how long it will take for the Strait traffic to fully and sustainably resume, and for damaged energy infrastructure to be repaired. Meanwhile, the inflationary impacts are already being felt and could prove persistent, for several reasons.

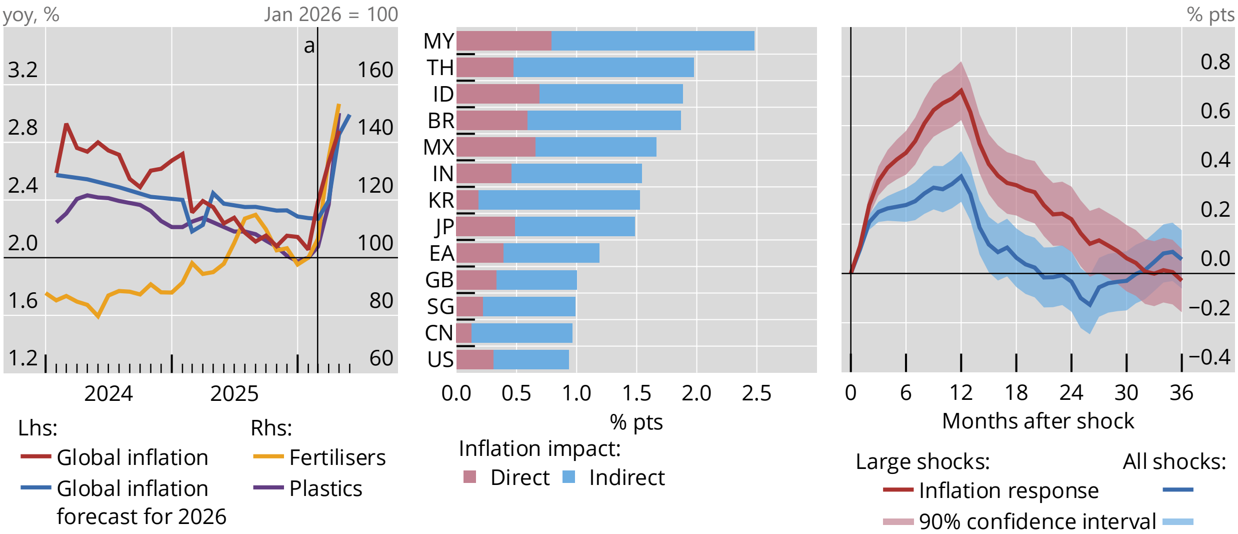
First, a 10% oil supply loss was significant, and markets could take considerable time to rebalance. The disruption initially caused a violent shift in oil markets, turning the ample inventories prior to the conflict into an acute shortage. Brent prices surged by 67% to an intraday peak of $120 in less than two weeks and have since been subject to significant volatility. Physical crude prices have reacted even more to tighter supply conditions, with some regional crude oil prices matching mid-2008

Severe energy shock increases inflationary pressures — Graph 8

A. Inflationary pressures rising after conflict in Middle East[1]

B. Supply chain linkages amplify higher input prices[2]

C. Large energy supply shocks have disproportionate effects on inflation[3]



[a] Start of conflict in Iran (28 February 2026).

[1] Global inflation and global inflation forecast are the GDP-PPP-weighted cross-country averages of headline inflation and consensus forecasts of 2026 inflation, respectively. See additional notes to graphs for details. [2] The consumer price index (CPI) inflation impact of a joint 10% price increase in four input sectors – oil and gas, refined petroleum, chemicals and plastic products. Direct effects refer to shocked items in the CPI basket; indirect effects capture propagation through supply chain linkages. [3] Response to a 10% increase in energy prices. Energy price growth instrumented by the Organization of the Petroleum Exporting Countries (OPEC) oil supply shocks. Large shocks refer to months in which the absolute monthly growth in energy prices was above the 75th percentile. See Avalos et al (2025) for details.

Sources: IMF; World Bank; Bloomberg; Consensus Economics; LSEG Datastream; national data; BIS.

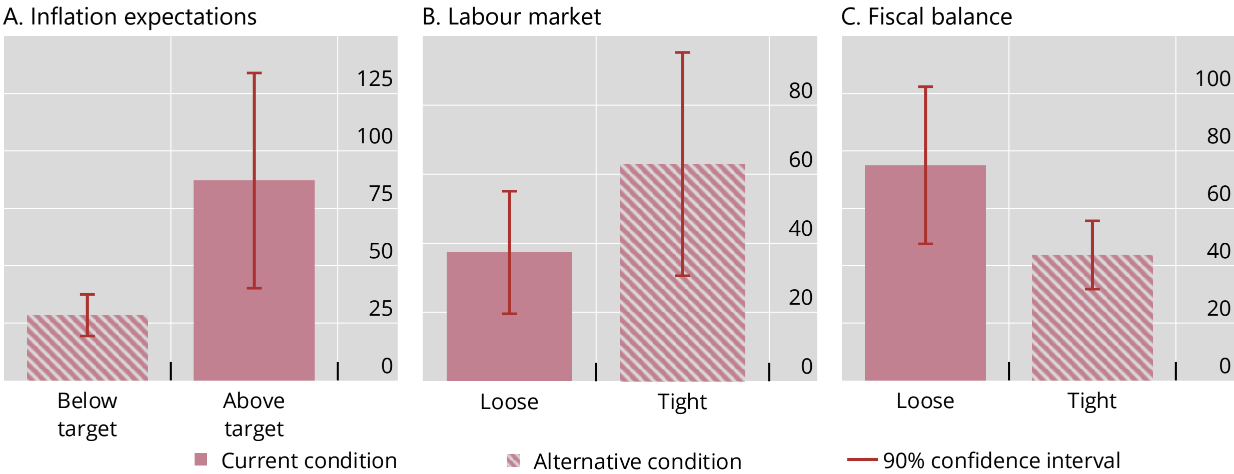
peaks. Granted, recent de-escalation has brought relief and oil prices have pulled back significantly. But, as argued in Box B, large imbalances in the physical markets remain and could lead to further strains and volatility.

Second, there are already signs of rising inflationary pressures. Global inflation has jumped by half a percentage point since the conflict started (Graph 8.A). Several commodities have seen double-digit price growth. For instance, prices of plastics and fertilisers were both up by 50% – consistent with purchase managers reporting significantly higher input prices. Higher costs and shortages of key inputs could propagate through supply chains, raising the costs of other intermediate goods and amplifying price pressures on final goods (Graph 8.B). Given the time lags in production, the upstream cost increases could continue to pressure inflation well after energy flows and oil prices normalise.

Third, the inflationary impact may scale non-linearly with the size and duration of the oil disruption. Evidence for AEs suggests that inflation is more sensitive to larger energy price shocks (Graph 8.C). One possible reason is that firms are less able to absorb large cost increases and more likely to pass them through to final goods prices. A larger and more persistent energy shock is also more likely to affect a broader set of other commodities, triggering second-round responses of non-energy prices. The cascading effects of the cost increases to date through the supply chain could thus compound and amplify the effects on consumer prices. Post-pandemic high inflation may have also weakened the anchoring of inflation expectations.

Initial conditions determine upside risks to inflation[1]

In basis points — Graph 9



[1] Impact of a 10% oil supply shock on headline inflation after 12 months for respective categories of initial conditions. Oil price growth instrumented with oil supply shocks identified following Baumeister and Hamilton (2019). See additional notes to graphs for details.

Sources: Baumeister and Hamilton (2019); OECD; IMF; Consensus Economics; LSEG Datastream; Macrobond; national data; BIS.

Several mitigating factors could help contain the inflationary impact of the current oil shock. First, the prospective resumption of oil flows through the Strait, if sustained, should help truncate the upside tail risk to inflation. Another is the reduction in energy intensity, which has fallen by more than half in some countries over the past two decades. This reduces the sensitivity of domestic economic activity to higher oil prices, although these gains may be tempered by the embedded energy costs of imported goods. Another mitigating factor is the more favourable macroeconomic context relative to previous inflation surges. Inflation expectations, while still above target in some jurisdictions (Graph 9.A), are lower now than after the start of the Russia-Ukraine war in 2022. Labour market normalisation since 2022 has further reduced the risk of second-round effects and wage-price spirals (Graph 9.B). And while fiscal balances remain looser than average (Graph 9.C), relief spending that is more targeted this time should help strengthen fiscal discipline and lessen the inflationary impact of the current energy shock.

AI progress and investment boom under pressure

AI has the potential to raise productivity significantly over the coming decade. Task-level studies consistently report large efficiency gains, often to the tune of between 20 and 50% in time savings (Graph 10.A). Aggregate productivity growth estimates tend to be more conservative at less than 1% over a long horizon, reflecting challenges in adopting the technology at scale and integrating it with production processes. Still, there are further upside productivity gains, particularly if the technology improves to the point at which knowledge creation can be automated. The potential implications of such transformative AI for growth, income distribution and monetary policy are profound (Box C).

Box C

Transformative AI, long-term growth and r-star

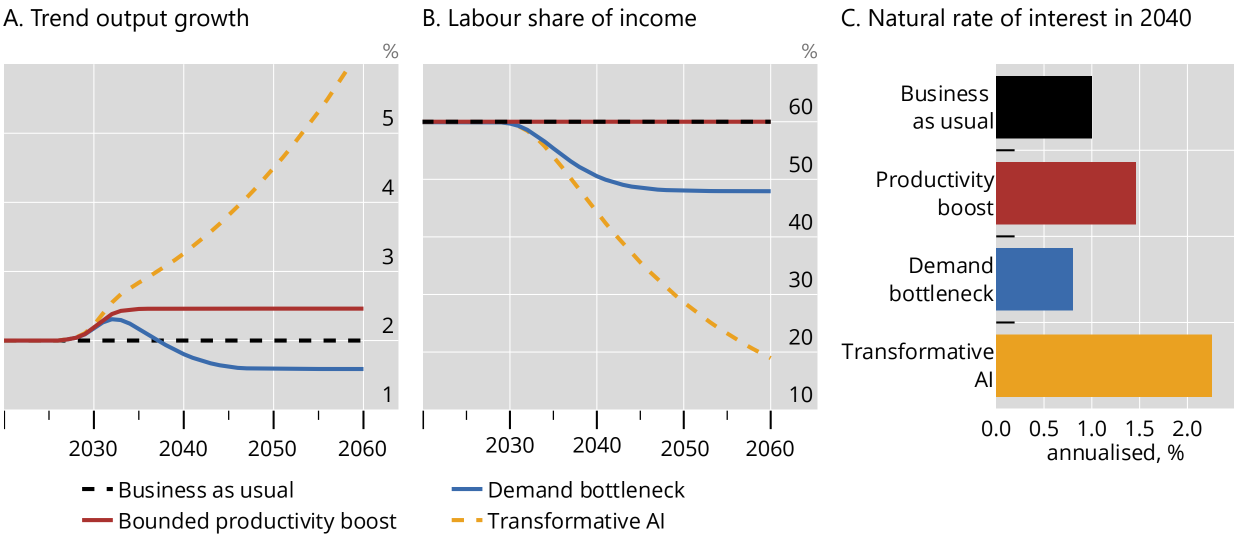
Artificial intelligence (AI) has the potential to differ fundamentally from earlier waves of technological progress. Previous general purpose technologies, such as the steam engine, electrification and information technology, raised workers' productivity by providing them with better tools. AI could go further by augmenting the production of knowledge itself. If, at some point, AI systems can improve their own capabilities and "create" technology and ideas, the macroeconomic consequences could be profoundly different from past innovations. A key constraint on long-run growth, namely the rate at which humans can generate new ideas, could be lifted.

Recent research has begun to formalise this possibility. Trammell and Korinek (2023) argue that if AI capital becomes a sufficiently close substitute for human labour, the economy can transition from the regime of constant exponential growth to one of accelerating super-exponential growth. As machines autonomously improve themselves, the economy acquires a self-reinforcing engine of growth. Jones and Tonetti (2026) identify a supply side counterforce. If different economic tasks are strong complements, the overall output would be constrained by the task that is improving slowest, the weakest link. AI progress in automated tasks could then fail to translate into faster aggregate growth if essential human performed tasks hold output back. Trammell and Korinek (2023) also argue that economies currently operate in this complementarity regime, implying that the transformative scenario remains a possibility rather than a present reality.

These frameworks are supply side oriented – they focus on the productive potential of AI and assume that consumer demand keeps pace with supply. But as AI advances, automation increasingly diverts income from labour, which is spent on goods and services, into further AI investment. The consumer base could erode as productive capacity expands. Forward-looking firms, recognising the shrinking future market for AI-produced goods and services, may find it unprofitable to invest in innovating and automating the next task. Productivity stalls not because of technological limitation, but because the demand to justify further capacity expansion is missing. The demand bottleneck becomes the binding constraint.

AI's long-run impacts are uncertain and scenario-dependent[1]

Graph C1



AI = artificial intelligence.

[1] Simulation based on a task-based growth model featuring potentially transformative AI capital and two types of households with different marginal propensities to consume.

Sources: Rungcharoenkitkul (2026a); BIS.

A unified framework that nests the supply side predictions as special cases, but incorporates demand bottleneck, synthesises the range of possibilities and provides insights for monetary policy. The framework features a task-based production structure in which AI capital can automate a rising share of tasks. It has two classes of households (capital owners and workers) to track who bears the costs of adjustment[1] and features a forward-looking free-entry condition governing firms' decisions to invest in further innovation and automation. In calibrating the model, trend productivity, markups, product turnover and longevity of innovation rents are set to standard empirical benchmarks. The model economy's labour share and r-star before the introduction of transformative AI are matched to data and established estimates. By varying the scope of automation and innovation's reliance on consumer demand, the model generates scenarios that include: (i) business as usual; (ii) bounded productivity gains; and (iii) explosive growth. Critically, it identifies a fourth possibility, the demand bottleneck.

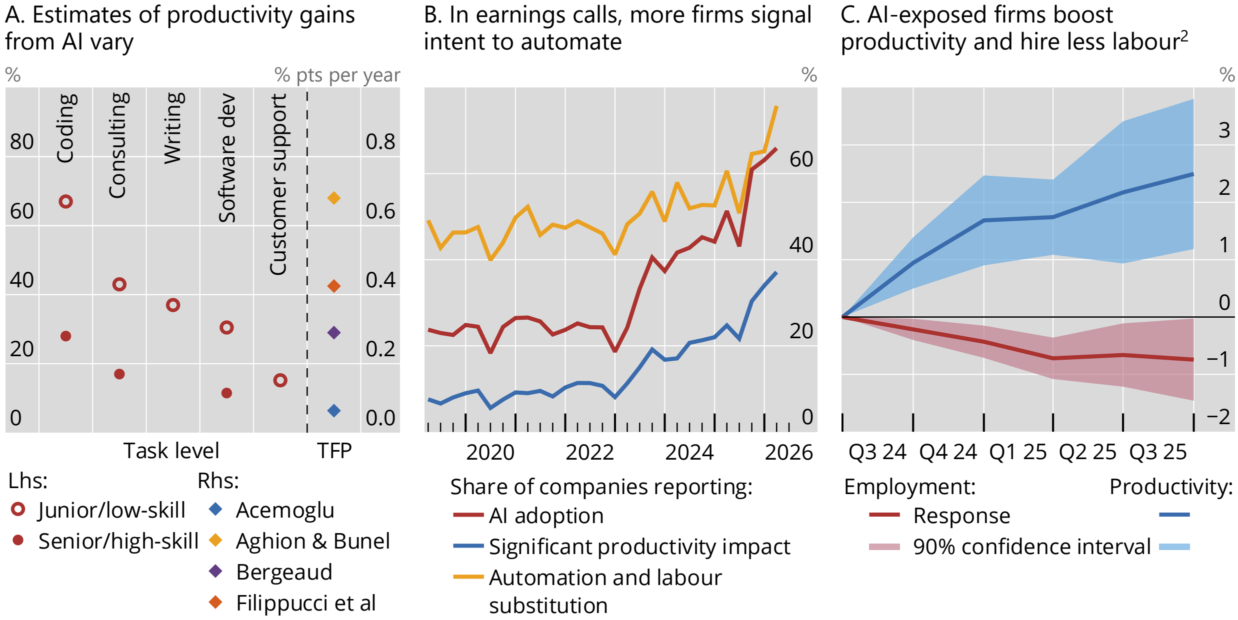
The projections for aggregate output highlight the wide uncertainty surrounding AI's growth impact (Graph C1). Under the business as usual scenario in which labour remains the binding input, output continues to grow at its historical trend rate of 2% annually. A bounded productivity boost would shift trend growth permanently by a constant margin – which has not occurred since the Industrial Revolution. Under the transformative AI scenario, in which AI becomes a self-reinforcing growth engine, output growth expands exponentially and the labour share falls towards zero. Under the demand bottleneck scenario, output growth rises before falling below its historical trend in the long run as automation stalls. Since every displaced worker is also a lost consumer, the spending that rewards innovation eventually shrinks, leading to a slowdown. This scenario produces a labour share decline that is less severe than the transformative case, but worse than the other two cases.

The analysis also sheds light on the implications for the natural rate of interest, or r-star. Under the business as usual scenario, r-star stays at its pre-AI level. Under the bounded productivity boost and transformative AI scenarios, higher productivity growth raises the marginal product of capital and r-star increases. Under the demand bottleneck scenario, r-star initially rises while supply side forces dominate but then falls below its pre-AI baseline as the bottleneck takes hold. The r-star implications thus depend on parameters that are uncertain today: how much AI profits and innovation rely on consumer demand, how quickly competition within the AI sector erodes margins, and how fast AI products and infrastructure become obsolete. The corresponding medium-term inflation pressures move with r-star in direction, turning disinflationary if the demand bottleneck dominates and inflationary if expected productivity lifts demand on net.

[1] See also Fornaro and Wolf (2026), who show that automation-driven redistribution towards capital owners with lower marginal propensities to consume can open a demand shortfall and a liquidity trap in a New Keynesian model, and Falk and Tsoukalas (2026), who show that a similar demand externality can lead firms to over-automate relative to cooperative equilibrium.

The transition to a more productive AI-driven economy entails risks, however. As more capable AI tools find applications in more tasks and occupations, labour displacement could intensify. Whether or not AI advances create new jobs – or expand demand for existing ones – sufficiently to make up for such displacements remains uncertain. Unlike past general purpose technologies, AI competes directly with human cognitive abilities, possibly narrowing the scope for workers to move up the value chain or find new non-disrupted tasks. To date, such disruptive labour displacements have yet to occur at scale. But there are signs of possible adjustments to come. In earnings calls, more firms are acknowledging potential productivity gains from AI, signalling their intent to automate an increasing share of production processes and engage in labour substitution (Graph 10.B). Consistent with this, US sectors with higher exposure to AI have also seen higher productivity gains, partly at the expense of lower employment growth relative to other sectors (Graph 10.C).

AI holds promise of large productivity gains, but with risks to labour markets[1] Graph 10



AI = artificial intelligence; software dev = software developers; TFP = total factor productivity.

[1] See additional notes to graphs for details. [2] Based on a cross-sectoral period-by-period regression where cumulative productivity (employment) growth is regressed on Q3 2024 log of productivity (employment) and Q3 2024 sectoral exposure to AI in the United States.

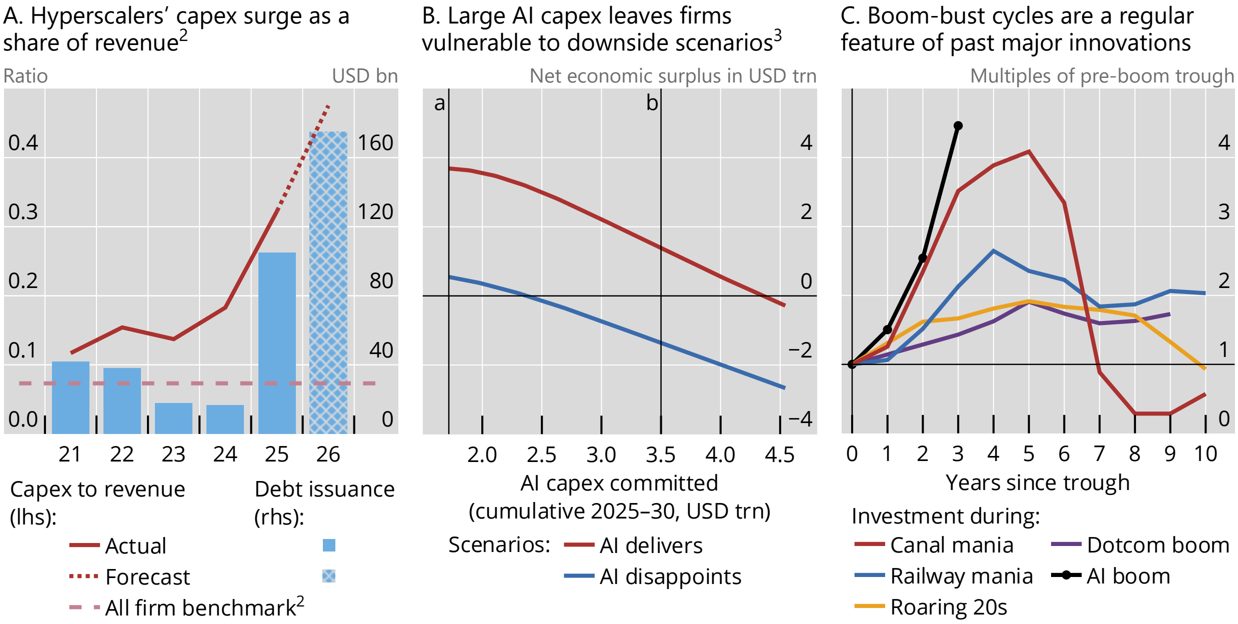
Sources: Acemoglu (2025); Aghion and Bunel (2024); Bergeaud (2024); Brynjolfsson et al (2025); Cui et al (2026); Dell'Acqua et al (2023); Filippucci et al (2024); Gambacorta et al (2024); Noy and Zhang (2023); S&P Global Market Intelligence; national data; BIS.

In the near term, the ongoing AI investment boom raises questions about the sustainability of the current economic expansion. The five largest hyperscalers are set to spend over a trillion US dollars on AI-related capital expenditure from 2025 through 2026. These commitments are outpacing earnings and the free cash flow of these firms, leading some to issue debt to raise additional financing (Graph 11.A). This investment race may be partly driven by the perception that only a small number of players with superior technology will ultimately dominate the market shares. The intense competition raises the risk of firms over-committing resources to investment projects with still uncertain returns, leaving all firms vulnerable to disappointments in AI payoffs. Model analysis based on such contest motives highlights the downside risk of current AI exuberance. As competitive pressure drives capex higher, the net economic surplus – the total payoff less investment costs – declines for the sector as a whole and could turn negative in adverse scenarios (Graph 11.B). Disappointment in returns could trigger a sudden pullback in financing and turn the capex boom into a protracted investment bust, with potential knock-on effects on financial conditions (see below).

Another risk is that the AI boom runs into a supply side roadblock. The AI build-out has recently been facing growing bottlenecks in electricity, advanced semiconductors and grid equipment. Fast-growing demand for computing power is already pressuring electricity prices and input costs, with potential spillovers to inflation. Looking ahead, these temporary shortages may also amplify over-investment, as firms attempt to lock in future capacity through long-dated contracts that further expose them to any disappointments in demand.

Historical episodes of investment booms offer instructive parallels (Graph 11.C). The canal mania of the 1830s, the British railway mania in the 1840s, the electrification

Rapid AI boom raises questions about its sustainability[1] Graph 11



AI = artificial intelligence; capex = capital expenditure.

[a] Cumulative capex to date. [b] 2030 projection (Jensen Huang, Nvidia CEO): $3–4trn.

[1] See additional notes to graphs for details. [2] Weighted average capex to revenue ratio for all US non-financial corporates between 2010 and 2025. [3] Net economic surplus is revenue minus capex and debt service. Estimates based on a contest model featuring cross-firm financing and debt. "AI delivers" assumes full revenue; "AI disappoints" assumes 50% drop in productivity with partial financing unwind. See Rungcharoenkitkul (2026b) for details.

Sources: Cranmer (1960); Rungcharoenkitkul (2026b); Bank of England; Federal Reserve Bank of St Louis; Bank of America; S&P Global Market Intelligence; companies' communications; national data; BIS.

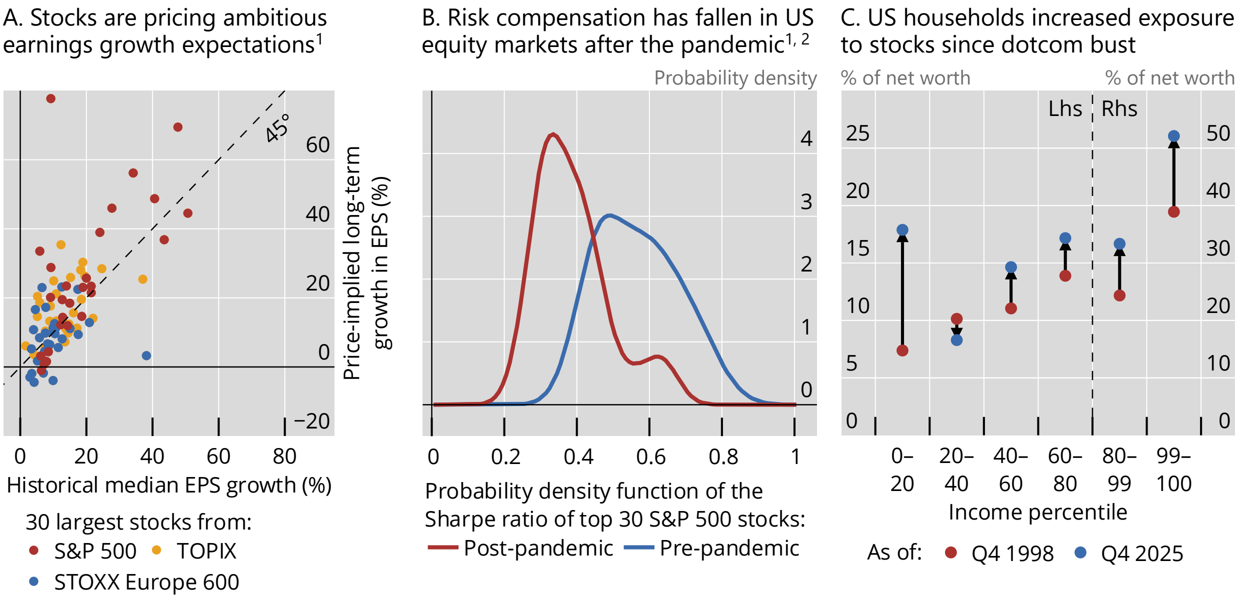
exuberance of the late 1920s (roaring 20s) and the dotcom boom of the late 90s all shared one common trait: a genuine technological breakthrough that attracted capital in excess of what commercial returns could ultimately justify. These episodes ended with an eventual reversal in investment, inducing economy-wide recessions. The scale and pace of the current AI investment boom accompanied by expectations of large productivity payoffs bear resemblance to these precedents, highlighting potential downside risks in the near term.

Financial vulnerabilities as amplifiers

Should inflation rise significantly or AI-led investment turn to a bust, the macroeconomic consequences could be amplified by existing financial vulnerabilities. A tightening of policy rates needed to contain inflation could precipitate a sharp pullback in asset prices after a prolonged period of exuberant risk-taking, triggering disruptive macro-financial feedback loops. A reversal of AI optimism could likewise have major financial consequences, given AI firms' rising leverage and growing footprint in credit markets. Vulnerabilities extend to their supplier ecosystem, including engineering, procurement and construction (EPC) contractors whose balance sheets are comparatively weak, leaving them exposed to any capex pullback by hyperscalers.

Rich equity valuations are becoming a source of macroeconomic vulnerability

Graph 12



EPS = earnings per share; TOPIX = Tokyo Stock Price Index.

[1] See additional notes to graphs for details. [2] Sharpe ratio = excess return divided by volatility.

Sources: Board of Governors of the Federal Reserve System; Kenneth French Data Library; LSEG Datastream; LSEG Workspace; BIS.

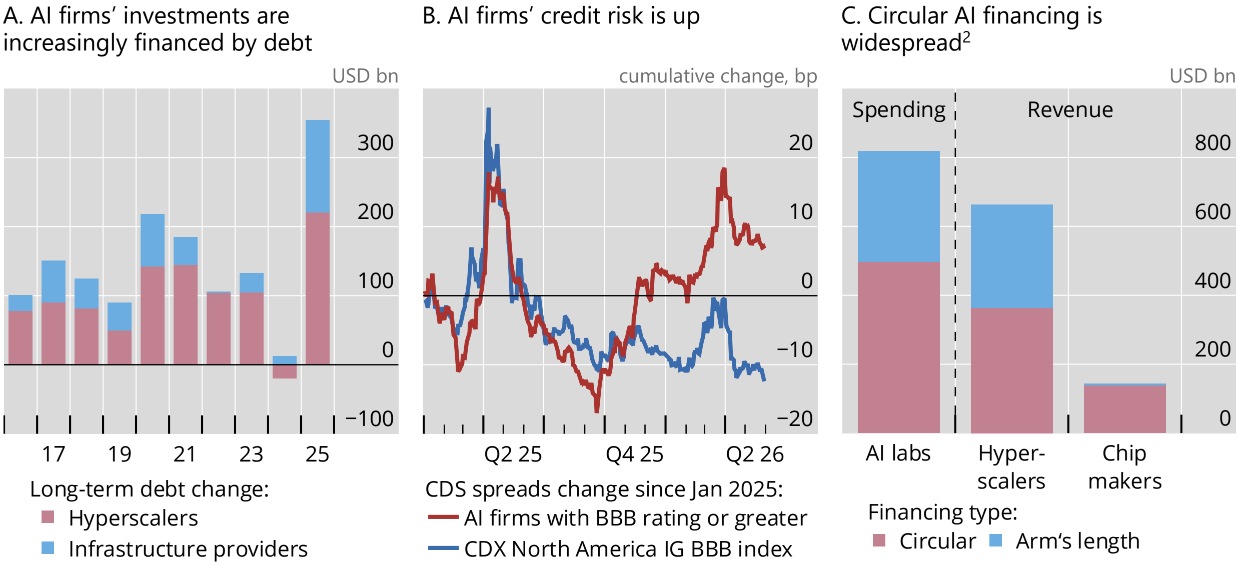
Equity valuations are elevated, particularly for firms at the core of AI development. The implied long-term earnings growth for the largest corporations sits well above recent historical benchmarks (Graph 12.A), with US stocks often trading at large premia to peers in other major markets. These implied rates often exceed even the elevated growth that some of the technology firms have delivered in their relatively short lifetimes. As these firms mature and command a larger share of the market, sustaining such high growth could become increasingly challenging.

Sentiment has also been a major driver of current valuations. Risk premia on the largest US stocks have compressed markedly since the Covid-19 pandemic, with the distribution shifting clearly to the left (Graph 12.B). This points to growing investor complacency and reduced compensation for risk-bearing. Post-pandemic exuberance has been largely broad-based across sectors and countries, coinciding with the rapid rise of AI as an investment theme following the release of generative AI tools in late 2022.

A major equity market correction could have larger macroeconomic consequences today than in the past. Household equity exposures have grown over the past few decades, both relative to total wealth (Graph 12.C) and income (Graph 3.C). A large correction in valuations could have more pronounced wealth effects and sharper consumption pullback than in the past. And with US stocks accounting for an outsized share of global equity markets – about 64% of the MSCI Global index – the wealth impact from a US-led repricing could propagate globally.

Financial stability could also be at risk in the event of an AI bust. Fixed income markets are one obvious vulnerability, given the high volumes of debt issued by hyperscalers, AI labs and EPC firms (Graph 13.A). Should hyperscalers slow or halt the aggressive pace of capex deployment, many borrowers across the supply chain could struggle to replace lost revenue and service their debt. The credit spreads of some AI

Corporate credit is vulnerable to repricing on AI disappointments[1] Graph 13



AI = artificial intelligence; CDS = credit default swap; IG = investment grade.

[1] See additional notes to graphs for details. [2] Announced multi-year commitments as of April 2026. Circular financing refers to a reciprocal investment structure in which hyperscalers take equity stakes in AI labs in exchange for the latter's purchase commitments, thus rechannelling capital back to investors as revenue; arm's length financing denotes flows that do not involve such circular financing.

Sources: Bloomberg; CNBC; LSEG Datastream; S&P Global Market Intelligence; The Wall Street Journal; BIS.

firms have already begun to widen somewhat to reflect this risk (Graph 13.B), even as equity markets continue to price in significant upside gains.

The opacity of AI-sector financing compounds these vulnerabilities. Hyperscalers, chip makers and AI labs are linked through a complex web of private arrangements. The most prominent is circular financing: chip makers and hyperscalers take equity stakes in AI labs or neocloud providers, who in turn commit to multi-year purchases of chips or computing power. Data centre construction is increasingly outsourced to third parties that lease facilities back to hyperscalers on long-dated contracts with embedded exit clauses. The terms of such deals are typically poorly disclosed, with risks of the same asset being pledged multiple times. Together, such arrangements account for a sizeable share of sector-wide financing and forward revenue (Graph 13.C).

A sharp repricing of equity risk could prompt a reassessment of corporate credit risk and lead to tighter credit conditions more broadly.[1] Indeed, broad indices of credit spreads tend to correlate negatively with stock market returns (Graph 14.A), more so for the high-yield than the investment grade segment. While large, synchronised corrections in both markets are rare, there are notable precedents such as the Great Financial Crisis and the March 2020 dash for cash episode. A repricing of risk this time, whether triggered by higher interest rates or an AI bust, has the potential to be similarly disruptive by triggering a corporate credit freeze with wider implications for aggregate investment.

Any tightening in credit conditions could expose existing vulnerabilities in the less transparent private credit space, whose reach has expanded among middle market and small firms (Graph 14.B). Signs of stress are already visible: direct lending funds catering to retail investors have faced mounting redemption requests, forcing some to liquidate assets and return capital despite having no contractual obligation to do so. A larger shock, whether from a renewed inflation surge or a sharp AI-led repricing, could trigger a more widespread credit crunch. The consequences could extend beyond the non-bank perimeter, given banks' growing and opaque exposure to private credit funds, compounded by overlapping ties through insurance companies' balance sheets. Given that the affected segment is smaller corporates that account for a large share of job creation, the real economy implications could be substantial.

The growing role of private credit also raises concentration risks. Direct lending funds, dominant players in the private credit ecosystem, have quadrupled their lending to the AI and information technology (IT) sectors in the past five years, to about 15% of their portfolios.[2] These loans tend to be larger than those in other sectors, while their terms such as tenor and pricing remain broadly similar, raising questions about lending standards and risk pricing. Investor enthusiasm has allowed more funds to participate, increasing concentration risks as software firms draw on multiple private credit lenders simultaneously (Graph 14.C).

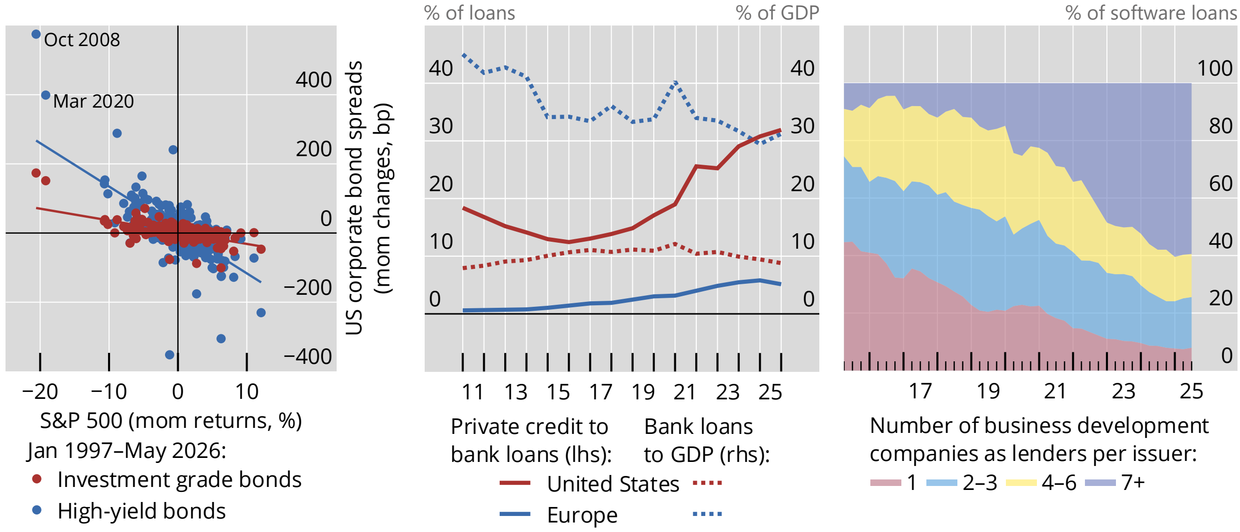
Cyclical vulnerabilities are compounded by secular forces reshaping the financial system. NBFIs, beyond their roles in private credit activity, are shifting credit and leverage outside the banking sector and interacting with fiscal risks (Chapter II). Advances in AI and digitalisation are changing the contours of financial stability risk. Frontier AI models lower the cost and accelerate the pace of cyber attacks. Money-like digital assets such as stablecoins (Chapter III) introduce run-prone instruments outside the bank perimeter. These challenges are testing the adequacy of the current regulatory framework.

Sudden tightening of financial conditions may overly curtail credit supply — Graph 14

A. Corporate equity and credit risk are linked

B. Private credit has become a growing financing source to SMEs[1]

C. Exposure to software borrowers is concentrated[2]



SMEs = small and medium-sized enterprises.

[1] See additional notes to graphs for details. [2] Number of distinct business development companies (BDCs) lending to the same borrower, expressed as a share of the total BDC loan volume to the software sector.

Sources: Avalos et al (forthcoming); ICE Data Indices; LSEG Datastream; Macrobond; PitchBook Data Inc; national data; BIS.

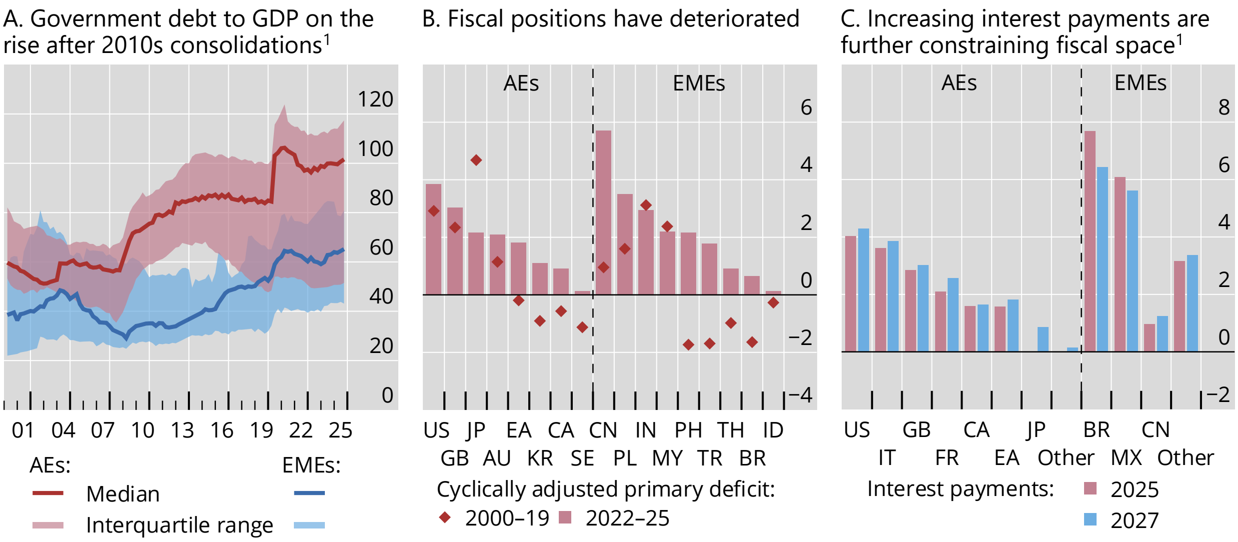
Fiscal positions under increasing strain

Many countries entered the current energy crisis with limited fiscal space. Public debt in AEs has risen steadily over recent years (Graph 15.A), reducing governments' ability to cushion fallout from higher energy prices. Although the increase partly reflects successive shocks, from the Covid-19 recession to the war in Ukraine, persistent failures to make meaningful progress on fiscal consolidation during economic expansions have also played a part. Cyclically adjusted primary deficits in AEs averaged 1.9% of GDP from 2022 onwards (Graph 15.B), nearly double the 1.1% recorded over the two preceding decades. EMEs have seen an even sharper deterioration (1.8% since 2022 versus 0.1% between 2000 and 2019). Fiscal positions are set to remain strained over the coming years. Debt servicing costs are unlikely to ease soon, as higher interest rate payments continue to weigh on fiscal accounts (Graph 15.C). Deficits in 2027 are projected at or above 2025 levels in most jurisdictions.

The energy shock exacerbates fiscal pressures on several fronts. Rising energy costs intensify demands for government relief, straining already tight fiscal constraints. Though higher inflation in isolation may relieve fiscal burden, the required responses from monetary policy to rein in inflation may entail higher nominal and real interest rates. The net effects would be further increases in debt servicing costs, more so if inflationary pressures were higher and more persistent (Graph 16.A). Sizeable refinancing needs amplify this impact, as debt coming due is rolled over at higher rates (Graph 16.B). Finally, fiscal arithmetic has become less favourable. The gap between bond yields and nominal GDP growth, previously deeply negative, has reversed and turned positive in many countries (Graph 16.C). Countries can no longer count on nominal growth to stabilise debt dynamics. They now must run primary surpluses or significantly smaller deficits to maintain stable debt-to-GDP ratios.

Higher public debt is cutting fiscal space

As a percentage of GDP — Graph 15

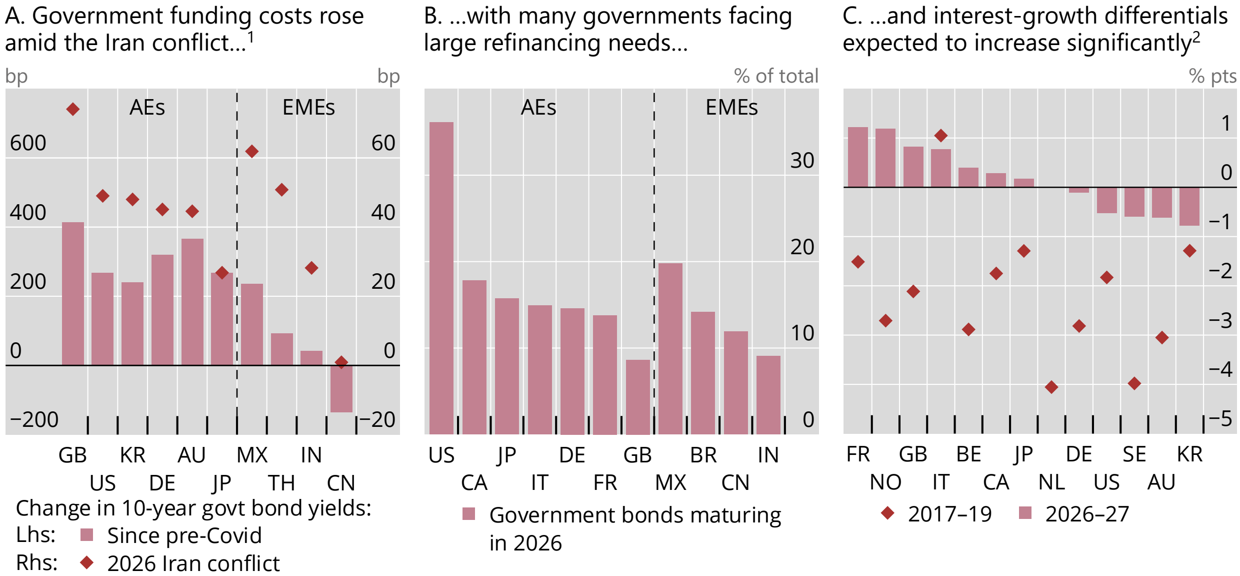


[1] See additional notes to graphs for details.

Sources: IMF; OECD; BIS.

Fiscal vulnerability is growing on multiple fronts

Graph 16



[1] See additional notes to graphs for details. [2] Interest-growth differentials computed as the difference between the yield on 10-year government bonds and potential GDP nominal growth. Data for 2026–27 based on OECD Economic Outlook projections.

Sources: OECD; Bloomberg; BIS.

Policy implications

The global economy remains caught in the crosscurrents of progress and peril. Progress in AI and its promise kept financial conditions easy and supported economic activity. At the same time, successive global shocks, from higher tariffs to the conflict in the Middle East, threaten to undermine stability. The global economy and financial markets have so far proven resilient against these shocks. But this resilience is being increasingly tested and strained. Indeed, the new geopolitical environment could be significantly more volatile and precarious than in the past. Adverse supply shocks have become more frequent and more intense (Graph 17.A) – a condition that is set to stay.[3]

In this context, authorities may have to contend with the increasingly interwoven roles of fiscal and monetary policy. Supply shocks, if persistent, make it harder for central banks to keep inflation in check without adversely affecting growth and unemployment. Meanwhile these shocks also put fiscal policy under pressure to ease households' cost of living burdens. Yet higher public debt crowds out monetary space, weakening the central banks' ability to contain inflationary pressures without further worsening public finance. The separation between fiscal and monetary policies – long a cornerstone of central bank independence and credibility – is coming under growing strain.

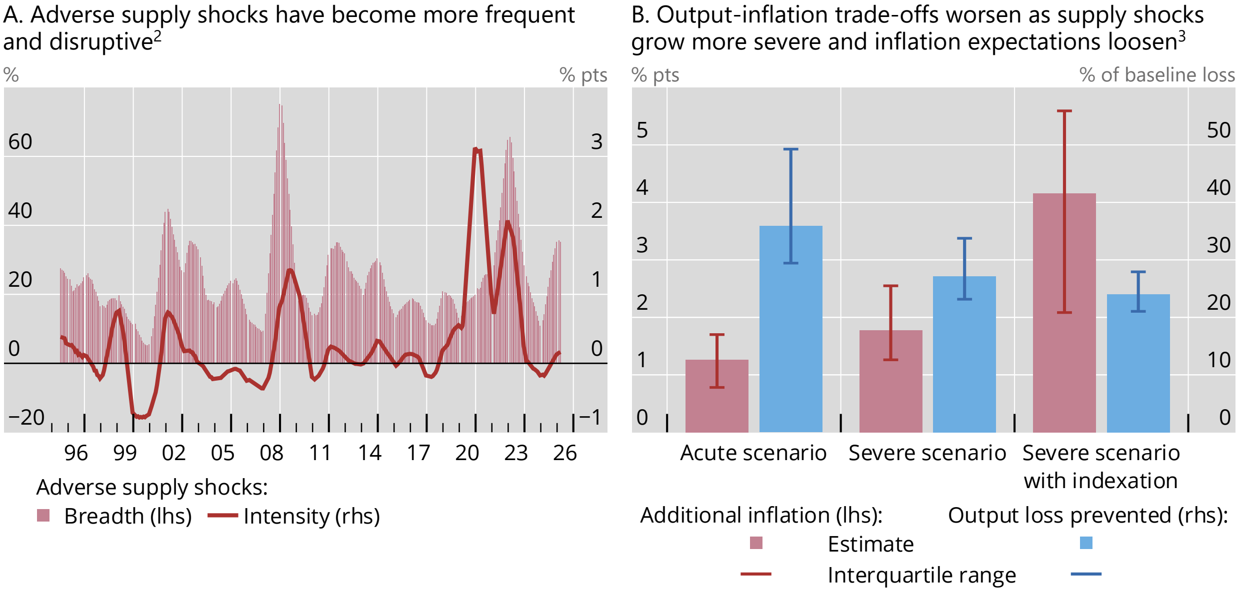
Policymakers must also come to grips with multiple structural shifts and their uncertain implications ahead. The AI revolution could boost productivity and ease supply constraints, but there is also significant uncertainty about both the near-term transition and the longer-term payoff. Other structural shifts, from demographic challenges and geoeconomic fragmentation, are likely to shape inflation and growth dynamics across jurisdictions. Macroeconomic policy needs to be robust to these multifaceted uncertainties.

Monetary policy

In response to stagflationary headwinds that worsen policy trade-offs, the rationale to look through temporary supply shocks remains compelling – but only up to a point. As monetary policy can do little to directly offset the first-round effects of a supply shock, accepting a one-off rise in the price level helps avoid amplifying the real income loss, particularly if energy price increases are temporary. But central banks must also be alert to signs of second-round effects and any loosening of inflation expectations. With more protracted supply shocks and more backward-looking expectation formation, the case for looking through weakens, as the inflation costs rise while the ability to prevent large output losses decline (Graph 17.B). With the post-pandemic inflation surge still fresh in the memory, the risks of even transient supply shocks triggering second-round effects and persistent inflation should not be discounted.

The right policy calibration varies across economies, depending on how expectations are formed as well as the magnitude of the growth impact. The Strait of Hormuz disruption has disproportionately affected energy-intensive manufacturing hubs in Asia that depend heavily on oil shipments through the Strait. Where the growth fallout is severe, but inflation expectations remain firmly anchored, there is greater room to look through the shock and adopt a more measured policy response. But there is also an intertemporal consideration – allowing inflation expectations to drift today can worsen future policy trade-offs. In an environment of more frequent supply shocks, the payoff to investing in inflation credibility has increased.

Adverse supply shocks pose challenges to monetary policy[1] Graph 17



[1] See additional notes to graphs for details. [2] "Breadth" is the share of 40 economies exposed to negative supply shocks (downward growth surprises and upward inflation surprises). "Intensity" captures the cross-country average size of supply shocks. [3] Simulations based on the open-economy multi-sector DSGE model described in Burgert et al (2025) and Rees (2026). "Additional inflation" arises from holding the policy rate fixed ("looking through" higher oil prices), compared with following a standard Taylor rule. "Output loss prevented" is the reduction in the output loss under the "look through" strategy compared with a standard Taylor rule. Indexation means firms' inflation expectations are partly influenced by past price growth.

Sources: Burgert et al (2025); Rees (2026); Consensus Economics; BIS.

The ongoing AI boom also poses several challenges for monetary policy. While the rapid acceleration of capital expenditures on AI infrastructure has provided a tailwind to global growth, a sustained rapid expansion in the coming years could usher in more pronounced demand pressures, especially via power, construction and specialised input bottlenecks. At the same time, the highly concentrated, partly debt financed AI build-out, with interconnected cash flows and exposures, underscores downside risks to global growth, particularly if any investment pullback is amplified by existing financial vulnerabilities. Over the longer term, AI's eventual effects on productivity, labour markets, income distribution and the role of monetary policy remain highly uncertain. Monetary policy strategies should be robust across a wide range of scenarios.

For EMEs and small open economies (SOEs), these policy trade-offs are sharper still and are shaped by a shifting external environment. Capital flows could become more selective and volatile as geoeconomic fragmentation redraws the cross-border investment landscape along strategic as well as financial lines. This could leave EMEs and SOEs more exposed to sudden and less predictable capital flow reversals. A flexible inflation-targeting approach with judicious use of foreign exchange intervention remains the appropriate core framework, but it must be complemented by deeper domestic capital markets and prudent reserve buffers.[4]

Safeguarding price stability could become more challenging as fiscal positions deteriorate and pose risks to inflation themselves. Higher defence and energy support spending, alongside rising interest burdens, are adding to budget pressures, at a time when public debt is elevated by historical standards in many countries. At this juncture, monetary policy has a key role to play. By continuing to fulfil its mandate and prioritising medium-term price stability, even when policy actions may have near-term fiscal implications, central banks can help anchor inflation expectations and keep inflation risk premia contained. Staying focused on its inflation mandate also provides a clear signal that supports policy coherence and complements credible medium-term fiscal frameworks aimed at placing public finances on a sounder footing.

Fiscal and structural policy

The overarching task confronting fiscal policy is to reconcile three demands that have become increasingly difficult to satisfy jointly: cushioning households and firms from more frequent supply shocks, meeting rising defence and security commitments, and placing public finance on a sustainable path. The first two cannot be delivered credibly if the third is not. Failure to put fiscal positions on a sound footing in a timely manner could also result in higher risk premia, making the consolidation even more difficult and painful in the future.

These growing challenges call for greater efficiency and more realistic scope for discretionary spending. Support measures in response to current energy supply shocks, where necessary, should be temporary, targeted and tailored. Broad-based subsidies and price caps may be politically expedient but are economically blunt: they distort the relative prices that guide adjustment and compound deficits as shocks persist. They also tend to outlast the circumstances that justified them. Targeted one-off transfers to the most exposed households and firms preserve more fiscal space, leave price signals intact and are easier to withdraw as conditions normalise.

Over the medium-term, authorities must carve out a credible plan that reconciles foreseen increases in defence and social spending with a sound fiscal framework. Adherence to a rule-based consolidation path, together with renewed urgency in delivering on it, would underpin that credibility. Securing such credibility would help keep risk premia contained and secure fiscal space that otherwise could be eroded.

Authorities must resist the temptation to seek monetary escape valves. Pressures on central banks to accommodate fiscal needs – whether through lower interest rates, extended balance sheet support or forbearance on sovereign exposures – may offer apparent short-term reliefs, but they undermine the core pillar on which low and stable financing costs rest. Past episodes in which fiscal-monetary lines have blurred provide unambiguous lessons: the gains are temporary while the costs of restoring credibility are large and protracted, with the ultimate burden falling on households and firms in the form of higher inflation and macroeconomic instability.

The latest Middle East conflict has put energy security and supply chain resilience to the fore, highlighting the role of structural policies. Diversifying suppliers and transit routes lessens exposure to single chokepoints. Maintaining larger strategic reserves can provide a cushion to weather the initial impact of disruptions while markets adjust. Sustained investment in domestic energy sources, including renewables, would also make economies less exposed to external energy shocks. Beyond energy, there is also a need to strengthen supply chain resilience including that of critical inputs. Potential steps include mapping input dependencies, streamlining regulatory approvals for alternative suppliers and, where appropriate, pooling strategic stockpiles with international partners.

Structural policy could also help transform AI's promises into durable output gains. Promoting investment in skills and capabilities to leverage AI across sectors, as well as the digital backbone and energy infrastructure on which AI-enabled productivity depends, are key levers. Competition policy also has a role to play in ensuring that the gains from the technology are diffused and shared widely rather than becoming unduly concentrated among a small number of firms. Broader labour and goods market reforms would also facilitate the efficient reallocation of resources at a time when the global economy is undergoing major technological transformation.

Prudential policy

The combination of exuberant financial markets and elevated geopolitical risks raises the stakes for macroprudential policy to build resilience. The pockets of risk are by now familiar, but their interconnections have deepened. Private credit has grown rapidly and extended into retail channels; leveraged hedge funds have taken on ever-larger roles in core funding and treasury markets; and AI-related financing has become more concentrated and circular within the ecosystem. These interlinkages could turn into powerful amplifiers at times of stress.

A policy response to these interconnections begins with finalising and implementing Basel III consistently across jurisdictions and resisting calls for broad-based deregulation under the umbrella of simplification. The gains in bank resilience over the past decade are encouraging, but not self-sustaining. Unwinding them in pursuit of short-term competitive considerations would forfeit a key buffer on which the global financial system relies. Macroprudential and regulatory policy may also need to lean more firmly against the persistently strong risk appetite and rising opacity that typically accompany financial booms.

Another challenging task lies beyond the banking perimeter. Similar risks warrant comparable treatment regardless of where in the system they sit, which argues for extending rigorous prudential standards to NBFIs, using a mix of entity- and activity-based approaches. These could include imposing minimum haircuts on securities financing transactions, tightening liquidity management requirements for open-ended funds and using central clearing more broadly.[5] The data gaps themselves, not least in relation to private credit, also represent a vulnerability, as authorities cannot respond to risks they cannot see. Progress on granular reporting of NBFI leverage, bank-NBFI interconnectedness and private credit exposures must not stall.

Finally, the regulatory and supervisory framework must keep pace with rapid advancements in AI and digitalisation. Supervisory visibility into AI use by market participants needs to improve to capture model-driven correlated exposures, herding behaviour and the potential for algorithmic collusion. Cyber resilience requirements need to reflect the financial system's reliance on a few technology providers and the emergence of frontier AI models capable of identifying and exploiting vulnerabilities at scale. The guiding principle is to reap the benefits of technological progress while ensuring that the broader financial system continues to serve the real economy safely.

Endnotes

[1] If a firm's valuation falls, the buffer of the value of its assets over and above the value of its liabilities (ie its net worth) falls too, increasing default probabilities.

[2] Aldasoro et al (2026).

[3] Since the pandemic, the frequency of adverse supply shocks has surpassed that of negative demand shocks, breaking the pre-pandemic pattern in which negative demand shocks typically dominated.

[4] See BIS (2022).

[5] See Chapter II for a discussion of the trade-offs that pursuing such regulatory changes would entail.

Additional notes to graphs

Graph 1: Using consensus forecasts.

Graph 1.A: Rest of the world is a GDP-PPP weighted average of 34 countries.

Graph 1.C: Rest of the world is a GDP-PPP weighted average of 30 countries.

Graph 2.A: The effective tariff rate reflects the average rate observed in customs data, which is computed as the value of customs duties as a percentage of the value of imports. Pre-substitution announced tariffs are based on pre-tariffs trade patterns, as published in The Budget Lab's reports. Post-substitution announced tariffs account for post-tariffs adjustments in trade patterns. The announced tariff rates reflect the most conservative scenarios in The Budget Lab's scenarios, including Section 122 extensions, Greenland tariffs and tariff rates before the International Emergency Economic Powers Act (IEEPA) ruling. Not including later revisions by The Budget Lab.

Graph 2.B: Estimates based on the multi-sector trade model of Zhao (2025).

Graph 2.C: Based on regressions across US sector–tariff pairs, run separately for (i) cost of goods sold (COGS) growth and (ii) the change in the ratio of operating profits to sales (margin) between Q4 2024 and Q4 2025. Each outcome is regressed on its corresponding Q4 2024 ratio (COGS to sales or margin), sales growth over the same period, and exposure to tariffs announced on 2 April 2025. Tariff exposure is a dummy variable that is equal to one for firms whose largest pool of suppliers is located in a country tariffed at or above 20% on 2 April 2025. All variables included in the regression are medians at the sector-tariff pair level, weighted by total sales.

Graph 3.A: Total capital expenditures for seven US hyperscalers and 364 other global AI firms, as classified in Rishabh and Shreeti (2026). 2026 capital expenditure forecasts collected from company earnings calls and press releases.

Graph 3.B: One-year-ahead consensus forecasts of investment (gross fixed capital formation) and exports year-on-year growth.

Graph 3.C: US equity wealth to income = corporate equities and mutual fund shares held by US households divided by their disposable personal income. Global financial conditions refer to adjusted Goldman Sachs financial conditions index, excluding policy rate contributions.

Graph 4.A: Others include transit calls by container, dry bulk, general cargo and roll-on/roll-off vessels.

Graph 4.B: Peak supply cuts divided by average of global crude oil supply in the three months prior to the event. Price changes calculated from the month prior to the event to peak using Saudi Arabian Light oil benchmark (until 1980), Dated Brent prices sourced from World Bank Commodity Price Data (1990 episode) and the Brent crude prompt price for delivery in 10 days at the Sullom Voe terminal (2026 episode).

Graph 4.C: Based on local projection regression where log of global CPI (global IP) index h month ahead is regressed on current log of global CPI (global IP) and the current shock to maritime traffic in the Strait of Hormuz. Traffic shocks are computed as deviations of observed traffic from average across time and chokepoints, considering the period 2019–26 and the 12 busiest chokepoints worldwide, yielding 21 observations with a traffic deviation larger than one standard deviation, 10 of which were on the negative side (disruptions).

Graph 5.A: Share of total trade value imported from the following Persian Gulf countries in 2024: AE, KW, SA and QA. Polymers = PE, PP, PET and PVC; feedstock = methanol, PTA and MEG.

Graph 5.B: 2026 growth impact used for both IMF and OECD. IMF global impact scenarios cover three scenarios; a baseline (upper bound) scenario, an adverse and a severe scenario. The baseline scenario is constructed bottom-up from individual country projections before and after the outbreak of the latest Middle East conflict. The adverse (severe) scenario assumes an oil price increase of 80 (100)% and gas price increase of 160 (200)% starting in Q2 2026, relative to the January 2026 World Economic Outlook Update, with the increase mostly unwinding in 2027. OECD impact scenarios cover two scenarios – a mild and a prolonged disruption scenario. The prolonged disruption scenario assumes oil, gas and fertiliser prices rise by 50% relative to the mild disruption scenario until Q3 2027, followed by a gradual decline as supplies recover. It also assumes lower technical efficiency due to energy rationing and supply chain disruptions, higher household saving and tighter financial conditions. The mild scenario assumes disruptions to be shorter-lived. See OECD (2026) for details.

The range of model-based scenarios is based on a model of first-round GDP losses, and from a multi-sector model. First-round GDP loss estimates capture two first-round channels: the income drain from higher oil import costs and the demand drag due to any transfers from consumers to domestic oil producers with lower marginal propensity to consume (MPC). The consumer's MPC is set at 0.6 based on the literature. The producer's MPC is set at 0.2, calibrated to replicate a 0.1 percentage point US GDP impact per $10/barrel shock (Briggs et al (2026)). Estimates are based on an increase of oil prices of $30/barrel.

Graph 6.B: Americas = CA, CL and MX; Asia-Pacific = AU, CN, IN, KR, MY, NZ, PH and TH; EMEA = CH, CZ, DK, GB, HU, IL, MA, NO, PL, SE and ZA; major AEs = EA, JP and US.

Graph 7.A: Seven-day moving averages. Geopolitical risk index constructed as number of articles related to adverse geopolitical events as a share of the total number of articles in 10 newspapers each month. See Caldara and Iacoviello (2022) for details.

Graph 7.B: Corporate spreads of ICE BofAML index yields to OIS rates with matched maturities. Ten-year OIS for US investment grade, five-year for the rest. The USD OIS rate is based on SOFR. The EUR OIS rate is based on ESTR.

Graph 7.C: US Dollar Index (DXY) is a weighted index of EUR, JPY, GBP, CAD, SEK and CHF to the US dollar. Simple averages of nine Asian; nine EMEA and five Latin American economies.

Graph 8.A: Global inflation is the GDP-PPP weighted average of headline inflation across 16 AEs including EA and 22 EMEs excluding AR and TR. Global inflation forecast for 2026 is based on consensus data and is the GDP-PPP-weighted average of headline inflation across 16 AEs including EA and 18 EMEs.

Graph 9: Each panel shows estimates from sample splits based on the listed variable at the time of shock. The latest available simple average of countries in the sample defines which initial condition is referred to as the current condition (solid bars). Sample = AR, BR, CA, CN, CZ, GB, HU, IN, JP, KR, MX, MY, NO, PL, SE, TR and US, subject to data availability. See Banerjee et al (forthcoming) for details.

Graph 9.B: Loose (tight) labour market measured as below (above) median labour market gap based on a Hodrick-Prescott (HP) filtered unemployment rate.

Graph 9.C: Loose (tight) fiscal balance measured as the headline fiscal balance being below (above) median over the sample.

Graph 10.A: Data sources for task level productivity gains: coding output from Gambacorta et al (2024); consultant tasks from Dell'Acqua et al (2023); clerical tasks and writing from Noy and Zhang (2023); software developers' productivity from Cui et al (2026); and customer support from Brynjolfsson et al (2025).

Graph 10.B: Share of companies reporting the following in their earnings calls: early stage or advanced use of AI within the business, significant positive impact of AI on company productivity and actual or potential reduction in labour input due to AI or automation. Based on earnings call analysis using a large language model.

Graph 10.C: Sectoral exposure to AI measured as the fraction of data scientists in sectoral employment in Q3 2024, as reported in the US Bureau of Labor Statistics occupational employment survey (OES). Data on sectoral real value added comes from the US Bureau of Economic Analysis national income and product accounts (NIPA) tables.

Graph 11.A: Based on financial data of the five biggest US based hyperscalers: Alphabet, Amazon, Meta, Microsoft and Oracle. Simple averages for capex to revenues ratio and total gross debt issuance. 2026 capital expenditure and revenue expectations collected from earnings calls and press releases. 2026 debt issuance as projected by Bank of America.

Graph 11.B: Cross-firm financing involves hyperscalers engaging in partnerships with labs, by taking on equity stakes in exchange for purchase commitments (circular financing). Financial unwind involves partial dissolution of partnerships and debt fire sales. Calibration is disciplined by observed AI deal data and historical technology boom evidence.

Graph 11.C: Episodes refer to the following series and pre-boom troughs refer to the following years. Canal mania = US canal construction spending, 1835; railway mania = GB real investment, 1843; roaring 20s = US private fixed asset investment, 1921; dotcom boom = US private fixed investment in information processing equipment and software, 1995; AI boom = AI hyperscalers' capital expenditure, 2023. AI hyperscalers' 2026 capital expenditure collected from earnings calls and press releases.

Graph 12.A: Long-term yearly EPS growth calibrated from Campbell-Shiller present value equations for each stock, under the maintained assumption that in the long run dividends will grow in line with earnings. Historical median EPS growth is based on February 2003 to January 2026. Data for thirty largest stocks by market capitalisation in each of the S&P 500, STOXX Europe 600 and TOPIX as of 26 March 2026.

Graph 12.B: Kernel distributions are constructed using monthly Sharpe ratios of an equally weighted portfolio of the 30 largest stocks in the S&P 500. Pre-pandemic period corresponds to January 2014 through December 2019. Post-pandemic period corresponds to January 2021 through January 2026. The largest 30 stocks in the S&P 500 represent 56% of the index value as of 26 March 2026.

Graph 13.A: Yearly changes in long-term debt (net). Based on global financial statements data for seven hyperscalers and 43 global infrastructure providers operating in the following business segments: power and distributions, engineering and construction, networking, cooling systems and AI neoclouds.

Graph 13.B: Cumulative changes in five-year CDS spreads since 1 Jan 2025. Simple average of AI-firms with a BBB or greater long term credit rating: Alibaba, Alphabet, Amazon, AMD, Baidu, Broadcom, Intel, Meta, Microsoft, Nvidia, Oracle, SK Hynix, Tencent and TSMC.

Graph 13.C: Authors' calculations based on company announcements and SEC filings, and on reporting/estimates from Bloomberg; CNBC and The Wall Street Journal.

Graph 14.B: Outstanding bank loans in the United States (commercial and industrial loans) and Europe (loans to non-financial corporates in EA and GB). Invested capital of private credit funds in the United States and Europe.

Graph 15.A: Quantiles are weighted by the logarithm of each country's nominal GDP. Based on data for 12 AEs and 16 EMEs.

Graph 15.C: General government, net interest payments; OECD (2026) data if available, IMF (2026) data otherwise. For the regions, GDP-PPP weighted averages for ten other AEs and 19 other EMEs.

Graph 16.A: Changes since pre-Covid period refers to changes since January 2020. For the Iran conflict, changes are 27 February–27 March 2026.

Graph 17.A: Adverse supply shock intensity is constructed as 0.5 × (CPI surprises − GDP surprises), reported as the simple average across 40 economies. Only country-months where growth and inflation surprises move in opposite directions consistent with supply shocks are included in calculations. Breadth and intensity are both shown as 12-month moving averages. Growth and inflation surprises are based on annual consensus forecasts. 2026 uses data up to March.

Graph 17.B: Acute scenario features a 50% increase in global oil prices that decays at a rate of 40% per quarter. Severe scenario features a 50% increase in global oil prices that decays at a rate of 5% per quarter. Severe + indexation scenario features a 50% increase in global oil prices that decays at a rate of 5% per quarter and an assumption that industry-level price growth is indexed to its rate in the previous quarter for firms outside the oil, agriculture and mining industries. Estimates correspond to the effects in the first 12 quarters in each scenario.

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II. High public debt and shifting financial markets: challenges for central banks

Key takeaways

- *Central banks face mounting challenges from the interplay of near record-high public debt with the growing role of non-banks in sovereign debt markets. This new fiscal-financial stability nexus amplifies and accelerates the transmission of market stress.*
- *More frequent and sharper shifts in sovereign bond values can tighten financial conditions, while inflation expectations may also be disrupted. At the same time, high debt levels complicate monetary policy transmission. Central banks may need to intervene more frequently to address market dysfunction.*
- *While central banks have navigated these challenges effectively, lasting success depends on sound fiscal and regulatory foundations. Public finances must follow a credible, sustainable path. Financial stability risks should be addressed with consistent regulation, and central bank backstops should remain temporary, targeted and reversible.*

Introduction

Following the Great Financial Crisis (GFC) and the Covid-19 pandemic, public debt has risen to near post-World War II highs in many economies. And it might climb higher, with current fiscal deficits still large and high fiscal pressures coming from ageing populations and public investment needs. Alongside this debt surge, the structure of sovereign bond markets has changed markedly. Hedge funds are playing an increasing role in intermediating government debt, often through highly leveraged and funding-dependent strategies that hinge on both banks and other non-bank financial institutions (NBFIs).

These shifts have created a new fiscal-financial stability nexus. While the traditional bank-sovereign nexus remains important, stress can now spread rapidly and more widely – via funding markets, across borders and between banks and non-banks. Government bond market liquidity can be ample for prolonged periods, yet dry up quickly in response to shocks, raising borrowing costs. As a result, fiscal space may shrink well before any limit implied by long-run fundamentals is reached.

Against this backdrop, central banks might find fulfilling their mandates more difficult. Three challenges, in particular, are likely to intensify.

First, as investors reassess fiscal sustainability and market liquidity, sovereign yields may swing more sharply and frequently. Such fiscal risk repricing can tighten financial conditions quickly and weigh on demand, especially if amplified by NBFI deleveraging. The effects on inflation are, however, more uncertain. Weaker demand may be disinflationary, but a reassessment of fiscal sustainability may also become inflationary if it triggers exchange rate depreciation or disrupts inflation expectations. These inflationary channels are more likely to operate when monetary policy credibility is weak.

Second, high public debt can make monetary transmission more complex and uncertain. When this debt is high, rate hikes raise government interest payments and transfer income to bondholders, supporting demand and attenuating the contractionary effect. But higher interest payments can also worsen the fiscal outlook, lift risk premia and tighten financial conditions. Debt maturity influences the balance between these channels: shorter maturities speed up the pass-through to fiscal costs and bondholder income, while longer maturities expose bondholders to valuation losses that can trigger deleveraging and tighten credit.

Finally, central banks may need to step in more often to address market dysfunction in repurchase agreement (repo) and government bond markets. But repeated interventions, through large-scale purchases or lending operations, could encourage investors to take on more risk and borrow more, increasing the fragility of the financial system. They could also weaken the market discipline that constrains fiscal excess. And, in an inflationary environment, such interventions could make it harder to stabilise inflation.

Central banks have so far navigated these challenges well, but lasting success requires sound fiscal and regulatory foundations. This points to three policy priorities. On the fiscal front, governments must move towards a more symmetric fiscal policy, supporting the economy in downturns but rebuilding fiscal buffers in expansions. For countries with high debt levels, credible medium-term fiscal frameworks are needed to ensure that fiscal consolidation takes place. On the regulatory side, authorities should pursue "congruent regulation". This would imply regulatory frameworks that apply similar stringency to financial intermediaries posing similar risks to financial stability, regardless of their legal form or business model. Given NBFI vulnerabilities, it is especially important to consistently tighten safeguards against excessive leverage, liquidity mismatches and fragile funding structures that can amplify stress in government bond markets. Finally, central bank liquidity backstops to address market dysfunction should be carefully designed to be temporary, targeted and easily reversible, to avoid blurring the monetary policy stance, encouraging excessive leverage or entrenching the very fragilities they are meant to address.

These policy actions reinforce each other. Stronger fiscal frameworks reduce fiscal risk and ease pressures on financial markets. A more resilient financial system improves fiscal space and makes it less vulnerable to liquidity shocks and deleveraging. Credible monetary policy preserves price stability and supports financial conditions, with positive spillovers for both fiscal policy and financial stability.

Near record-high public debt and evolving fiscal space

Public debt in many economies has risen to near post-World War II highs (Graph 1.A) and, with large current fiscal deficits (Graph 1.B), it is expected to stay elevated in the coming years. The high level of debt largely reflects a series of major global shocks over the past two decades. In the wake of the GFC, the deep and prolonged recession eroded tax revenues and lifted cyclical spending. At the same time, governments enacted sizeable discretionary stimuli to support demand and facilitate private sector deleveraging. Many economies then shifted to fiscal consolidation in the early 2010s, most notably between 2011 and 2014, but the pandemic and Russia's invasion of Ukraine prompted another round of large fiscal expansion to protect jobs and preserve the purchasing power of households and firms. Debt levels could climb even higher if the energy supply disruption caused by the conflict in the Middle East proves to be protracted (Chapter I).

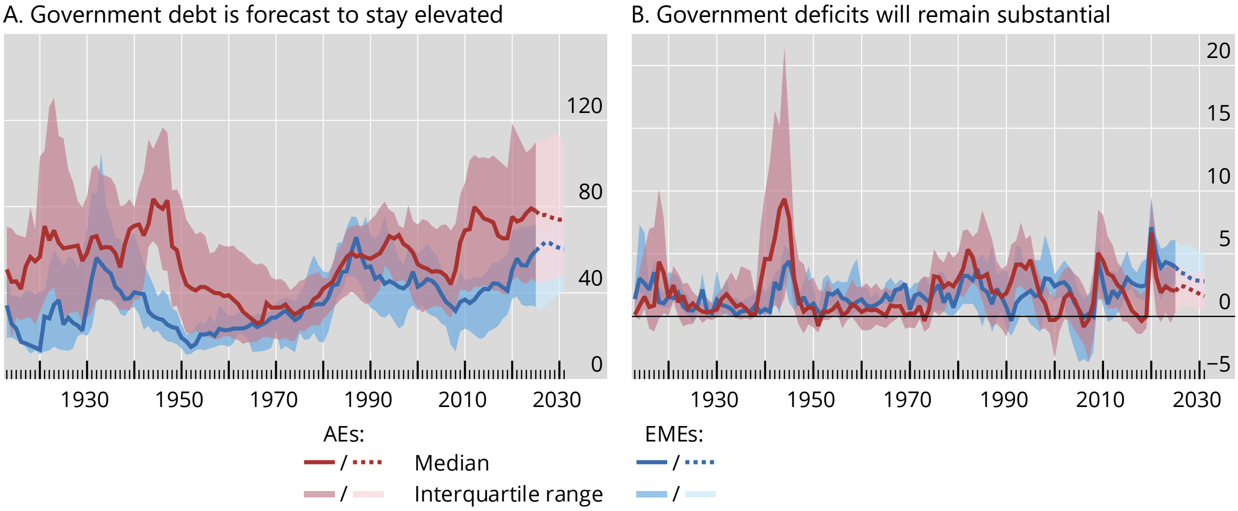
Debt increases, however, have varied significantly across countries, reflecting differences not only in exposure to shocks but also in fiscal policy responses. As recoveries took hold, divergences persisted. In several jurisdictions, fiscal consolidation has been insufficient or delayed, while in others – notably in the United States – fiscal policy turned strongly expansionary in the years preceding the pandemic. Empirical analysis confirms that fiscal policy has generally become less responsive to rising debt since the GFC and remained highly asymmetric over the business cycle, expanding aggressively in downturns but adjusting little during expansions (Box A). Some countries, however, bucked this trend. While large advanced economies (AEs) and several emerging market economies (EMEs) have driven the rise in global debt aggregates, several smaller economies have managed to contain debt and deficit levels.

Looking ahead, fiscal pressures are set to persist. Ageing populations will continue to exert upward pressure on pension and healthcare expenditures in many countries, while demands for higher public investment – especially infrastructure, defence and renewable energy – are intensifying. Without offsetting measures such as higher government revenues, other public spending cuts or changes in the interest rate-growth differential, these spending pressures imply a substantial increase in public debt across jurisdictions beyond 2031.[1]

The evolution of government debt and deficits[1]

As a percentage of GDP

Graph 1



The dotted lines and lighter shaded areas indicate forecasts.

[1] See additional notes to graphs for details.

Sources: IMF; OECD; Finaeon; LSEG Datastream; national data; BIS.

Box A

Insufficient debt consolidation in good times

A series of major shocks explain much of the rise of public debt over the past two decades, but in many economies, debt also drifted higher because fiscal policy did not adjust sufficiently as recoveries took hold. This pattern is visible in both the weakening response of primary fiscal balances to rising debt and an asymmetric response over the business cycle.

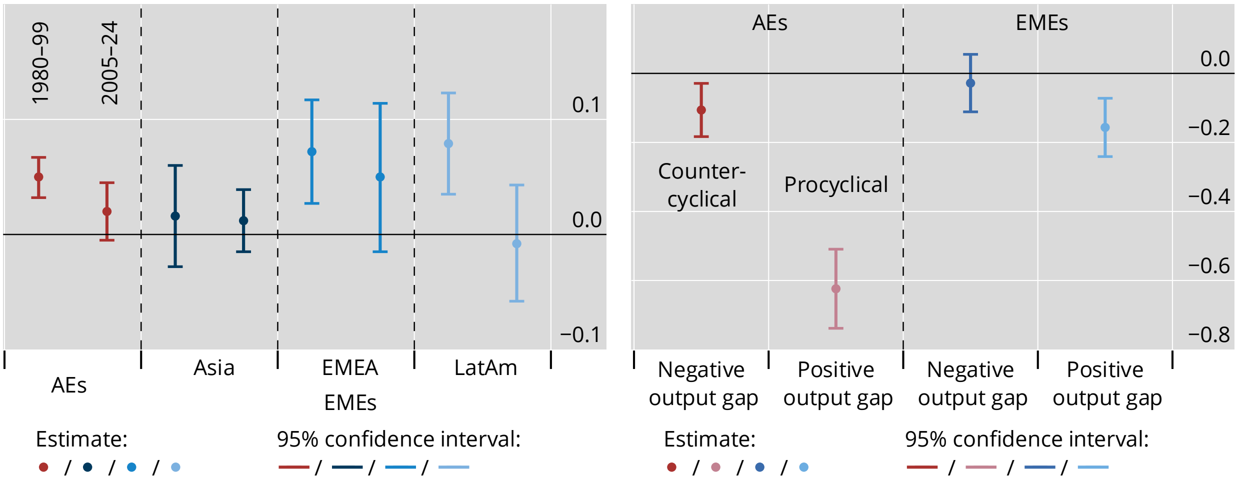
Consider first the behaviour of primary fiscal balances. Stabilising public debt requires fiscal policy to adjust as debt servicing costs rise. Yet, while primary surpluses increased as debt rose in the 1980s and 1990s, this effect vanished by 2024 (Graph A1.A).[1] This pattern is consistent with other studies documenting weaker fiscal consolidation efforts since the Great Financial Crisis. One possible explanation is that more negative interest rate-growth (*r-g*) differentials were seen as creating additional fiscal space.[2] Other factors appear to have also played an important role, including greater "fiscal fatigue"[3] and greater political polarisation, both of which make it harder to build support for consolidation.[4]

Fiscal policy is less responsive to debt and asymmetric over the business cycle[1]

In percentage points | Graph A1

A. Primary balance has become less responsive to debt over time[2]

B. Primary balance responds asymmetrically to the business cycle[3]



EMEA = Europe, the Middle East and Africa; LatAm = Latin America.

[1] The sample covers 27 AEs and 24 EMEs (seven in Asia, 11 in EMEA and six in LatAm). [2] Based on panel regressions for primary balances against their lags, the output and spending gaps and the lagged debt ratios interacted with interest rate-growth differentials over a window of 20 years, controlling for time and country fixed effects. [3] The graph shows that when the output gap is negative then the cyclically adjusted primary balance (CAPB) decreases for AEs and does not change for EMEs. This implies a countercyclical response of fiscal policy to the business cycle for AEs. When the output gap is positive, the CAPB decreases for both AEs and EMEs, implying a procyclical fiscal policy. Estimates are based on weighted mean group estimators for coefficients from country-level regressions of the CAPB on their lagged values, past positive and negative output gaps and past debt levels. Sample period: 1980–2024, subject to data availability.

Sources: IMF; OECD; World Bank; European Commission; Finaeon; LSEG Datastream; national data; BIS.

Consider next the uneven response of fiscal policy over the business cycle. While countercyclical fiscal policy is a standard prescription for stabilising output, fiscal policy often responds aggressively and countercyclically when output is below potential but fails to adjust symmetrically in expansions.[5] Country-level regressions confirm that such asymmetries have characterised fiscal policy over the past 40 years (Graph A1.B). In both advanced economies (AEs) and emerging market economies (EMEs), discretionary fiscal policy tends to change little overall or moves countercyclically when output gaps are negative, implying deficits in bad times.

But when output gaps are positive, fiscal policy often moves procyclically, particularly in AEs, reducing fiscal space in good times too. Such asymmetry seems to have increased since 2005, though with the small sample size the evidence is not conclusive.

These average patterns mask significant differences across countries. While many countries ran procyclical fiscal policies when output was above potential, several jurisdictions – including Chile, Denmark and Sweden – consolidated in good times and adjusted their primary balances symmetrically. This more countercyclical behaviour appears to be associated with stronger institutional frameworks and lower initial debt levels rather than the mere presence of fiscal rules.[6] Nevertheless, the quality and enforcement of fiscal rules still matter. In the European Union, for instance, these features have been shown to reduce procyclicality.[7]

[1] Positive coefficients mean that primary balances tend to improve when debt is higher, once the effects of the business cycle and other factors are accounted for. This does not necessarily imply debt stabilisation in all cases, as stabilisation also depends on the relationship between interest rates and economic growth. The estimates therefore provide a general indication of whether fiscal policies are moving in a sustainable direction. [2] See Checherita-Westphal and Semeano (2020) and Cheng et al (2026). Also see Mauro and Zhou (2021) who, inter alia, show that favourable r-g differentials did not remove the need for consolidation: average fiscal deficits remained above debt-stabilising levels despite steady declines in r-g. [3] See Ghosh et al (2013) and Checherita-Westphal and Žďárek (2017). [4] See Fatás et al (2019) for a review of reasons why politicians decide to borrow and spend more during economic upturns instead of consolidating. One possible explanation for such behaviour is that increased spending and tax cuts boost the re-election prospects of politicians even in good times. [5] See Aldama and Creel (2022) and Heimberger (2023) for empirical evidence on the procyclicality of fiscal policy. Pereira da Silva et al (2022) discuss how reduced fiscal redistribution has made fiscal policy more procyclical. [6] See Caselli et al (2022). [7] See Gootjes and de Haan (2022).

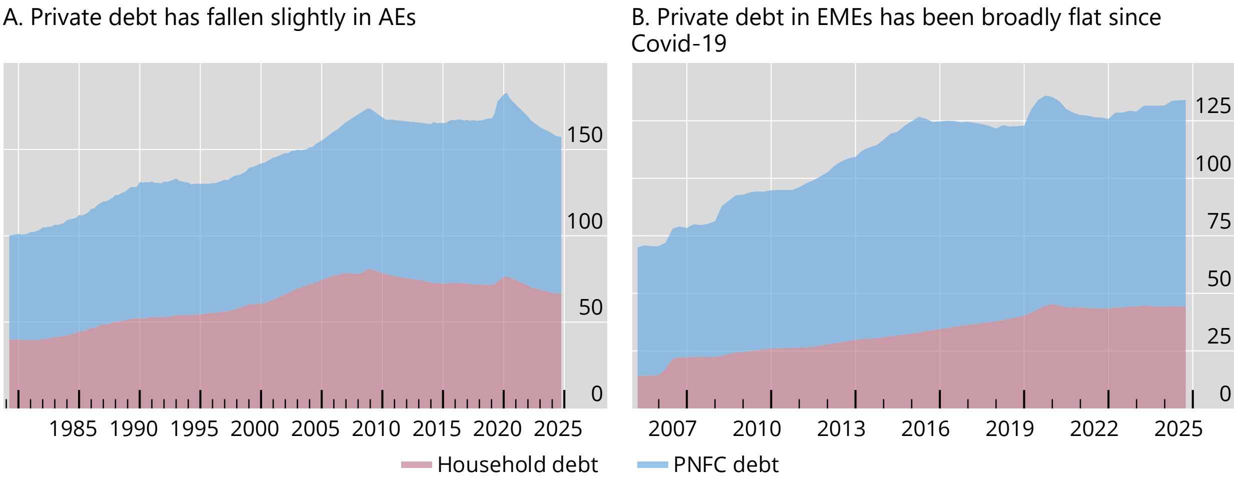
Further strains may arise from the materialisation of contingent liabilities.[2] In particular, public debt may increase due to the fiscal costs of future financial crises, which tend to be linked to the scale of private non-financial sector debt.[3] While private debt has fallen slightly since the GFC, it remains historically high in several AEs (Graph 2). Moreover, it has increased in several small open AEs such as Sweden and Switzerland, as well as in several EMEs, with notable increases in Brazil and China. Additional risks to public debt could arise from the losses incurred by state-owned enterprises and subnational governments, which are often backed by explicit and implicit guarantees, and by the fiscal burden of natural disasters, which may intensify in the future due to climate change.

Elevated public debt and rising fiscal pressures coincide with a less benign financial environment than the one that prevailed in the aftermath of the GFC. Sovereign bond yields in AEs and EMEs are significantly higher today than at their trough during the pandemic (Graph 3.A), reflecting higher real rates and term premia. GDP growth has also slowed from post-pandemic peaks. As a result, the interest rate-growth differential has narrowed (Graph 3.B).[4] Together with higher debt stocks, these developments have already pushed up interest payments as a share of GDP across many countries, with interest costs set to become one of the largest spending items in many AEs and EMEs (Chapter I).[5] They have also led some countries to shorten the maturity of newly issued debt, albeit from historically long average maturities.

Whether fiscal pressures will prove manageable depends on how borrowing costs evolve. Two factors are key: (i) the structural demand for government bonds, which is determined by demographic trends, productivity growth, household saving behaviour and fiscal policy itself, especially the generosity and design of public pension systems; and (ii) the capacity of the financial system to intermediate that demand, which can shift rapidly in response to shocks and compress fiscal space well before any limit implied by long-run fundamentals is reached.

Private debt has remained high since the Great Financial Crisis[1]

As a percentage of GDP | Graph 2



PNFC = private non-financial corporation.

[1] GDP-PPP weighed averages across 27 AEs and 16 EMEs, subject to data availability.

Sources: IMF; national data; BIS.

Structural demand for government debt is likely to remain strong, but its long-run path is uncertain. Falling fertility rates, rising longevity and the shift towards a defined contribution pension system should boost aggregate saving and demand for safe assets, suggesting that interest rates could remain low relative to income for a prolonged period.[6] On that basis, some studies argue that many economies should retain ample fiscal space despite historically high debt levels.[7] However, as populations age and shift from saving to dissaving, while also demanding more health and social services, aggregate saving may fall, putting upward pressure on real interest rates – although the timing and scale of this fall are highly uncertain.[8] In addition, an escalation in geopolitical tensions could disrupt flows of capital and labour and reduce the perceived safety of assets, potentially reversing downward interest rate trends sooner than demographics and other structural factors alone would suggest.[9]

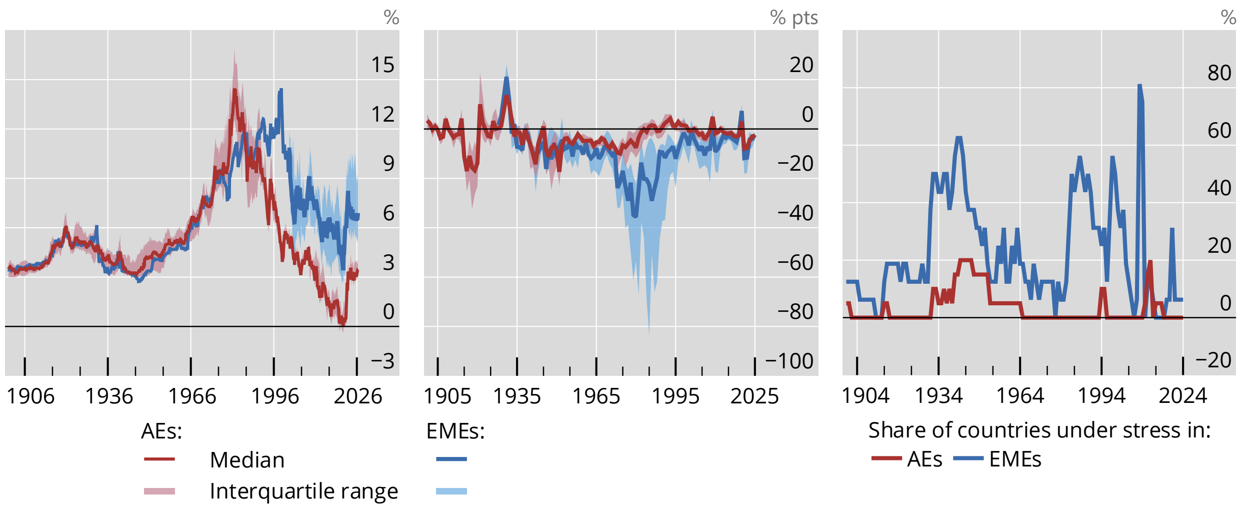
Financial intermediation capacity introduces a more abrupt source of fiscal risk. The capacity of banks and NBFIs to intermediate and hold government debt may vary over time and can be affected by shocks to either the government or the financial sector. Fiscal space may therefore shift and borrowing costs may spike well before any limit implied by long-term structural factors is reached (Box B). Furthermore, the same deterioration in fundamentals can compress fiscal space far more severely when the financial system is fragile or when debt is high. Hence, debt tolerance is heterogeneous and can change over time: a debt burden that appears manageable in one country or period may become fragile in another as the structure of financial intermediation and financial conditions evolve.[10]

This makes it difficult to identify a single threshold beyond which debt becomes unsafe. Empirical evidence nevertheless points to several warning indicators of sovereign distress. First, high debt ratios can indicate solvency vulnerabilities, while large gross refinancing needs and short debt maturities signal rollover risk.[11] Likewise, a high proportion of debt denominated in foreign currency or linked to inflation or short-term interest rates can heighten vulnerability to adverse exchange rate, inflation or interest rate shocks. Large current account deficits can also signal dependence on external financing that can reverse abruptly, as seen in some euro area economies in 2010–12 and several crises in emerging markets in the 1980s and 1990s. By contrast, the interest rate-growth differential seems to have limited predictive power for sovereign debt crises. Such crises have often occurred when this differential was low or negative (Graphs 3.B and 3.C). Moreover, this differential tends to rise only shortly before crises, leaving little time for corrective policy actions.[12]

Still, the financial system evolves continuously, so warning indicators and policy prescriptions must adapt to changing conditions. Debt maturity is a case in point: short maturities heighten rollover risk, yet longer maturities do not guarantee financial resilience. If duration risk is concentrated in the private sector, adverse shocks can trigger deleveraging and weaken market liquidity, amplifying the tightening of financial conditions. Similarly, issuing debt in domestic currency mitigates exchange rate risk but does not fully insulate governments from shifts in global financial conditions.

Sovereign borrowing costs and stress episodes[1] Graph 3

A. Government bond yields[2] | B. Interest rate-growth differential | C. Share of countries with sovereign defaults or stress events[3]



[1] See additional notes to graphs for details. [2] For yields in EMEs, mean instead of median and interquartile range prior to July 2001 due to data availability. [3] Sovereign stress events are identified based on government bond yield spreads relative to US Treasuries or German Bunds.

Sources: Asonuma and Trebesch (2016); Beers et al (2025); Reinhart and Rogoff (2009); IMF; Finaeon; JPMorgan Chase; LSEG Datastream; BIS.

Box B

Why financial intermediation matters for fiscal space

The interaction between financial intermediation and fiscal space is crucial but often underappreciated. The financial system does not simply absorb government debt at a given interest rate. Its balance sheet capacity, funding conditions and risk management constraints influence both the level and the sensitivity of sovereign borrowing costs to debt. When intermediaries are well capitalised and funding markets are liquid, additional debt can be absorbed with limited pressure on yields. When balance sheets are weak, market volatility is high or funding conditions tighten, the same additional debt can generate much larger increases in yields. Fiscal space can therefore shrink even if fiscal fundamentals and the long-run paths of interest rates and growth have not changed.

A simple example illustrates the mechanism, drawing on Zampolli (2026). The starting point is the standard debt accumulation equation (in approximate form):

$$b_{t+1} = (1 + r_t - g)b_t - s(b_t)$$

where *b* is the debt-to-GDP ratio, *r* is the sovereign borrowing rate, *g* is the GDP growth rate, and *s* is the primary surplus, written as a function of debt. In conventional debt sustainability analyses (DSAs), the interest rate *r* may rise with debt *b*, but the analyses typically abstract from financial intermediation. Intermediation adds a further channel: the state of intermediary balance sheets and funding markets can affect both the level of borrowing costs and their sensitivity to debt. This can be represented as:

$$r_t = r - \gamma(x) + a(x)b_t$$

where *x* summarises the state of the financial system, including intermediary capital, market volatility, internal risk controls and regulatory restrictions.[1] The term $\gamma(x)$ captures the compression of spreads associated with abundant liquidity and strong risk-bearing capacity. When financial conditions tighten, this compression unwinds and $\gamma(x)$ falls, raising borrowing costs. The coefficient $a(x)$ captures market depth: it measures how steeply borrowing costs rise with additional debt issuance and increases when intermediary balance sheets weaken or risk constraints tighten.

In a steady state, for the debt to remain stable ($b_{t+1} = b_t = b$), the primary surplus $s(b)$ must cover total interest costs $C(b)$:

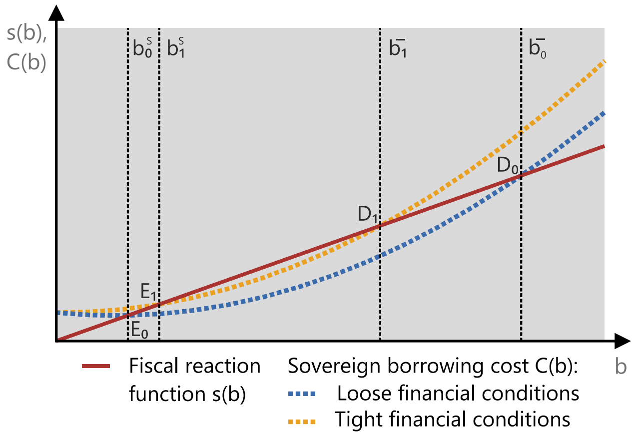
$$s(b) = C(b) \equiv \big(r - g - \gamma(x)\big)b + a(x)b^2$$

Graph B1 shows this relationship. The right-hand side is an upward-sloping (and convex) borrowing cost curve expressed as a function of debt. For a given surplus schedule *s(b)*, the intersections with *C(b)* define the stable equilibrium debt level b_s and the endogenous debt limit $\bar{b}$.[2] Fiscal space is the gap between the two, $\bar{b} - b_s$. A deterioration in financial conditions (eg a fall in intermediary capital or a spike in volatility) raises the level of the cost curve, through a lower $\gamma(x)$, and steepens it, through a higher $a(x)$. As shown in Graph B1, this shifts and rotates the cost curve upward, raising the stable debt level (from E_0 to E_1) and pushing the debt limit $\bar{b}$ inward (from D_0 to D_1). Fiscal space is therefore not fixed: it can shrink, even when the primary surplus schedule and the long-run $r - g$ are entirely unchanged; and it can remain compressed for as long as financial weakness lasts.

This mechanism differs from the logic of self-fulfilling sovereign liquidity crises, which have been extensively studied in the literature on sovereign debt crises. In this literature, fiscal fragility comes from a coordination failure among otherwise unconstrained investors. If enough investors simultaneously expect a government to default, the risk premium they demand can make that default more likely, even when underlying fiscal fundamentals have not changed.[3] This insight remains important, but it does not fully capture the structure of today's sovereign bond markets in which non-bank financial institutions play an increasing role. In such markets, balance sheet dynamics and risk constraints can amplify shocks to yields even in the absence of a coordination failure.

This distinction matters for policy. If fragility is rooted in a coordination failure among investors, the priority is to rule out the bad equilibrium. Credible fiscal frameworks, debt maturity management and central bank backstops can all help to reduce the incentive for self-fulfilling runs. These instruments continue to play a critical role. But when fragility is rooted in the risk-bearing capacity of the financial system, policy must also address that capacity directly (see the discussion on emerging policy challenges in this Chapter). Standard prescriptions also need nuance: longer maturities, lower foreign-currency issuance and central bank backstops can mitigate rollover risks, but they may also increase exposure to other risks, including duration risk, foreign investor balance sheet constraints and moral hazard related to central bank interventions.

Financial conditions determine fiscal space — Graph B1



- Tighter financial conditions raise and steepen the sovereign borrowing cost curve C(b)
- As a result, debt increases from b_0^s to b_1^s, while the debt limit declines from $\bar{b}_0$ to $\bar{b}_1$
- Fiscal space (the gap between b^s and $\bar{b}$) shrinks even if fiscal capacity (ie the ability to raise fiscal surpluses represented by s(b)) is unchanged

Sources: Zampolli (2026); BIS.

These insights also have implications for how fiscal risks are assessed in practice. Partly influenced by the history of sudden stops and market-access crises in emerging market economies, DSA frameworks currently employed by practitioners already incorporate debt-sensitive interest rates, financing risks and stress scenarios. A natural step is to integrate financial intermediation more directly into the core debt dynamics models at the heart of these frameworks. This would make explicit how market depth, intermediaries' balance sheet capacity and liquidity affect sovereign spreads, debt limits and fiscal space. It would also help to identify when otherwise similar debt paths differ in their exposure to financial amplification.[4] Such an approach should ultimately provide a richer guide to the assessment of both fiscal risks and preventive policies.

[1] Shin (2010) shows that such a relationship is a general feature emerging from market clearing in models of procyclical leverage and risk driven by value-at-risk constraints on financial intermediaries' capital. Zampolli (2026) further shows how the coefficients $\gamma(x)$ and $a(x)$ in the interest rate schedule could capture different financial amplification mechanisms, such as the bank-sovereign nexus, the "original sin redux", duration matching by long-term investors and repo market deleveraging. [2] The endogenous debt limit thus differs from those arising from, for example, fiscal fatigue (Ghosh et al (2013)), the tax Laffer curve (Bi (2012)) or strategic default incentives (Arellano (2008)). See also Lorenzoni and Werning (2019) and Jiang et al (2022, 2024). While these analytical frameworks include state-contingent risk premia, these premia reflect expected fiscal outcomes, not the balance sheet capacity of the institutions intermediating sovereign debt. [3] See eg Calvo (1988); Cole and Kehoe (2000); Aguiar et al (2015); Corsetti and Dedola (2016). [4] Stochastic extensions of the standard framework represent only a partial improvement. Shocks are typically calibrated to average historical experience rather than derived from a model of financial dynamics. And non-linear feedback loops between sovereign spreads, the balance sheet capacity of financial intermediaries and fiscal space are often excluded, despite likely being most relevant during crises. In operational DSAs, these different strands of analyses – standard debt simulations plus liquidity indicators – are often aggregated into an overall sustainability score rather than being integrated into the same analytical framework. See eg Bouabdallah et al (2017).

A new form of fiscal-financial stability nexus

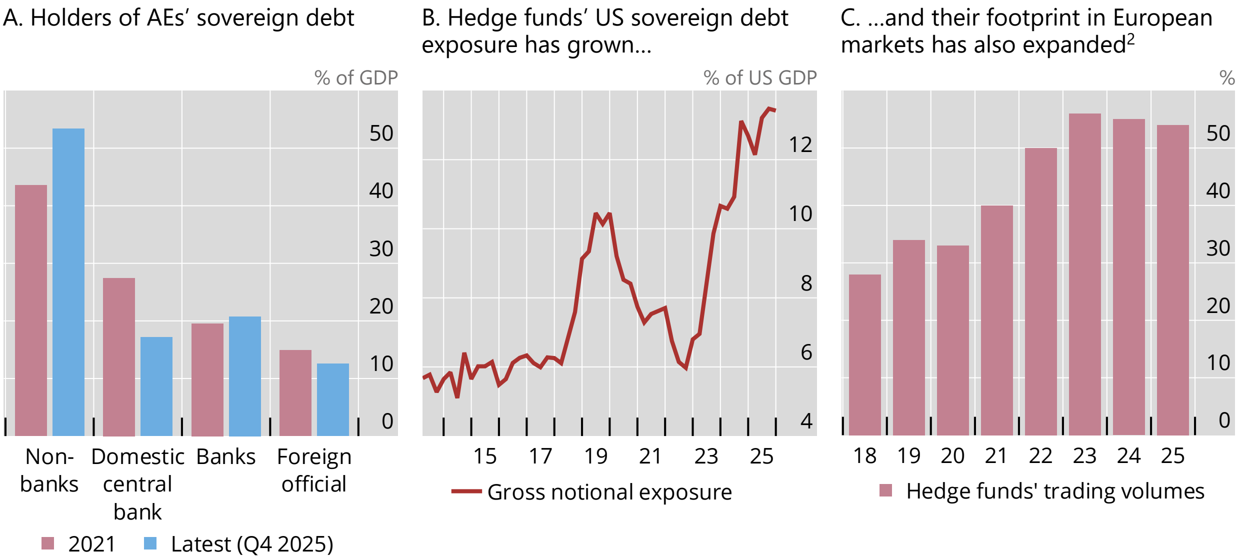
Alongside the public debt surge, the structure of the global financial system has evolved, reshaping the link between public finances and financial stability. Near record-high public debt is now increasingly held and intermediated by NBFIs, whose balance sheets, funding models and risk management practices differ markedly from those of banks. While there is a broad variety of NBFIs and greater NBFI participation does not in itself imply fragility, the growing role of leveraged and funding-dependent NBFIs increases the system's sensitivity to liquidity shocks. This has given rise to a new fiscal-financial stability nexus, with amplification channels that operate even when bank solvency risks are contained.

The increasing role of NBFIs in government bond markets

The NBFI classification captures very different investor types. Real-money investors such as many insurance companies and pension funds provide long-term demand and deepen markets, and they can help to diversify risks, including across borders. Sovereign bond intermediation, however, increasingly involves leveraged hedge funds, which are highly active in futures and spot markets and are financed via repos, often supplied by banks. Other segments, notably money market funds (MMFs) and open-ended bond funds, can face redemption-driven liquidity strains that can also transmit and amplify shocks. Stablecoin issuers are a new emerging type of NBFI. They also have a large footprint in the bond markets of some jurisdictions and bring new vulnerabilities (Chapter III).

NBFIs in general have become the largest holders of sovereign debt in AEs, driven by a range of factors. Their share of total sovereign debt holdings rose from 44% in 2021 to 53% in 2025 (Graph 4.A). Several forces help to explain this shift. On the supply side, large and persistent fiscal deficits, reinforced by the pandemic, lifted sovereign bond issuance, outpacing growth in credit to the private sector.[13] On the intermediation side, post-GFC changes in regulation and business models made balance sheet-intensive market-making more costly for banks. While banks continue to play a central intermediation role, their capacity to warehouse risks has not kept pace with the growth of sovereign debt. At the same time, capital markets expanded,

The rise of non-bank financial institutions in AE sovereign debt markets[1] Graph 4



[1] See additional notes to graphs for details. [2] Percentage of electronic secondary market trading volumes in euro area government bonds on Tradeweb.

Sources: Arslanalp and Tsuda (2014); Ferrara et al (2024); IMF; Office of Financial Research; Tradeweb; BIS.

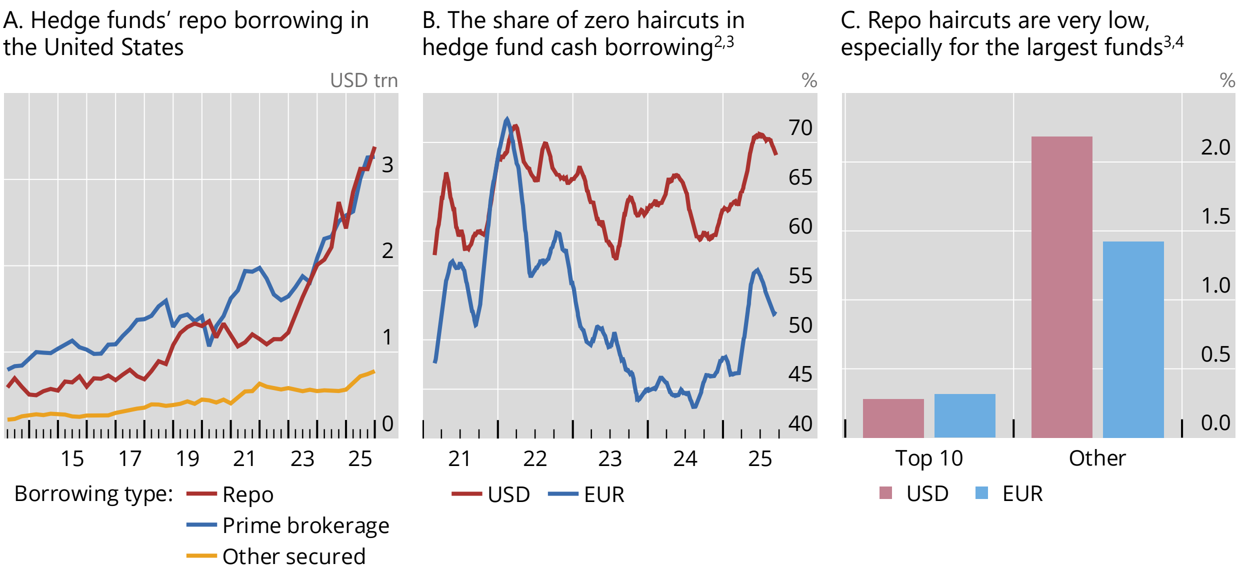
with deeper derivative and repo markets. Easy access to secured financing coupled with persistent relative-value opportunities, in turn, supported the demand from hedge funds. Another factor on the demand side was rising long-term liabilities of insurance companies and pension funds, which have supported demand for government debt as a safe, liquid asset used for duration management and hedging.[14] In addition, in recent years, higher risk-free rates also increased the appeal of fixed income in strategic asset allocations.

At the same time, official demand waned. As quantitative tightening progressed over 2022–25, the share of government bond holdings by domestic central banks fell from 27% to 17% and that of the foreign official sector from 15% to 13%. This increased the amount of sovereign debt that had to be absorbed by private investors.

Among private investors in AEs, leveraged hedge funds have become pivotal in intermediating sovereign debt. Measured relative to GDP, US sovereign debt exposures of hedge funds in the United States have more than doubled since 2022 as leveraged relative-value strategies expanded rapidly (Graph 4.B).[15] The rise in hedge funds' trading footprint is also evident in other major AEs. In the euro area, hedge funds' share of electronic trading in government bonds has increased markedly (Graph 4.C), with similar patterns observed in Canada and the United Kingdom.

The large-scale emergence of hedge funds as core intermediaries in government bond markets has given rise to new financial stability vulnerabilities. To boost returns on small price differences, hedge funds employ high leverage, typically funded through short-term repo borrowing and facilitated by prime brokerage and derivatives intermediation (Graph 5.A). This reliance on funding-dependent liquidity – abundant in calm conditions but prone to evaporate when risk capacity tightens – leaves core markets more exposed to sudden deleveraging and episodes of market dysfunction.

Hedge funds' repo borrowing has surged given lax funding terms[1] — Graph 5



[1] See additional notes to graphs for details. [2] Forty-business-day moving averages. [3] Based on outstanding data from the ECB's Securities Financing Transactions Data Store, which covers securities financing transaction activity of euro area established entities and their branches. [4] The top 10 hedge funds are identified as those with the highest daily average outstanding volumes between January 2021 and September 2025.

Sources: Hermes et al (2025); Office of Financial Research; BIS.

Lax funding terms amplify these vulnerabilities, especially for the largest hedge funds. In recent years, a large share of repos has been extended at zero or near-zero haircuts, effectively allowing borrowing against most of the market value of collateral. Around 70% of bilateral USD repos and more than 50% of bilateral EUR repos with hedge funds are transacted at zero haircuts (Graph 5.B).[16] Average haircuts are compressed, and the most favourable terms are concentrated among the largest funds (Graph 5.C). These funding structures enable high leverage but leave positions acutely sensitive to shifts in margins, haircuts and derivatives pricing. When funding terms tighten – as they did during the March 2020 margin calls or the April 2025 unwind of swap-spread trades – rapid deleveraging and fire sales can amplify yield spikes.

Beyond hedge funds, other NBFIs can also amplify stress in government bond markets. For instance, insurance companies and pension funds use interest rate swaps and repo-financed positions to manage the maturity mismatch of assets and liabilities. A rise in yields can reduce the value of these hedges and increase margin calls. To meet these, insurance companies and pension funds may, in turn, sell their most liquid assets – frequently government bonds – which can add to upward pressure on yields, increasing margin calls further. Separately, some MMFs and open-ended funds exhibit liquidity mismatches: they offer daily redemptions while holding assets whose market liquidity can dry up in stress. In periods of outflows, such funds may sell government bonds held for liquidity management to meet redemptions, which can lead to feedback loops and impair market functioning. Such dynamics were evident during the March 2020 "dash for cash".[17]

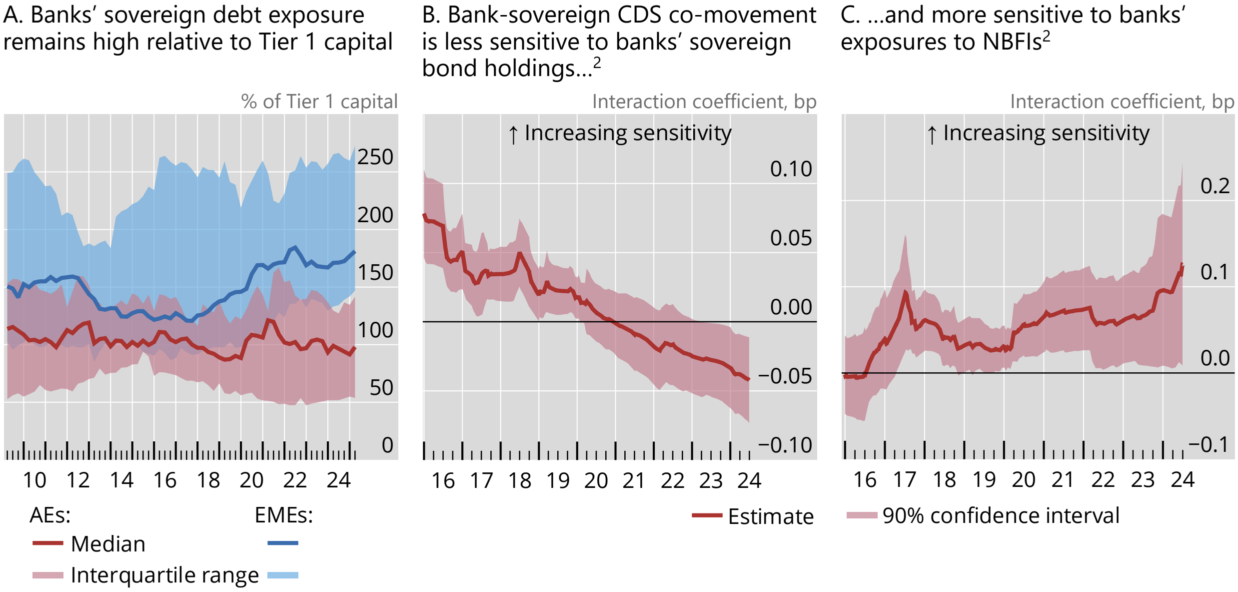
Since the footprint of NBFIs in sovereign debt markets has widened, the traditional bank-sovereign nexus may have changed. The bank-sovereign nexus came to the fore during the European sovereign debt crisis more than a decade ago. Higher sovereign yields triggered mark-to-market losses on banks' sovereign bond holdings and eroded banks' capital and intermediation capacity, reinforcing the rise in yields.

Banks' sovereign debt exposures seem to suggest that the bank-sovereign nexus remains an important potential amplification channel, in particular in EMEs. Banks' share of sovereign debt holdings has been broadly stable at about 20% over the past five years (Graph 4.A). And exposures remain material: banks' sovereign bond holdings relative to Tier 1 capital are comparable to levels seen 10–15 years ago (Graph 6.A). As of 2025, across countries, the median ratio of banks' sovereign exposures to Tier 1 capital is around 180% in EMEs and just under 100% in AEs.

However, there is evidence that the direct bank-sovereign nexus may have become less pronounced than a decade ago. For instance, cross-country bank-level evidence from Europe shows that bank-sovereign risk co-movement has become less dependent on banks' direct sovereign bond holdings (Graph 6.B). The post-GFC regulatory reform agenda has played an important part in reducing the strength of the bank-sovereign nexus. Banks now hold more and better-quality capital, maintain larger liquidity buffers and rely on more stable funding sources, significantly increasing the overall resilience of the financial system.

At the same time, banks' interconnections with NBFIs seem to have created indirect transmission channels from sovereign risk to banks.[18] Banks provide repo financing, prime brokerage and derivatives intermediation to hedge funds, asset managers, insurers and pension funds. They also extend credit lines and offer collateral and margin services. On the liability side, NBFIs supply a meaningful share of banks' funding – through MMF deposits, purchases of bank paper and secured finance. All these NBFI linkages can expose banks indirectly to considerable sovereign

The broadening of the bank-sovereign nexus[1] Graph 6



CDS = credit default swap; NBFI = non-bank financial institution.

[1] See additional notes to graphs for details. [2] Rolling five-year window estimates of the coefficients on interaction terms linking sovereign CDS spreads with bank CDS spreads via banks' exposure shares: sovereign exposures (panel B) and NBFI exposures (panel C).

Sources: Avdjiev et al (2026); IMF; BIS.

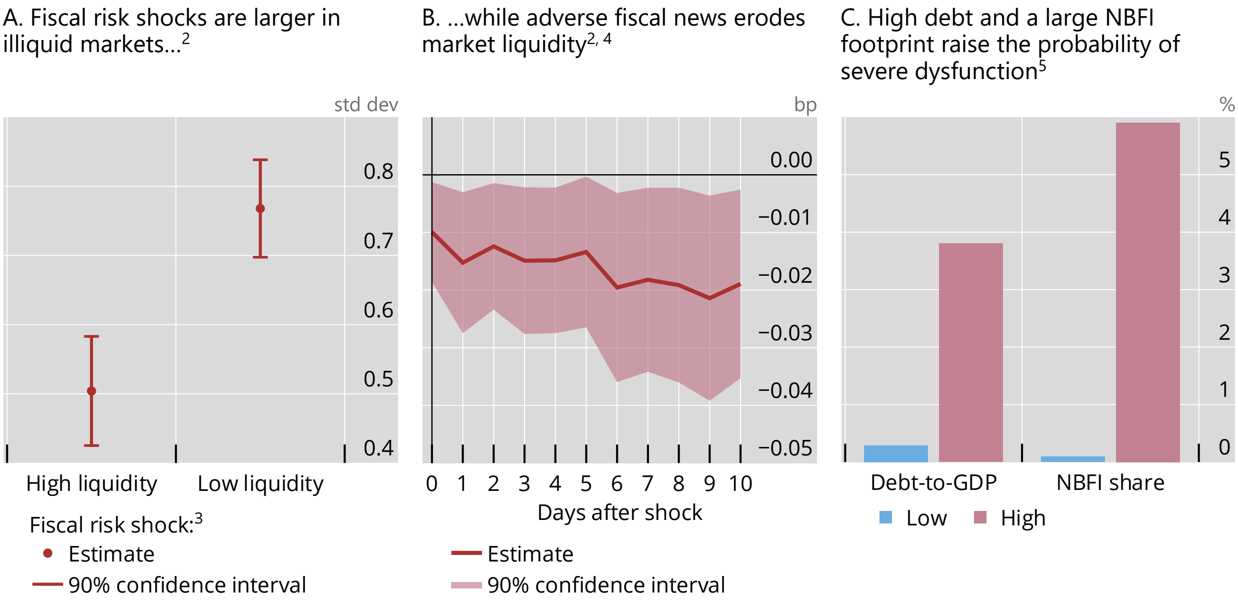
risk. Evidence from the same European banks suggests that banks' exposures to NBFIs have become a significant determinant of the co-movement between bank and sovereign credit default swap (CDS) spreads over the past few years (Graph 6.C).[19]

Market functioning and fiscal policy interactions

A critical dimension of the new fiscal-financial stability nexus is the interactions between fiscal risks, sovereign bond market functioning and intermediaries' balance sheet health (Box B). These are multifaceted. Take a negative shock that leads markets to reassess the fiscal sustainability of a jurisdiction. In illiquid conditions, when intermediaries' balance sheet capacity is strained, the impact on yields will be higher than otherwise. At the same, the initial shock will also tighten margins and compress intermediaries' risk-bearing capacity, prompting deleveraging, which will further impair market functioning. Empirical estimates confirm this interaction: the absolute magnitude of fiscal surprises is larger in illiquid markets (Graph 7.A), and adverse fiscal surprises, in turn, erode market liquidity (Graph 7.B).

The new nexus is also evident from the fact that high levels of public debt and a large footprint of NBFIs can significantly increase the likelihood of market dysfunction. This is, for example, the case in the US Treasury market – one of the most critical financial markets. Estimates indicate that the probability of experiencing a stress event similar to the GFC within the next three months is about 10 times higher when the ratio of public debt to GDP is high than when it is low (approximately 3.8% versus 0.3%). Likewise, the probability of such an event rises considerably when the share of NBFIs is high (Graph 7.C).

Fiscal risk shocks and market liquidity: two-way interactions and tail risks[1] — Graph 7



NBFI = non-bank financial institution.

[1] See additional notes to graphs for details. [2] Fiscal risk shocks refer to unexpected changes in sovereign yields triggered by news affecting the fiscal sustainability of sovereigns. [3] Absolute value of the fiscal risk shock. [4] Impulse response of market liquidity to a one standard deviation adverse fiscal risk shock with liquidity measured as the inverse of Bloomberg's yield curve "noise" proxy. [5] Probability that US Treasury market stress is above its average during the Great Financial Crisis. High (low) indicates top (bottom) 10% of the historical distribution.

Sources: Drehmann and Zhu (2026); Gorea et al (2026); Bloomberg; BIS.

Fiscal space can erode quickly as the fiscal-financial stability nexus unfolds. In general, the interactions make it hard to cleanly separate the impact of a fundamental fiscal shock from the subsequent amplification due to market dysfunction. But the 2022 UK gilt episode, for instance, illustrates quantitatively how market dysfunction amplified yields beyond the underlying fiscal shock. Estimates indicate that forced liability-driven investment (LDI) sales generated peak price discounts of around 7%, with roughly half of the post-announcement price drop reflecting fire sales beyond the underlying fiscal surprise.[20] Outside the United Kingdom, similar dynamics have been documented in core bond markets, including during the March 2020 US dash for cash and, more recently, the April 2025 rates volatility, when margin spirals and dealer balance sheet constraints contributed to sharp moves in yields.[21]

International spillovers and the FX-repo link

Cross-border, foreign exchange (FX) hedged positions create additional fragility beyond the domestic channels discussed above, particularly for USD exposures held by non-US investors. Asset managers, pension funds and insurers commonly hedge the currency risk on USD assets with short-dated FX swaps and forwards. The FX derivatives market has expanded rapidly since the GFC. Outstanding FX swaps, forwards and currency swaps reached about $130 trillion at the end of 2025, up from about 50 trillion in 2009. Growth has been the fastest among financial counterparties (Graph 8.A, red bars). Most contracts are short-term – roughly three quarters mature within one year (Graph 8.B). Hedging long-dated assets with such short-dated swaps

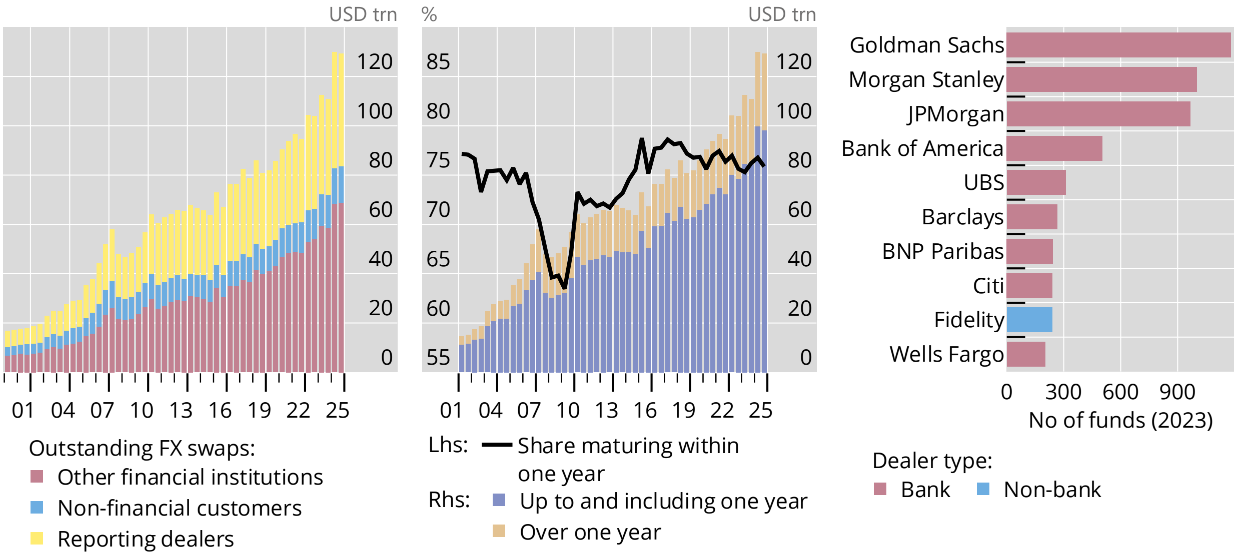
International dimensions: FX swaps and dealer linkages

Graph 8

A. FX swaps have expanded sharply[1, 2]

B. Most FX swaps are short-term, creating rollover risk[1]

C. Repo funding to leveraged hedge funds is concentrated among a few dealers[3]



[1] See additional notes to graphs for details. [2] FX forwards and swaps, including outright forwards, FX swaps and currency swaps. [3] Number of individual hedge funds serviced by each prime broker.

Sources: Araujo et al (2024); US Securities and Exchange Commission; BIS OTC derivatives statistics; BIS.

transforms currency risk into rollover risk. Abrupt shifts in FX swap market conditions – reflecting dealer balance sheet constraints, margin changes or liquidity squeezes – can thus trigger funding stress and portfolio outflows, raising local currency sovereign yields.

Tight linkages between the FX swap and repo markets amplify these spillovers. Major dealer banks intermediate in both markets and substitute across them as balance sheet constraints tighten. While FX swaps are largely off balance sheet, both activities draw on dealers' risk budgets, so stress in one market can curtail capacity in the other.[22] When FX swaps are not rolled over, asset managers must source dollars to close positions, which can trigger dollar funding strains. This dynamic was evident in March 2020.[23] Concentration adds to the fiscal-financial stability nexus: a small number of dealers account for the bulk of repo lending to leveraged hedge funds (Graph 8.C), increasing the risk that strains propagate quickly across funding markets and jurisdictions, with amplified yield pressure.

In EMEs, these international spillovers may interact with domestic market structure and intermediation constraints. Although many EMEs have reduced foreign-currency borrowing by developing local-currency sovereign bond markets, this has not eliminated vulnerability to external financial shocks. Rather, as in "original sin redux", currency and duration risk are transferred to foreign investors, whose outflows can push up local-currency yields when the dollar appreciates or global risk appetite deteriorates.[24] Because many EMEs still have relatively shallow domestic institutional investor bases and thin hedging markets, the retreat of foreign investors can leave domestic banks and other domestic investors to absorb a larger share of sovereign issuance, reinforcing the link between sovereign stress, bank balance sheets and domestic financial conditions.

When fiscal and financial risks reach the central bank

High public debt and the broader fiscal-financial stability nexus described above are likely to complicate the task of central banks. Larger debt stocks make public finances more sensitive to monetary policy decisions, while persistent fiscal pressures or strains can feed more directly into inflation expectations and financial conditions.[25]

Such interactions have arisen before. In the 1980s and 1990s, for example, several EMEs across Latin America and the Russian Federation, saw fiscal imbalances, fragile banking systems and currency mismatches erode monetary credibility, trigger exchange rate adjustments and, in several cases, fuel high inflation. In the euro area, during the 2010–12 sovereign debt crisis, the bank-sovereign nexus amplified initial fiscal concerns into broader financial stress, prompting extraordinary monetary measures.[26]

What is new is the emergence of these links in several major AEs where fiscal sustainability had rarely been in doubt, alongside significant changes in the structure of the financial system in these and other economies. As a result, many central banks now face a more complex and less predictable environment.

Three interrelated challenges, in particular, stand out. First, fiscal risk could be repriced more frequently and abruptly, while the effects of fiscal policy on activity and inflation could become more sensitive to financial conditions and shifts in inflation expectations. Second, monetary policy transmission may increasingly depend on fiscal conditions and the private sector's exposures to sovereign debt, with the level and maturity profile of public debt and its distribution across investor types becoming more important. Finally, central banks may be called upon more often to stabilise government bond markets. Yet frequent interventions risk blurring the policy stance, encouraging higher leverage and hence entrenching the very fragilities that necessitate them. These three challenges are examined in turn.

The effects of fiscal risk repricing and fiscal policy

Fiscal risk repricing occurs when investors assess that fiscal sustainability has worsened and require a higher risk premium to hold government debt. It matters in two distinct ways. First, when triggered by expansionary fiscal measures, it may weaken or even offset the intended demand-supporting effects of the stimulus. Second, repricing can also occur without any new fiscal measures, for example when markets react to a growth downgrade or a shift in global risk sentiment. In this case, it acts as a shock on its own.

The macroeconomic effects of risk repricing operate first through financial conditions. A change in fiscal risk typically raises government bond yields. Since sovereign yields are a benchmark for private sector funding costs, this tends to tighten borrowing conditions for households and firms and weigh on aggregate demand. Risk repricing could also trigger capital outflows and currency depreciation, as investors' confidence takes a hit. This can further tighten financial conditions, especially where foreign-currency liabilities or imported inputs are key. These effects can be amplified by NBFI channels: deleveraging, margin calls or liquidity strains can reinforce the initial rise in yields, causing a negative feedback loop.

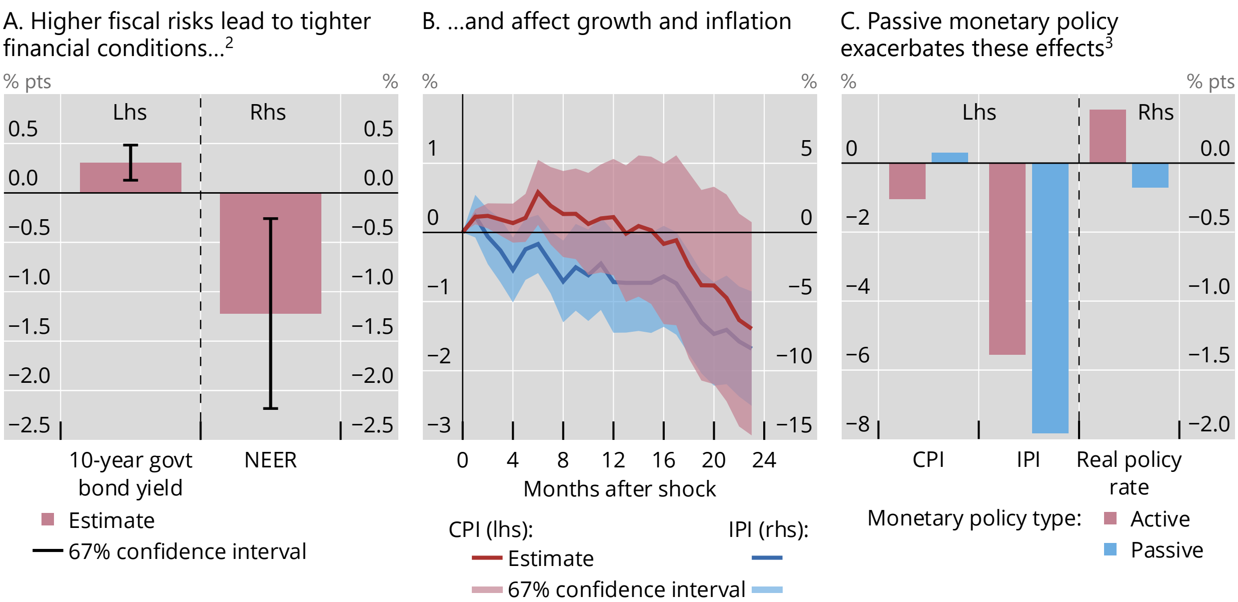
A second channel operates through inflation expectations and exchange rate pass-through. As the fiscal outlook worsens, inflation expectations could also be disrupted. This may occur, for instance, if monetary policy is expected to remain looser to limit the fiscal impact of higher interest rates.[27] The currency may also weaken, especially if a change in the perceptions of fiscal risk triggers capital outflows, thereby lifting imported inflation and reinforcing price pressures even as demand softens.[28]

The credibility of monetary policy is key to the strength of both channels. Credibility limits the extent to which fiscal stress translates into higher expected inflation, and by reducing the inflation risk compensation investors demand to hold longer-term assets, it also moderates the tightening of financial conditions. The response of fiscal policy to heightened fiscal risk can also shape the transmission. Consolidation measures that help restore market confidence can contain the rise in risk premia and the tightening of financial conditions, but they also weigh on demand and can reinforce disinflationary pressures.[29]

Measuring how changes in fiscal risk affect the economy is challenging. A wide range of factors influence sovereign yields, many of which also independently affect output and inflation. One approach to isolating the effects of risk repricing from other influences is to focus on episodes when sovereign yields rise while yields on high-grade corporate bonds of comparable maturity fall. This negative co-movement typically reflects investors reassessing fiscal risk rather than reacting to changes in inflation developments, monetary policy or other common influences.[30]

Evidence from this approach, using a broad panel of AEs and EMEs since 2010, confirms that, on average, fiscal risk repricing tightens financial conditions, weighs on output and affects inflation, although with considerable cross-country variation that makes estimates somewhat imprecise.[31] Sovereign yields rise and currencies depreciate (Graph 9.A). Moreover, price pressures rise for about a year, as inflation expectations are revised up and currency depreciation lifts imported inflation. In the

The financial and real effects of fiscal risk repricing[1] Graph 9



CPI = consumer price index; IPI = industrial production index; NEER = nominal effective exchange rate.

[1] Impact of a 1 percentage point increase in five-year government bond yields due to a fiscal risk shock. See additional notes to graphs for details. [2] Cumulative six-month impact. [3] Cumulative two-year impact, conditional on the monetary policy response.

Sources: Gorea et al (2026); BIS.

medium term, however, tighter financial conditions weigh on demand, leading to persistent disinflation and weakness in real activity (Graph 9.B). These effects tend to be more pronounced when the central bank responds passively – allowing the real policy rate to turn negative after the shock – compared with situations in which the central bank responds actively to inflation pressures (Graph 9.C). This suggests that accommodation does not necessarily shield the economy from the adverse consequences of fiscal risk repricing but could actually amplify them.

In addition to evidence from fiscal risk repricing, empirical studies that isolate the impact of specific fiscal policy changes confirm the relevance of offsetting channels and inflation pressures. For instance, fiscal multipliers tend to be smaller – and can even turn negative – when public debt levels are high.[32] Moreover, fiscal expansions are found to be significantly more inflationary when public debt is allowed to rise without a clear expectation of future stabilisation.[33]

Exchange rate movements and shifts in inflation expectations are central to how fiscal policy raises inflation. In EMEs, fiscal expansions are estimated to produce larger exchange rate depreciations than in AEs, while also shifting the expected inflation distribution towards higher inflation outcomes. Unexpected increases in public debt also raise long-term inflation expectations, especially when debt is already high and dollarisation is significant. These effects, however, are much smaller under credible inflation targeting frameworks, underscoring the importance of institutional safeguards in anchoring inflation expectations.[34] In AEs, the link between high public debt and inflation expectations is also evident: for instance, surveys across several countries show that informing households about high public debt raises their inflation expectations, with a considerably larger rise among those who have less confidence in the central bank's determination to fight inflation.[35]

Monetary policy transmission

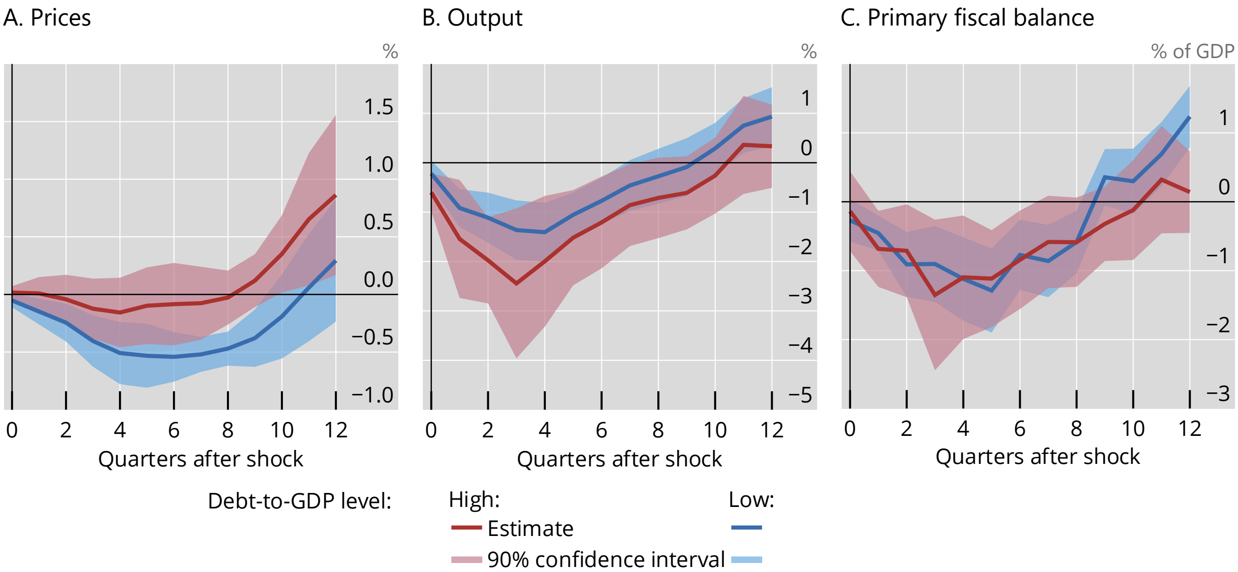
Fiscal risk repricing could also be triggered by monetary policy changes. When the central bank hikes rates, higher interest payments on a large debt stock can worsen the fiscal outlook and prompt markets to reassess fiscal risk. Spreads and term premia may therefore widen, amplifying the tightening of financial conditions that normally arises through standard transmission channels, including bank lending and broader credit channels. This may, in turn, amplify the drag on economic activity. Additionally, the deterioration of fiscal positions may affect inflation expectations in a way that reduces the disinflationary impact of monetary policy.

Beyond fiscal risk repricing, a second channel – closely related but distinct – operates through valuation effects. All else being equal, a rate hike reduces bond prices, resulting in capital losses for investors and financial institutions holding public debt, even without any reassessment of fiscal risk. These losses erode risk-bearing capacity and tighten credit supply, thereby amplifying yield movements.[36] Thus, the valuation channel strengthens the contractionary impulse to activity. But, unlike the repricing channel, it need not dampen the disinflationary effect of monetary policy: absent changes in fiscal risk, the larger drag on output could reinforce disinflation through the standard aggregate demand-Phillips curve mechanism.

Finally, a third channel works through interest income effects. Higher interest rates raise government interest payments, boosting income for private bondholders. If not offset by higher taxes or reduced transfers, this income transfer supports aggregate spending. Unlike the valuation channel, which reduces aggregate demand and reinforces disinflation, the interest income channel weakens both the output

High public debt blunts the price effects of monetary policy[1]

Graph 10



[1] Impact of monetary policy shocks, based on local projection regressions for 11 euro area economies. High and low debt correspond to counterfactual debt ratios of 120% and 60% of GDP, respectively. See additional notes to graphs for details.

Sources: Johns et al (2026); BIS.

contraction and the disinflation from rate hikes, with larger debt stocks boosting these offsetting effects.[37, 38]

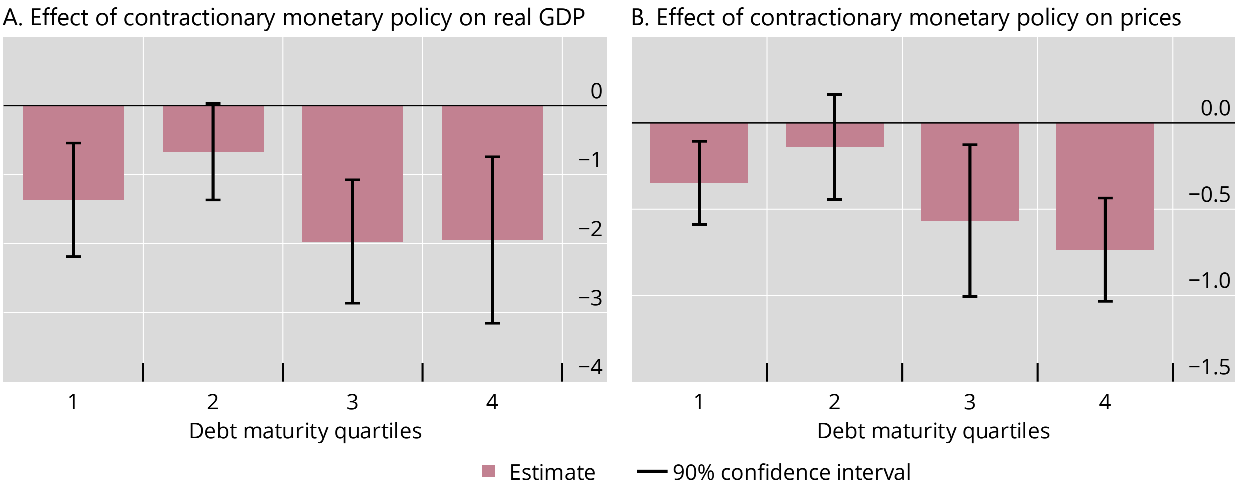
The limited available evidence suggests that higher debt does alter monetary policy transmission. In the United States, changes in interest rates have had a smaller impact on industrial production and unemployment when public debt levels were high, consistent with interest income effects weakening monetary transmission.[39] In the euro area, the evidence points to higher debt levels having a different impact on output and inflation. Graph 10 illustrates this by comparing counterfactual responses at debt ratios of 120% and 60% of GDP while holding the maturity profile fixed at the same sample average. Countries with higher debt exhibit a weaker disinflationary response to monetary tightening (Graph 10.A) and a larger decline in output (Graph 10.B), although the output difference relative to those with low debt is not statistically significant.[40] In both high and low debt countries, the primary fiscal balance tends to deteriorate following a rate hike (Graph 10.C), rather than adjust to absorb higher debt service costs, indicating that the interest income channel is operational.[41, 42]

The maturity structure of public debt also matters. When maturities are long, the valuation channel is stronger: bond prices are more sensitive to yield changes, the income transfer to bondholders is deferred, and monetary policy is more powerful. As maturities shorten, more debt rolls over quickly at higher rates, strengthening the income channel and weakening the disinflationary impact of monetary tightening. At very short maturities, however, rollover risk could re-emerge as an amplifying force: frequent refinancing needs may leave governments more exposed to abrupt repricing of fiscal risk, which can feed back more quickly into higher sovereign borrowing costs and tighter financial conditions.

Public debt maturity matters for monetary transmission[1]

In per cent

Graph 11



[1] Impact of monetary policy shocks after four quarters, based on local projection regressions for 10 euro area economies. See additional notes to graphs for details.

Sources: Johns et al (2026); BIS.

Evidence from euro area data is consistent with this non-linear pattern. Monetary policy tends to have its strongest effects in countries where debt maturities are long (Graph 11), in line with stronger valuation effects and a more delayed income transfer. In countries with medium maturities, policy transmission is relatively weaker, possibly because the income channel partly counteracts valuation effects. In countries with the shortest maturities, however, both the output contraction and disinflation intensify again, suggesting potentially greater sensitivity to refinancing pressures and fiscal risk repricing.[43]

These findings matter for the current environment, with public debt elevated and, in some economies, average maturities shorter than at their post-pandemic peaks. If debt continues to roll over at higher rates, the interest income effects could become more significant, potentially weakening the disinflationary impact of monetary policy. And if maturities shorten further, economies could also become more sensitive to fiscal risk repricing. Together, these developments would worsen the trade-off central banks face by making policy rate increases more consequential for fiscal positions while rendering their effects on output and inflation less predictable.

Addressing market dysfunction

Beyond complicating the transmission of fiscal and monetary policies, high public debt and the broader fiscal-financial stability nexus also heighten the risk of market dysfunction. Such episodes can threaten financial stability and further undermine monetary transmission, leaving central banks with little choice but to intervene. Asset purchase programmes and emergency lending operations are powerful backstops to restore market functioning and ease funding strains, whether the vulnerability crystallises in the banking or NBFI sector. In practice, however, NBFIs in many jurisdictions do not have access to lending operations. When NBFIs are at the centre of the dysfunction, central banks must therefore rely on asset purchases.

Although effective, central bank backstops give rise to several interrelated challenges.

First, providing backstops can challenge the calibration and implementation of the central bank's monetary policy stance. Backstops should only seek to restore temporary dysfunction, not provide longer-term stimulus. In practice however, drawing that distinction can be difficult. This can complicate the calibration of the monetary policy stance and challenge central bank communication, especially in a high-inflation environment. But even when market stress coincides with a downturn, using asset purchases for dual purposes – as many central banks did in March 2020 – carries its own danger. The imperative to bolster market confidence may crowd out concerns about overstimulating the economy, prompting purchases that prove too large and subsequently too slow to unwind once market functioning is restored.[44]

Second, the expectation of ex post central bank support can create ex ante moral hazard, leaving the system more vulnerable to future episodes of market dysfunction. If market participants come to view central bank backstops as likely, they may take on greater liquidity or duration risk, run with thinner buffers or rely more on short-term funding. The result is a more fragile market structure, prone to larger and more frequent episodes of dysfunction.

Third, large-scale interventions can also exacerbate underlying fiscal problems, raising the risk of more severe and more abrupt repricing of fiscal risk or loss of market confidence later on. By dampening the impact of fiscal developments on government bond yields beyond what fundamentals warrant, central bank backstops may weaken market discipline.[45] Governments may then use the resulting fiscal space for further expansions, creating larger vulnerabilities in the future.

Finally, large-scale balance sheet operations can also create risks for central bank independence. For example, large-scale purchases of government bonds could create perceptions that, beyond macro-financial conditions, monetary policy decisions may be influenced by central banks' sovereign debt exposures or that fiscal considerations are constraining the pursuit of price stability. Such perceptions could contribute to a de-anchoring of inflation expectations, especially in countries with a history of fiscal dominance. Large-scale purchases can also expose central banks to losses. While losses and negative equity do not directly affect the ability of central banks to operate effectively, large losses can draw heavy public criticism, as seen in several jurisdictions in recent years. Such criticism can undermine legitimacy and ultimately independence.

Confronting the emerging policy challenges

The challenges discussed above call for a multipronged policy response. What follows addresses each dimension in turn: monetary policy, fiscal policy, regulation and the design of central bank backstop facilities.

Monetary policy

Monetary policy will have to walk a fine line in the years ahead. With public debt at post-war peaks, high interest payments can weaken the impact of policy tightening on inflation (see the previous section), potentially requiring a stronger policy response. At the same time, sovereign debt markets have become more exposed to leveraged and liquidity-dependent intermediaries, potentially making risk premia, financial conditions and market functioning more sensitive to policy tightening. Policy calibration may therefore become more difficult: too little tightening could undermine inflation control, while too much could trigger larger than expected market reactions.

A gradual approach to interest rate hiking may therefore appear preferable under uncertainty, but excessive caution carries its own risks.[46] If monetary policy is perceived as constrained by debt service costs or concerns about market stress, inflation expectations could become less firmly anchored. Financial conditions could also tighten regardless, through higher term premia and currency depreciation. As discussed in the previous section, these risks are more acute where monetary policy credibility is weak.

Central bank independence is therefore essential. It shields policymakers from political pressures tied to high public debt and helps anchor expectations when fiscal or financial risks intensify. However, even the strongest institutional arrangements cannot be fully credible without fiscal sustainability and a resilient financial system.[47] Credibility ultimately hinges on measures (discussed below) that reduce the likelihood of the central bank being confronted with difficult trade-offs between price stability and financial stability.

Fiscal policy

Putting public finances on a credibly sustainable path is the most fundamental policy priority. This, in turn, requires restoring symmetry to fiscal policy. In many countries, policy has long been asymmetric over the business cycle, expanding aggressively in downturns but failing to consolidate sufficiently in expansions (Box A). Rebuilding buffers therefore means taking advantage of good times: unless market access is at risk, consolidation should proceed once the recovery in activity has firmed and financial conditions have normalised. To minimise growth costs, fiscal adjustment should also proceed gradually. But gradualism works best if it is anchored in credible medium-term frameworks, well-specified and enforced fiscal rules and independent fiscal councils.[48]

The composition of consolidation matters as much as its pace. For instance, indiscriminate cuts to public investment can be self-defeating if they undermine potential growth and, in turn, fiscal sustainability. This risk is especially relevant for countries that face both high debt and anaemic growth. High debt could sap growth, while weak growth makes debt harder to reduce, creating a debt trap. Breaking this loop may require protecting or reallocating spending towards infrastructure, education and technological innovation. These areas can raise potential growth, expand the tax base and crowd in private capital. To maximise these gains, public investment should be accompanied by structural reforms that boost productivity more broadly and improve the efficiency with which capital is allocated and used (Chapter I).[49]

Regulation

The post-GFC reform agenda has delivered a markedly stronger financial system. Banks are now much better capitalised, they hold larger liquidity buffers, and macroprudential authorities have the mandate and tools to address several macroprudential risks. Regulatory reforms to ensure that NBFIs do not undermine financial stability have also been on the policy agenda for several years, but further reforms are needed.

A guiding principle for regulatory design should be to pursue "congruent regulation". This would imply regulatory frameworks that apply similar stringency to financial intermediaries posing similar risks to financial stability, regardless of their legal form or business model. While a useful guiding principle, designing congruent regulatory frameworks is challenging in practice. Gauging contributions to systemic risks is inherently difficult, the more so given the heterogeneity of NBFIs and their business models. That said, a range of activity- and entity-based tools can be deployed to move towards congruent regulatory treatment. But implementation is further challenged by a fragmented institutional architecture that often assigns, even within a jurisdiction, the authority to design regulatory frameworks to multiple authorities in charge of different NBFI sectors. Greater cooperation at the national and international level would be important to overcome this gridlock.

In the context of the fiscal-financial stability nexus, regulatory measures that address systemic vulnerabilities in government bond markets are particularly important. Two frequently made proposals for regulatory measures merit further consideration.

One proposal is greater use of central clearing for cash and repo markets. This could enhance the resilience of government bond markets, although it is not a panacea.[50] Central clearing can support intermediation activity by freeing up dealers' balance sheet capacity, given reduced counterparty risk and multilateral netting. Central clearing can also address the asymmetry observed in bilateral markets, where haircuts for the largest hedge funds tend to be smaller than those for other participants (see Graph 5.C). By encouraging all-to-all trading, the market may become less fragmented and more resilient. That said, mandatory central clearing brings its own financial stability risks. These include the increased systemic importance of central counterparties, which would be significant. Margins could also be substantial and they could even exacerbate the unwinding of leveraged trades.

Another proposal is to impose minimum haircuts to limit the build-up of leverage. Zero haircuts effectively allow some market participants, such as hedge funds, to operate with as much leverage as they wish. Some market participants argue that haircuts are set at the portfolio level rather than trade by trade. In practice, this is difficult to do effectively: dealers often lack a complete view of clients' aggregate exposures, and correlations within a portfolio can break down under market-wide shocks, leaving counterparties more exposed than anticipated.[51] But minimum haircuts should be applied in a targeted manner. In many repo transactions, haircuts are designed to protect the collateral provider (ie the cash borrower) rather than the cash lender. A uniform minimum could therefore inadvertently favour one side of the trade, ie the cash or collateral lender.

In addition, prudent banking regulation and continued supervision remain critical to avoid the build-up of systemic risks from leveraged investors in government bond markets. As discussed in this chapter, banks, and in particular a small group of prime brokers, are key providers of funding to these NBFIs in repo and FX swap markets. It is therefore critical that these banks carefully manage their counterparty credit risk in relation to NBFIs and prevent them from taking on excessive leverage. This must be enforced by prudent supervision and the application of robust regulatory frameworks related to market and counterparty credit risk, as specified in Basel III and implemented in many jurisdictions.

The design of central bank backstop facilities

The key overarching consideration for the design of any central bank backstop facility is to satisfy the backstop principle. This principle stipulates that central banks play a role in preventing market dysfunction from harming the real economy. At the same time, these interventions and backstop facilities should not disrupt price discovery or risk management during normal times, ensuring markets remain self-reliant, reinforced through appropriate macro- and microprudential regulation and supervision.[52]

One key design feature to implement the backstop principle aligns with the Bagehot principle. For lending operations this stipulates providing liquidity during stress against good collateral at a penalty rate. However, this is challenging. Facilities must be unattractive in normal times but sufficiently appealing during stress to ensure take-up without stigma that could amplify liquidity hoarding. Committing to a pricing schedule ex ante and maintaining it ex post is difficult in rapidly evolving, uncertain conditions. Similarly, pricing asset purchases for market functioning along the lines of the Bagehot principle is very complex, as in principle the central bank should purchase an asset at a penalty rate but still at a price that improves the market dysfunction. This requires distinguishing between price movements driven by fundamentals and those caused by market dysfunction. This is particularly challenging during stress, as dysfunction often stems from news about fundamentals, such as fiscal shocks.

Other design features can also help. One is to design interventions to be temporary and targeted to mitigate long-term side effects. The Bank of England's response to the LDI crisis in 2022 offers a blueprint: narrow, time-limited operations with explicit eligibility, clear triggers and a well-communicated exit. Another feature is to announce open-ended purchases rather than specific targets. This helps to address risks that purchases prove too large and too slow to reverse ex post. The design can also include an option to partly reverse initial purchases once market functioning is restored. Finally, communication has a role to play in anchoring expectations and preserving credibility.

Given NBFIs' central role in the fiscal-financial stability nexus, developing tools and expanding counterparty access to lending to NBFIs may be useful but involves trade-offs. Expanding counterparty access would allow central banks to address dysfunction through lending rather than asset purchases. Depending on the source of the dysfunction, lending operations may be preferrable to asset purchases since they are more targeted and do not remove all risks from NBFIs' balance sheets. Since they have a predefined maturity, lending operations do not permanently increase the central bank balance sheets or the liquidity provision to the system either. However, expanding access introduces operational and counterparty risks for the central bank and may heighten the potential for moral hazard and system-wide externalities. To manage these risks, expanding counterparty access to NBFIs requires them to be adequately regulated and at a minimum supervised.

Conclusion

Historically high public debt and structural shifts in financial markets are creating a more demanding environment for central banks. These shifts have narrowed the arm’s length separation between monetary, fiscal and financial stability policies. When fiscal positions appear unsustainable, markets may demand higher compensation for holding government debt, financial conditions can tighten and pressures may build for monetary accommodation or central bank intervention. When financial fragility is pervasive, it can amplify shocks to sovereign yields, compress fiscal space and constrain monetary policy. These risks are not hypothetical: tensions between policies have already surfaced in some economies, and recent market disruptions have exposed vulnerabilities that could resurface.

The goal should be to preserve or restore an environment in which each policy can deliver on its mandate without being unduly constrained by the others. By delivering on their mandates, policies reinforce each other. Disciplined fiscal policy underpins monetary credibility and financial stability. Robust regulation strengthens market resilience, preserves fiscal space and reduces the need for frequent central bank interventions. Credible monetary policy anchors inflation expectations and helps contain sovereign and exchange rate risk premia, thus strengthening both fiscal sustainability and financial stability.

Policymakers should not wait for vulnerabilities and the emerging challenges to worsen. Acting early to strengthen fiscal frameworks, financial resilience and monetary credibility would preserve room for manoeuvre across policy domains. Delay would instead make adjustment more costly and increase the likelihood that future shocks force difficult choices between price stability, financial stability and fiscal sustainability.

Endnotes

1 See Hernández de Cos (2025) for a discussion of long-term debt projections.

2 Contingent liabilities are not always fully reflected in fiscal accounts or analyses of debt sustainability. Hence, they are often referred to as "hidden debt". See Reinhart (2015). When they are revealed, they can trigger a sharp repricing of fiscal risk or even a crisis.

3 The main fiscal cost of financial crises – measured by the increase in public debt in the years following a financial crisis – is often indirect, due to the loss of output and fiscal revenue as well as discretionary fiscal measures. The direct costs, such as bailouts, are smaller on average and tend to be recouped partly or entirely several years after the crisis. See eg Amaglobeli et al (2017) and Borio et al (2020).

4 Even against the backdrop of a secular downward trend in interest rates, the very low interest rates observed post-GFC appear to be an anomaly. Historical research using century-long data by Rogoff et al (2024) shows that while there have been several prolonged periods of exceptionally low real interest rates, these episodes have invariably come to an end, suggesting the potential for some upward reversion.

5 According to International Monetary Fund projections, interest payments will account for more than half of the rise in nominal debt in AEs and EMEs during 2025–30, excluding stock-flow adjustments (IMF (2026)).

6 The negative interest rate-growth differential partly reflects financial repression, which was particularly pronounced in EMEs, as well as the high inflation of the 1970s, prior to the liberalisation of financial markets (Mauro and Zhou (2021)). When this differential is negative for structural rather than these more transient reasons, debt ratios can be stabilised even without primary surpluses, lowering the perceived cost of fiscal expansion. An implication, which gained wide policy traction post-GFC, is that governments – especially those borrowing in their own currency – have more fiscal room than traditionally assumed, and that the welfare costs associated with higher public debt, such as the crowding out of private investment, are modest (Blanchard (2019)).

7 For instance, Auclert et al (2025) estimate that US public debt could rise to about 250% of GDP. Importantly, stabilising debt at such high levels would require an implausibly large permanent fiscal adjustment of at least 10% of GDP.

8 See Goodhart and Pradhan (2020).

9 See eg Rogoff (2020, 2021).

10 Reinhart et al (2003) show that "safe" debt-level thresholds vary widely across countries depending on the depth of their financial markets in addition to their history of inflation and default.

11 See eg Arellano and Ramanarayanan (2012) who document that, in EMEs, as sovereign spreads rise, debt maturity shortens and short-term spreads widen by more than long-term ones, a pattern consistent with rollover vulnerability.

12 Mauro and Zhou (2021), drawing on a data set of 55 countries over up to 200 years, find that the interest rate-growth (r-g) differential has essentially no predictive power for government defaults. Furthermore, this differential is not independent of debt levels. Countries with higher initial debt ratios tend to

experience shorter negative r-g episodes and a more right-skewed distribution of outcomes, implying that tail risk of a reversal is greatest precisely when debt is already elevated (Lian et al (2020)). In past episodes, large negative r-g differentials have also sometimes reflected high inflation and financial repression, further weakening the predictive power of this metric.

13 See IMF (2025).

14 While the amount of government bond exposures of pensions funds and the insurance sector increased in recent years, their shares relative to total portfolios of the respective sectors have tended to decline (see eg Ding et al (2026) for pension funds and Aquilina, Garavito et al (2025) for the life insurance sector).

15 See Sushko and Todorov (2025).

16 See Hermes et al (2025).

17 See Schrimpf et al (2020) and Ghio et al (2023).

18 See eg Acharya et al (2024) and Borio et al (2023) for a recent review.

19 These results are from Avdjiev et al (2026). See also Aquilina, Cornelli and Tarashev (2025) for related analysis.

20 See Pinter et al (2024).

21 See FSB (2022) and Hernández de Cos (2025).

22 See Du et al (2025).

23 See CGFS (2020).

24 See Carstens and Shin (2019).

25 For an account of the forces that have led to the current situation, see BIS (2023).

26 Beyond these acute episodes, persistently high public debt has also weighed on trend growth in several economies, mainly by pushing up higher risk premia, requiring more distortionary taxation and lowering investment (see eg BIS (2013); Cecchetti et al (2011); Fatás et al (2019)).

27 See eg Kase et al (2026) and Schmidt (2025).

28 When fiscal sustainability is in question, the standard relationship between policy and the exchange rate can reverse: a monetary tightening or a fiscal shock that would normally appreciate the currency can instead depreciate it, as sovereign risk premia dominate the conventional interest rate channel. See eg Alberola et al (2021).

29 See Hernández de Cos and Moral-Benito (2013).

30 See Gómez-Cram et al (2024) for the economic intuition. Gorea et al (2026) perform a high-frequency identification by isolating episodes in which sovereign yield increases coincide with drops in the yields of ultra-safe corporate bonds.

31 Limited data availability for corporate and government bond yields in EMEs contributes to imprecise local projection estimates in Graph 9. Results are similar, and precision improves, when estimated using a more limited sample of mainly AEs. See Gorea et al (2026) for details.

32 See eg Ilzetzki et al (2013) and Nickel and Tudyka (2014).

[33] See eg Banerjee et al (2022); Bianchi et al (2023); and Smets and Wouters (2024).

[34] See Banerjee et al (2023) for the effects on inflation through the exchange rate and Brandão-Marques et al (2024) for the impact of debt surprises.

[35] See Grigoli and Sandri (2024).

[36] Leveraged intermediation by NBFIs can also make monetary transmission state-dependent. When leverage is high, the pass-through of policy shocks is amplified (Banerjee et al (2025, 2026)).

[37] This channel is mostly relevant for domestic bondholders. Its strength diminishes with the share of debt held by foreign investors.

[38] For theoretical exposition of the valuation and income effect channels, and how they differ from the standard intertemporal substitution channel, see Caramp and Silva (2023) and Caramp and Feilich (2024). These debt-related channels depend not only on the expected path of short-term real interest rates but also on the stock and maturity of public debt.

[39] See Caramp and Feilich (2024). The authors do not report results for inflation.

[40] In Graph 10.A, differences between impulse response functions for prices are statistically significant at all horizons, whereas in Graph 10.B, the differences for output are statistically significant only at very short horizons.

[41] For evidence on the fiscal backing of monetary policy, see also Smets and Wouters (2024) for the United States and Afonso et al (2023) and Kloosterman et al (2024) for the euro area.

[42] Evidence from the locational BIS international banking statistics shows key interactions, namely that fiscal tightening amplifies the impact of monetary tightening (Pradhan et al (2024)).

[43] The results shown in Graphs 11.A and 11.B remain robust when the maturity structure is approximated using four bins rather than the weighted average maturity. Each bin represents the volume of debt, as a share of GDP, corresponding to a specific residual maturity. This approach highlights that both the overall level of debt and its maturity composition play a role in the transmission mechanism (Johns et al (2026)). The results are also robust to using total debt rather than market-held debt.

[44] See eg Chavaz and Smets (2025) and English and Sack (2024).

[45] See eg Wolswijk (2026) and Broeders et al (2023).

[46] See Brainard (1967) on why the optimal response to uncertainty about the policy multiplier is an attenuated one. See also Goodfriend (1991) on interest rate smoothing as a strategy to minimise adverse financial market reactions. See Söderström (2002) on why a more aggressive response is needed in response to uncertainty about inflation persistence.

[47] See eg Bianchi and Melosi (2022). Drazen and Masson (1994) distinguish between the credibility of policymakers and that of policies.

[48] See eg Balasundharam et al (2023).

[49] See eg Draghi (2024). Public support for general purpose innovation is key to boosting private innovation (Gazzani et al (2025)). See also Carstens (2025) and Fornaro and Wolf (2025).

50 Mandatory central clearing has already been decided in some jurisdictions, such as in the United States. See eg FSB (2025).

51 Moreover, when repos that are part of a broader portfolio are stripped out, haircuts remain very low (Hermes et al (2025)).

52 See Markets Committee (2022).

Additional notes to graphs

Graph 1: The sample covers 27 AEs and 24 EMEs, subject to data availability. For government debt, general (if not available, central) government debt at nominal (if not available, market) value.

Graph 3.A: Data are monthly and include 10-year local-currency government bond yields, where available. More historical data are based on a mix of instruments. The sample covers 25 AEs and 18 EMEs, subject to data availability.

Graph 3.B: Interest rates are estimated as the ratio of annual government interest payments to the stock of government gross debt. Growth is annual growth in nominal GDP. The sample covers 26 AEs and 18 EMEs, subject to data availability.

Graph 3.C: Sovereign defaults are based on Asonuma and Trebesch (2016), Beers et al (2025) and Reinhart and Rogoff (2009). Non-default stress events are included from 1994 onwards due to data availability. Such events are identified based on government bond spreads relative to US Treasuries or German Bunds (for European countries), using a threshold for the level of spreads of above 10 percentage points and a threshold for the quarterly change in spreads above the 98th percentile. The sample covers 20 AEs and 16 EMEs, subject to data availability.

Graph 4.A: Aggregate debt divided by the aggregate GDP of 24 AEs.

Graph 4.B: Data are based on responses to US Securities and Exchange Commission Form PF.

Graph 4.C: The observation for 2025 covers data until August 2025.

Graph 5.A: Data are based on responses to US Securities and Exchange Commission Form PF.

Graphs 5.B and 5.C: Transactions with investment funds as cash borrowers, with specific collateral, no net exposure and bilateral segment only. See Hermes et al (2025) for further details.

Graph 6.A: Banks' (other depository corporations') claims on central, state and local government by residence, as a percentage of banks' (deposit takers') Tier 1 capital. AEs = AT, AU, BE, CZ, FI, FR, GR, IL, IT, LU, NL, PT and US; EMEs = AE, BR, CL, CO, HU, MX, MY, PH, PL, TH, TR and ZA.

Graphs 6.B and 6.C: Estimates are obtained from a daily bank-level panel regression of bank CDS spreads on sovereign CDS spreads interacted with banks' exposure shares. The specification includes bank-quarter fixed effects. Exposure measures are scaled by each bank's total exposures (to all borrowers). Sovereign CDS spreads are demeaned by counterparty country. Counterparty countries: BG, BR, CL, CY, EE, ES, GR, HR, HU, IE, IN, IT, KR, LT, LV, MT, MX, PE, PL, PT, RO, RS, RU, SI, SK and TR. Countries of lending banks: AT, BE, DE, DK, ES, FI, FR, GB, GR, IE, IT, NL, NO, PT and SE.

Graphs 7.A and 7.B: The sample covers DE, ES, FR, GB, IT, JP and US, using daily data from May 2011 to November 2025. Fiscal risk shocks are from Gorea et al (2026).

Graph 7.A: Daily market liquidity states are determined based on Bloomberg's yield-curve "noise" proxy, where liquidity is deemed to be high (low) when the proxy is below (above) the country-specific median.

Graph 7.B: The average daily change in the noise measure is 0.001 basis points, so a one-unit shock (equivalent to a one standard deviation increase in the fiscal risk shock, which raises 10-year government yields by approximately 30 basis points (see Graph 9.A)) increases the noise measure by around 20 times its mean, or 0.02 basis points.

Graph 7.C: Probabilities are estimated following Aldasoro et al (2025). The sample period is from July 2011 to January 2024.

Graphs 8.A and 8.B: The BIS OTC derivatives statistics comprise data reported every six months by dealers in 12 jurisdictions (AU, CA, CH, DE, ES, FR, GB, IT, JP, NL, SE and US) plus data reported every three years by dealers in more than 30 additional jurisdictions. For periods between Triennial Surveys, the outstanding positions of dealers in these additional jurisdictions are estimated by the BIS.

Graph 8.B: The share maturing within one year is calculated as a percentage of the data for which maturities are reported.

Graph 9: Estimated using a monthly sample from 2010 to 2025. The sample covers 25 AEs and 15 EMEs, subject to data availability.

Graph 9.A: Cumulative six-month impact of a 1 percentage point increase in five-year government bond yields due to a fiscal risk shock, as estimated using a panel local projection model.

Graph 9.C: Cumulative two-year impact of a 1 percentage point increase in five-year government bond yields due to a fiscal risk shock, conditional on the monetary policy response. Passive monetary policy episodes are defined by negative real policy rates for six out of eight months after a positive fiscal risk shock.

Graph 10: The sample covers AT, BE, DE, ES, FI, FR, GR, IE, IT, NL and PT from 2001 to 2020. Public debt is divided into four buckets, reflecting ultra short debt, short debt, medium maturity debt and long debt. Monetary policy shocks are from Jarociński and Karadi (2020) and interacted with the public debt buckets. For estimations with high and low debt, the maturity profile is held fixed at the sample average of each maturity bucket. The size of the monetary policy shock is one standard deviation.

Graph 11: The sample covers AT, BE, DE, ES, FI, FR, IE, IT, NL and PT from 2001 to 2020. Monetary policy shocks are from Jarociński and Karadi (2020) and are interacted with the weighted average maturity of privately held public debt. Maturities are divided into four quartiles based on the distributions of the average maturity (in years): first quartile = 5.9; second quartile = 6.5; third quartile = 7.2, fourth quartile = 13.7. The size of the monetary policy shock is one standard deviation.

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III. Anchoring trust in money: innovation beyond stablecoins

Key takeaways

- *Digital innovation is transforming finance, potentially enabling greater competition and efficiency in payment systems and financial intermediation. However, it also brings new macro-financial challenges and raises the broader question of how to preserve trust in money in the digital age.*
- *Stablecoins display some of tokenisation's potential to support faster and programmable payments, but current designs fall short on foundational properties of money and threaten financial integrity. Widespread adoption would raise further challenges that depend in part on the composition of stablecoin reserves and the scale of foreign demand.*
- *Advancing the future monetary system requires coordinated efforts by policymakers along two main dimensions: tackling weaknesses in current stablecoin arrangements to mitigate risks; and bringing the technological advances of tokenisation into the two-tier system to establish trusted forms of programmable money.*

Introduction

The global monetary system is at an inflection point, as digital innovation opens new possibilities for how money and assets are recorded, transferred and settled. The path to the next-generation monetary and financial system lies in improving the old and enabling the new while safeguarding the foundations of trust in money. The unifying principle is that technology should serve – not undermine – the core public good functions of money.

Within this context, this chapter assesses evolving forms of financial architectures based on distributed ledger technology (DLT) and different instruments that provide money-like functions. Among the latter, stablecoins have emerged as privately issued tokens on public permissionless blockchains that – in contrast to private permissioned networks – are publicly accessible and, in principle, enable any participant to validate transactions. The chapter illustrates potential use cases for stablecoins, discusses shortcomings and documents the macro-financial challenges that would arise if stablecoins were widely adopted, and discusses the policy priorities ahead.

The chapter begins by pointing out foundational properties of an effective monetary arrangement. These include coordination on using a common unit of account for prices, contracts and balance sheets as well as ensuring the singleness of money. Both properties are underpinned by an elastic supply of liquidity at the system level to meet payment needs in normal and stressed times. They also hinge on interoperability across payment instruments and platforms, which serves as the connective tissue that supports these properties and the network effects of money. No less important is financial integrity, which should hold good in any monetary system. The current two-tier monetary architecture, anchored in central bank money and private sector intermediation, largely upholds these properties. However, some frictions remain, such as limited interoperability across intermediaries' systems and platforms, obstacles to competition and inefficiencies in cross-border payments.

Combining DLT and tokenisation – the digital representation of claims on programmable ledgers – offers a way to address these frictions. It enables fractional ownership and direct peer-to-peer transfers, with a single shared record that reduces the need for reconciliation, permits simultaneous exchange and supports automated, round-the-clock operations. Yet the rising number of networks introduces new challenges to interoperability and raises key questions for network governance. Private permissioned networks can help to meet the regulatory and governance needs of finance. But they risk giving rise to walled gardens that dampen competition and innovation. Public permissionless blockchains, the type of distributed ledgers where stablecoins circulate, face scalability challenges, and they may require fundamentally different rules to ensure financial integrity. Current stablecoin arrangements feature additional shortcomings, such as deviations from par value in secondary markets and limits to elasticity and interoperability. Growing use of stablecoins thus raises policy challenges. Regulation will be pivotal in shaping the design of stablecoins and, by extension, their future role in the financial system.

Against this backdrop, the chapter then discusses the potential macro-financial implications if stablecoins, despite these shortcomings, were to achieve widespread adoption. The analysis highlights the roles played by regulatory requirements on issuers' reserve composition and cross-border demand. Stylised reserve compositions illustrate various transmission channels to credit supply, monetary policy, financial stability and fiscal space. Overall effects on economic activity are likely to remain limited under these scenarios. Still, sizeable stablecoin redemptions could adversely affect money markets and funding conditions. Moreover, there is a risk of "stablecoin dollarisation" in emerging market and developing economies (EMDEs), where demand for foreign stablecoins could reshape capital flows, affect exchange rate dynamics and challenge monetary sovereignty. This puts a greater onus on central banks to ensure price stability and payment efficiency.

The chapter concludes by highlighting policy priorities to advance the future monetary system. First, risks posed by current stablecoin arrangements, such as those arising to financial integrity or related to runs, need to be addressed. This calls for robust, internationally coordinated approaches that strengthen safeguards for users and mitigate adverse spillovers arising from stablecoins across markets and jurisdictions. Second, progress on integrating the technological advances of tokenisation into the two-tier architecture needs to continue. In this context, a unified ledger – eg implemented as a system of interoperable networks – could uphold the attributes of money. By integrating tokenised central bank reserves, tokenised commercial bank money and other appropriately designed and supervised private monies as well as tokenised assets, the unified ledger could realise the benefits of tokenisation and maintain trust in money, provided robust safeguards were in place.

As digital innovations continue to push the frontiers of technological capabilities in the monetary and financial system, international cooperation becomes increasingly important. Internationally consistent regulatory approaches can prevent regulatory arbitrage and market fragmentation. They can play a key role in generating virtuous network effects domestically and across borders.

History has shown that money is far more than a technology; it is an institutional achievement. Its attributes are not incidental conveniences but hard-won solutions to fundamental economic frictions. They allow money to serve as the economy's memory, to coordinate activity at scale and to support innovation without sacrificing trust.[1] Any future monetary arrangement, whether reflecting an incremental improvement or a leap into tokenised finance, must respect that inheritance or be prepared to learn the old lessons anew.

The foundations of trust in money

Money is fundamental to the functioning of any modern economy. As digital innovation promises faster and cheaper ways to move value and record claims, it is important to clarify what makes monetary arrangements effective and to identify the attributes that allow money to serve as the economy's ultimate coordination device. These attributes provide the benchmark for judging whether new arrangements preserve, strengthen or undermine what already works.

Money is typically described as having three textbook roles: a unit of account, a medium of exchange and a store of value. What fundamentally matters, however, is that money is accepted "with no questions asked" as final settlement of an obligation. This status is what makes prices meaningful, contracts enforceable and debts dischargeable. It rests on two foundational properties, which are supported by institutional arrangements for settlement and the elastic supply of liquidity at the system level.[2]

Foundational properties of money

Two foundational properties underpin an effective monetary system. The first is coordination on expressing prices, contracts and balance sheets in a common unit of account. The unit of account is the numeraire in which value is denominated; what is key is the collective agreement to use the same unit for economic calculation. The second is the singleness of money, under which claims denominated in that unit are redeemable at par with central bank money with finality. Taken together, these properties render money an information-insensitive asset that can pass from hand to hand with no questions asked.

These properties are institutional achievements sustained by credible public authorities, central banks' commitment to price stability, robust legal frameworks and supervised financial intermediaries. The common unit of account provides the language of value by placing disparate transactions on a common footing. Singleness complements it by ensuring redeemability at par for central bank money in all states of the world, so that recipients need not test the pedigree of each claim before accepting it.[3] Singleness overcomes adverse selection among different forms of money by ensuring that one dollar, euro, yuan or peso is worth the same as any other in settlement, including under stress. The absence of par exchange, even if tiny, may suffice in fair weather, but it disintegrates when stress hits, undermining the very property that enables coordination.[4]

Elasticity of liquidity at the system level underpins the functioning of these foundational properties. It contributes to ensuring "moneyness" – the ability to perform monetary functions – by keeping payments flowing amid changing circumstances. Economic activity ebbs and flows, and tax dates, quarter-ends or shifts in risk appetite can generate abrupt swings in banks' demand for central bank settlement balances. If the supply of those balances were rigid, payments would jam and an otherwise soluble liquidity shock could mutate into a solvency crisis. Central banks avert such outcomes by supplying intraday credit for settlement and by standing ready with backstops in times of stress, consistent with the monetary policy stance.[5] Because each solvent commercial bank can always replenish its reserve balance – borrowing intraday, accessing overnight standing facilities or drawing on lender of last resort facilities in stress – deposits at commercial banks remain redeemable at par for the liabilities of the central bank and other commercial banks.[6] By expanding or contracting its own balance sheet for monetary and financial stability purposes and enforcing safe operating standards on payment systems – the underlying "rails" – the central bank thus anchors the entire hierarchy of money.

Commercial banks replicate that elasticity one layer down, since their liabilities are the most widely accepted means of payment. Credit lines and the routine creation of deposits against new loans give households and firms the means to pay precisely when they wish to pay. Regulatory frameworks and supervision mitigate the risk of excessive credit creation. Deposit insurance further bolsters trust. Non-banks, such as payment service providers, play an important further role in payment and credit markets. They bring greater competition and diversity to the financial system, although new vulnerabilities may emerge.

Money's coordination function extends across borders, but the properties that underpin it are organised by currency domains. Within each jurisdiction, the properties are anchored by the central bank and its two-tier arrangements with private intermediaries. Across jurisdictions, however, there is no single unit of account and no universal settlement asset. Instead, money's reach is mediated by foreign exchange (FX) markets, a web of correspondent banking relationships and institutional backstops that connect currency areas while preserving monetary sovereignty.[7] In this setting, singleness is achieved within each currency. Par settlement is defined against that currency's reserves, not universally.

Network effects of money

Powerful network effects arise when the unit of account and singleness are firmly in place and the system supplies liquidity elastically. Sellers accept deposits because they know other sellers will; buyers hold them because they know sellers will. Usage begets acceptance, acceptance begets wider usage and the feedback loop delivers the scale that makes modern monetary exchange so efficient. Conversely, if singleness frays or elasticity is insufficient, network externalities work in reverse and coordination can collapse suddenly.

Interoperability allows network effects to compound rather than splinter. When payment instruments and platforms can interoperate under common technical standards and sound institutional arrangements, each additional user expands the set of counterparties who can be paid at par without delay, lowering information costs and deepening trust. By contrast, fragmented systems trap liquidity, force costly intermediation across networks and erode the perception of singleness. Interoperability thus acts as money's connective tissue: it carries the common unit of account across rails, preserves par transfer across institutions and instruments, and lets liquidity flow where it is needed. This holds domestically and across borders, ensuring that the benefits of scale do not stop at the edge of any particular system or platform.[8]

Central banks do not create these network effects but enable them. Their contribution has three facets. First, they stabilise the value of the unit of account through policy tools under clear mandates to ensure price stability and safeguard financial stability. Second, they guarantee par settlement with central bank reserves by operating and/or overseeing payment systems. Third, they supply liquidity on demand to solvent borrowers in these systems, from intraday credit and regular monetary policy operations to emergency backstops. Importantly, these functions rest on a sound regulatory framework and prudent supervision of the private institutions that interface with the public. They also rely on a balance sheet backed by the sovereign's taxing power and insulated from short-term political pressures by institutional independence. That combination of capacity and credibility turns the central bank into what one might call the system's trustee: the entity around which all other balance sheets can safely revolve.[9] Across borders, this anchor operates through linkages between currency areas, with FX markets and official facilities ensuring orderly translation between units of account.

Integrity forms the complementary strand that sustains trust and supports network effects. It refers to the prevention of illicit activities in the monetary system, eg money laundering and terrorism financing. When regulatory compliance and consumer safeguards are embedded consistently at the user interface, payments can flow at par with no questions asked about the instrument. Common identity and messaging standards, auditable data trails and governance that respects data sovereignty and data privacy allow institutions to interoperate without exporting vulnerabilities. Without integrity, lapses can propagate as quickly as payments do, eroding trust, inviting financial crime (or suspicions of it) and ultimately fragmenting networks.

Today's two-tier architecture and the current wave of innovation

The central bank alone cannot deliver the no-questions-asked property of money. Commercial banks and other (non-bank) regulated intermediaries are indispensable. They provide the means of payment of their customers, onboard customers, perform know-your-customer (KYC) checks, monitor transactions for suspicious activity, extend credit and absorb credit risk. Prudential regulation, deposit insurance and resolution regimes keep risks tolerably small for society at large.

Crucially, eligible private intermediaries have accounts at the central bank. That arrangement creates a two-tier structure in which private institutions allocate credit and innovate while the public sector steers funding conditions, supplies the ultimate settlement asset and sets the rules of the game.[10] The result is an institutional setup that minimises information costs for users. The system's architecture socialises trust, leaving individual transactions free from the burden of bilateral due diligence.

Confidence in this architecture has emerged from centuries of experimentation and occasional failure (Box A). Interpersonal credit gave way to commodity monies; commodity monies yielded to heterogeneous private notes; those gave way to central bank-anchored deposits; paper-based ledgers gave way to electronic book entry systems and, more recently, real-time updating of digital balances – even as earlier forms have often coexisted for long periods. Each transition aimed to improve money's ability to uphold the foundational properties of money while enhancing speed, convenience or reach. The current wave of digital innovation is no different.

Digital initiatives in tokenised finance aim to deliver efficiency gains in transferring value and settling obligations. These represent an evolution rather than introducing genuinely new forms of money. Their prospects turn less on novelty than on whether they connect to the existing unit of account, preserve singleness through credible redeemability in central bank money at par with finality and operate within a system that supplies settlement liquidity elastically and preserves integrity. If not, they risk reviving the very frictions that the modern system evolved to solve.[11]

Box A

The historical emergence of money and of central banking

Money is a fundamental social technology that is needed for complex economic systems and commerce to flourish. In societies around the world, the earliest forms of money were simple credit relationships, where an individual or family made a promise to deliver objects of value (goods or services) at a date in the future.[1] Providing those goods or services helped to extinguish that obligation. Over time, as societies and their web of credit commitments became larger, promises to pay were replaced by commodity money, such as cowry shells or coins made of natural alloys like electrum. The fact that commodity money emerged independently in both the Old World (across Africa, Asia and Europe) and the New World (the Americas) underscores the fundamental importance of money.[2]

The institutions underpinning money have taken many forms over time, with central banks becoming increasingly important as guardians of the monetary system. In the early modern period in Europe, many cities had public banks that issued financial money of the highest possible credit quality, which was accepted for settlement of other financial claims.[3] Beyond providing a venue for settlement, the emergence of central banks reflected the need for a universally accepted, liquid liability that could anchor payments and markets. By issuing claims that were, by construction, the safest and most liquid in the currency domain, these institutions supplied the monetary numeraire and a balance sheet capable of elastic support in times of stress. This public liability, underpinned by fiscal capacity, became the anchor around which private promises to pay revolved.

A particularly prominent example was the Bank of Amsterdam (Amsterdamsche Wisselbank), founded in 1609 with the stated purpose to "check the confusion of coin" and introduce a unitary standard: the Dutch Bank guilder. By allowing merchants to settle transactions on the Bank's ledgers, with Bank guilders backed by precious metals held in the vaults, the Bank supported commerce across Europe and around the world, and thus the guilder became the first truly global reserve currency.[4] This was apparent, for instance, in the crisis of 1763. In that episode, bills of exchange linked creditors in the chief financial centre (Amsterdam) with borrowers in key emerging market economies of the time (eg Prussia). When a confidence crisis gripped the market, the Bank stepped in to stabilise the system, ensuring that bills continued to be accepted and the system continued to function. This episode foreshadowed the role of central banks in later centuries as elastic nodes in the monetary system, and as lenders of last resort. The Bank functioned effectively as a proto-central bank for over a century. Yet its downfall in the 1780s, precipitated by large-scale lending to an affiliated entity and a lack of fiscal backing, shows the limits of fiat money and how trust can falter when the institutions backing it are insufficiently robust.[5]

Other episodes have further underscored the importance of a trusted monetary numeraire. For example, in 1805 the Battle of Trafalgar cut continental Europe off from the flow of Spanish silver dollars, which had served as the money of reference throughout the 18th century. This shock precipitated a major contraction of lending and severe economic fallout in France and Spain.[6]

Some major jurisdictions have functioned without central banks for a period. In the United States, for example, after the charters of the First Bank of the United States (1791–1811) and Second Bank of the United States (1816–36) were allowed to lapse, states introduced free banking laws. These laws allowed free entry for new note-issuing banks, subject to certain requirements.[7] Because of the proliferation of private banknotes, the difficulties in determining the value and – crucially – the need for settlement of (larger) payments, new institutions arose. One example was the Suffolk Bank of Boston which, from 1825 to 1858, operated a regional note-clearing system in New England. The Bank assessed the quality of private banknotes and would even stamp the notes of failed banks with red ink to prevent further circulation. This worked with some success, but the large profits of the institution underscored that this business is a natural monopoly.[8] Ultimately, these functions were taken over by the Federal Reserve System, founded in 1913. This mirrors the evolution from private to public banknotes in other jurisdictions, including Canada and Sweden.[9]

In the past two centuries, central banks have thus moved from being a novelty of some countries to being a ubiquitous feature of monetary systems (and nation states) around the world. Having started life primarily as bankers to the government or for specific commercial purposes, central banks have become key public institutions that are entrusted with ensuring the stability of the currency, generally with mandates for price stability and financial stability.[10]

[1] See Mitchell Innes (1913) and Graeber (2011). [2] There are parallels in other areas of technology, such as the parallel emergence in the Old and New Worlds of written language, number systems, astronomy and mathematics. For descriptions of commodity money in the pre-European contact Americas, see Griswold (1970) and Carlos (2023). [3] See Bindseil (2019). [4] See Schnabel and Shin (2004) and Quinn and Roberds (2016). [5] See Bolt et al (2024) and Bell et al (2024). [6] See Bignon et al (2026). [7] See Rolnick and Weber (1982). [8] See Rolnick et al (1998). [9] In some jurisdictions, such as Hong Kong SAR and Scotland, private banknotes continue to circulate. Yet in these cases, they are fully backed by reserves at the central bank. [10] See Clement et al (2026).

Digital innovation and the quest for new forms of money

By challenging the status quo, digital innovation prompts a reassessment of how monetary arrangements can evolve to meet users' needs while preserving the foundational properties that anchor money. The current system is robust but burdened by frictions that constrain functionality. Proprietary, non-interoperable databases, for instance, fragment data, hinder automated processing and restrict competition. Complex, sequential chains of messaging, clearing and settlement require repeated reconciliation. Core financial intermediaries can become single points of failure, raising systemic risk.[12] These shortcomings raise costs, slow the movement of value and amplify settlement and operational risks, especially across borders, where differing time zones and rules compound delays.

Technological innovations seek to address these frictions.[13] Innovations include targeted upgrades to financial infrastructures (eg retail fast payment systems, upgrades to real-time gross settlement systems) as well as proposals to more fundamentally rebuild the underlying rails. Among the latter, DLT and tokenisation could embed money and assets in programmable environments, integrating messaging, reconciliation and transfer into unified, automated workflows.[14]

DLT network settings

DLT decouples assets from the specific platforms that transfer them. It provides a shared, programmable infrastructure where tokenised assets can move across multiple platforms. Relative to today's siloed databases residing within individual financial intermediaries as well as sequential messaging and settlement chains, DLT can unify data, execution and transfer within programmable workflows. This capacity has supported the growth of the crypto ecosystem and spurred industry efforts to integrate tokenisation into mainstream financial applications.

Programmability does not strictly require DLT – many functions can be implemented on traditional infrastructures – but combining DLT with tokenisation can deliver notable benefits. This combination changes the way assets are held and transferred, creating new possibilities for fractional ownership, peer-to-peer payment and settlement. Potential benefits include a shared, tamper-evident record that reduces reconciliation across institutions and enables atomic (ie simultaneous execution of all legs of a transfer) settlement within the same ledger. The execution of processes can be automated via smart contracts and operate around the clock.[15] Reaping the benefits of tokenisation and developing new use cases, however, crucially depends on the availability of reliable forms of money on the ledger.

Today's DLT networks can be broadly grouped by their design choices into two main categories: public permissionless and private permissioned designs.[16] This distinction determines who may participate, how transactions are validated and how integrity and resilience are achieved.

Public permissionless networks are open to any user and, in principle, allow any participant to validate transactions. This open design fosters transparency and competition while widening access to financial services.[17] The network consensus relies on dispersed, often anonymous validators (ie participants that propose and attest blocks to update the ledger) rather than centralised bookkeepers. However, the resulting design, governance and incentive structures have introduced validator rents, congestion episodes and fragmentation across blockchains (Box B).[18] All of these erode network benefits. Public visibility of all transactions may also raise challenges related to privacy needs in financial markets. Moreover, in today's public permissionless networks, large multifunction cryptoasset intermediaries bundle significant activity off-chain and perform risk transformation, often without adequate prudential safeguards. This configuration can amplify risks of illiquidity, market incidents and hidden leverage. Such arrangements, as currently implemented, struggle to support monetary network effects at scale.[19]

Private permissioned networks restrict participation to approved entities, rely on identifiable validators and can embed governance to reflect regulatory safeguards. By supporting financial integrity and operational resilience, they align more closely with the needs of regulated finance. Supporting financial integrity and operational resilience, they lend themselves more naturally to use cases such as tokenised deposits within closed user groups for institutional treasury, intraday liquidity management and automated cash sweeps.[20] At the same time, constrained access can lead to walled gardens that limit competition and innovation.[21]

Interoperability remains challenging in both network settings. Public permissionless networks are split across many base networks and secondary networks built on top of them that do not seamlessly communicate (Box B); permissioned platforms often use different rules, identities and data policies. The result is that assets cannot move easily between networks, forcing reliance on ad hoc links (eg so-called bridges) that introduce new operational risks and may undermine resilience. From a monetary perspective, fragmented designs make it harder to sustain self-reinforcing network effects and the singleness that underpins uniform acceptance of money.

Within permissioned, interoperable rails that settle in central bank reserves and feature clear functional separation, tokenisation could address long-standing frictions without sacrificing integrity. Cross-border payments are a salient example. In the current correspondent banking model, sequential processes, limited overlap in operating hours and multiple hand-offs raise complexity and costs. Tokenisation can streamline these steps by aligning instruction, compliance checks and settlement into a coordinated workflow with atomic settlement of all payment balances.[22]

Public-private experimentation suggests that this architecture is feasible within a two-tier setup. Project Agorá brings together eight central banks and over 40 regulated institutions to test a shared cross-border platform with a unifying ledger for tokenised commercial bank deposits and separate, jurisdiction-specific ledgers for tokenised central bank reserves. The prototype shows that, after the validation steps are completed and the required balances are reserved and locked, payments can settle atomically, that is, across currencies in an all-or-nothing manner. Participation rules and domestic control over reserves are preserved, and privacy safeguards limit data-sharing to relevant parties. Legal analysis indicates that tokenisation does not change the nature of deposits or reserves and that settlement finality can be aligned with national frameworks through clear rules. Taken together, these efforts point to shorter settlement cycles, fewer errors and stronger integrity. Evidently, any move to production would require further measures to strengthen resilience and to establish firm governance and operating rules.[23]

Box B

The economics of public permissionless blockchains

The current crypto ecosystem, built on public permissionless blockchains, offers a vision for the monetary system grounded in decentralised trust.[1] Rather than relying on regulated intermediaries to provide centralised trust, these networks seek consensus among dispersed, often pseudonymous validators. By displacing trusted bookkeepers, public permissionless blockchains aim to raise efficiency and bolster operational resilience by avoiding single points of failure or control.

The economics of blockchains ("tokenomics") encompasses the overall economic design of blockchain networks, with consensus mechanisms as a key component. Since blockchains operate as a system without a central coordinator, a consensus mechanism is essential to establish trust among network participants, maintain a single ledger state and prevent double-spending. These mechanisms define how validation rights are allocated to participants and how rewards are distributed for their participation. Fees paid to validators (eg transaction fees in Bitcoin or gas fees in Ethereum) act as incentives to encourage honest behaviour and support the confirmation of transactions. This incentive design aligns participants' behaviour and deters malicious actions.

Despite this vision and associated technological innovations, the current reality of public permissionless blockchain ecosystems is one of rents, negative externalities and congestion, with fragmentation eroding network benefits. Achieving consensus and enforcing honest behaviour requires paying fees (rents) to validators, as defined by the tokenomics of the network. But as the number of transactions increases, updating the blockchain ledger becomes more computationally intensive, leading to higher fees and longer confirmation times. These challenges are not merely technical flaws, but structural features of decentralised systems.[2] While they sustain the incentives for validators, they also distort fairness, increase transaction costs and weaken users' incentives to remain on a given network.[3] These effects can ultimately undermine a network's long-term viability, efficiency and scalability.

The plethora of blockchain consensus mechanisms

Table B1

Consensus mechanism	Example chains	Key features
Proof-of-work	Bitcoin	• Participants expend computing power to add blocks • Miners solve hash puzzles • The protocol adjusts difficulty to maintain steady block times as computing power changes
Proof-of-stake	Ethereum	• Participants lock up ("stake") native tokens (ETH) and are selected to propose/verify blocks • Misbehaviour can forfeit part of the stake • Finality is achieved through many stakers attesting to the same block
Delegated validator sets (proof-of-staked authority, delegated proof-of-stake)	BNB Chain, Tron	• A small, elected or rotating group of validators produces blocks • Selection is based on votes or delegated stake

ETH = ether.

Sources: Eidan et al (2026); Shin (2026).

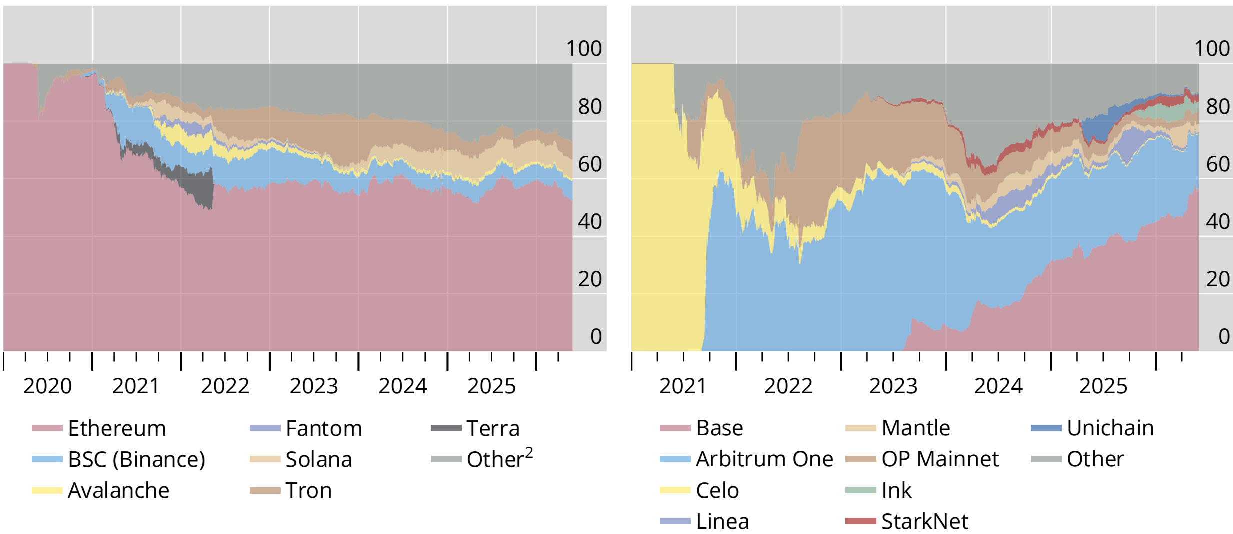
Efforts to address these issues focus on adjusting fee structure and consensus mechanisms and improving network capacity.[4] Updates to the blockchain protocol (a set of rules governing the network) that changed the fee mechanism have increased fee predictability for users and partly address volatility, but network inefficiencies persist (eg in Ethereum). In addition, some blockchain networks have adopted modified consensus mechanisms, such as proof-of-staked authority and delegated proof-of-stake, which delegate validation rights to a small group of participants (Table B1). The solutions proposed to address these challenges may improve efficiency and reduce costs for individual networks, yet they reflect a shift away from the vision of decentralisation and the removal of intermediaries.

Moreover, the crypto ecosystem exhibits ensuing fragmentation across both base networks (layer 1) and their scaling layers (layer 2) (Graph B1.A).[5] Layer 1 blockchains are the foundational networks that validate, process and record transactions directly. Layer 2 solutions are secondary frameworks that sit atop layer 1 to improve efficiency and scalability. Differences in design and implementation across these layers can disconnect users, fragment liquidity and limit functionality, creating silos that hinder interoperability. Proliferation of base networks and the absence of shared account or identity standards limit interoperability across chains. Even when the same issuer releases a stablecoin on multiple networks, each chain-specific version effectively behaves as a distinct asset; moving value across networks can be difficult or costly. Crypto exchanges and bridges help to connect disparate chains, but coverage is incomplete and these intermediaries often face meaningful cost efficiency and security challenges.

Rising fragmentation across layer 1 and layer 2 networks

As a percentage of total value locked — Graph B1

A. Growing fragmentation of layer 1 networks[1] — B. Rising use of layer 2 networks adds to fragmentation[3]



[1] Total value locked corresponds to the aggregate of all the funds locked in a decentralised finance smart contract. [2] Also includes layer 2 networks. [3] Layer 2 networks have been selected based on the categorisation applied by Token Terminal.

Sources: Eidan et al (2026); DefiLlama; Token Terminal; BIS.

Fragmentation across a rising number of layer 2 solutions introduces additional challenges. While such networks aim to reduce congestion by processing transactions on distinct chains, their proliferation further deepens fragmentation of the ecosystem (Graph B1.B). This patchwork quilt of fragmented systems hinders interoperability, as transactions and assets processed on one layer 2 solution may not be easily transferred or integrated with another. Consequently, the benefits of scalability and efficiency are often undermined by the absence of cohesion among these frameworks.

[1] See Nakamoto (2008). [2] See Boissay et al (2022) and Shin (2026). [3] See Auer, Frost and Vidal Pastor (2022). [4] See BIS (2025). [5] See Shin (2026) and Eidan et al (2026).

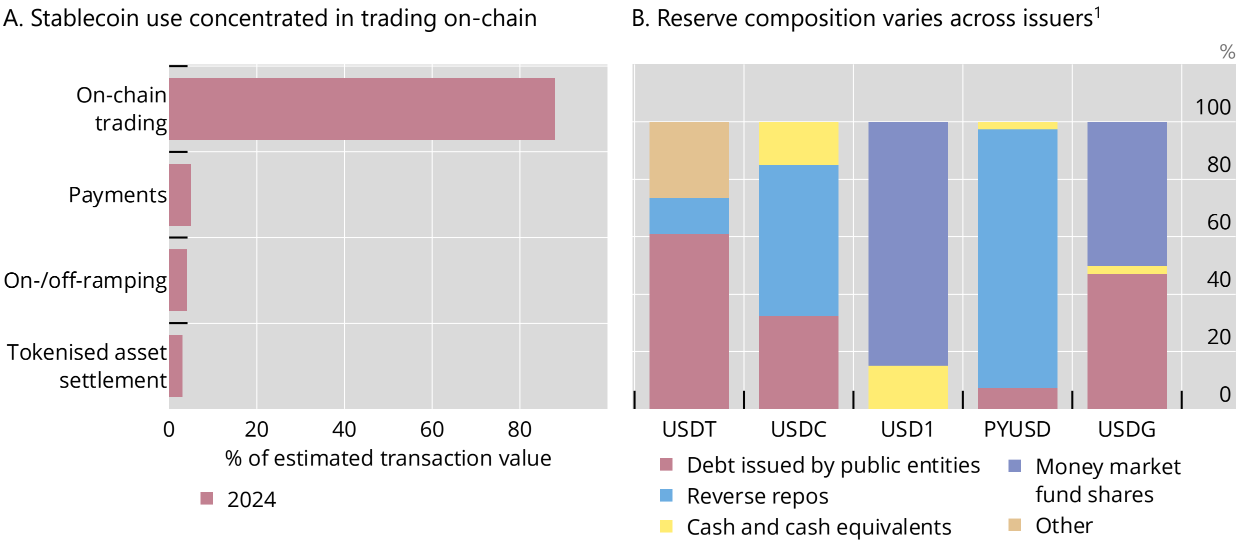
Emergence of stablecoins on public permissionless blockchains

Public permissionless blockchains have, to date, seen the widest uptake of all tokenisation initiatives, catalysing new instruments and applications. Amid this growth, fiat-backed stablecoins have emerged as privately issued tokens that provide money-like functionality on ledgers.[24] Other strands of money-like tokens on these blockchains include tokenised money market fund (MMF) shares. These often enable programmability for eligible ("allow-listed") holders, thereby introducing some elements of permissions. These shares are being piloted as reserve assets for stablecoins and more broadly as collateral available on the ledger.[25]

Stablecoins are tokens on a programmable ledger that aim to maintain a stable value against a reference asset (or basket of assets). They do so in the absence of the institutional underpinnings that sustain the foundations of money in the two-tier system. Unlike tokenised deposits, which require the coordinated onboarding of deposit-taking institutions and linkage to settlement accounts, bearer-like instruments such as stablecoins can be issued unilaterally and circulate widely on open infrastructures. To date, 99.4% of fiat-backed stablecoins (by market valuation) are pegged to the US dollar – thereby leveraging on the unit of account provided by the leading international reserve currency.

Stablecoins have a number of potential use cases. They are generally easily accessible via hosted wallets and, in principle, also via "unhosted" wallets (or "self-custody").[26] They can be integrated with smart contracts that enable programmability. They can serve as on- and off-ramps to the crypto ecosystem or provide exposure to a foreign currency, most importantly the US dollar. And, as cross-border payment instruments, they promise faster and cheaper transfers than conventional alternatives.

Stablecoin use focuses on crypto trading, with coins backed by low-risk assets — Graph 1



USDT: issued by Tether; USDC: issued by Circle; USD1: issued by BitGo, sponsored by World Liberty Financial; PYUSD: issued by Paxos Trust Company for PayPal; USDG: issued by Paxos entities (Singapore and EU).

[1] As of March or April 2026, subject to availability.

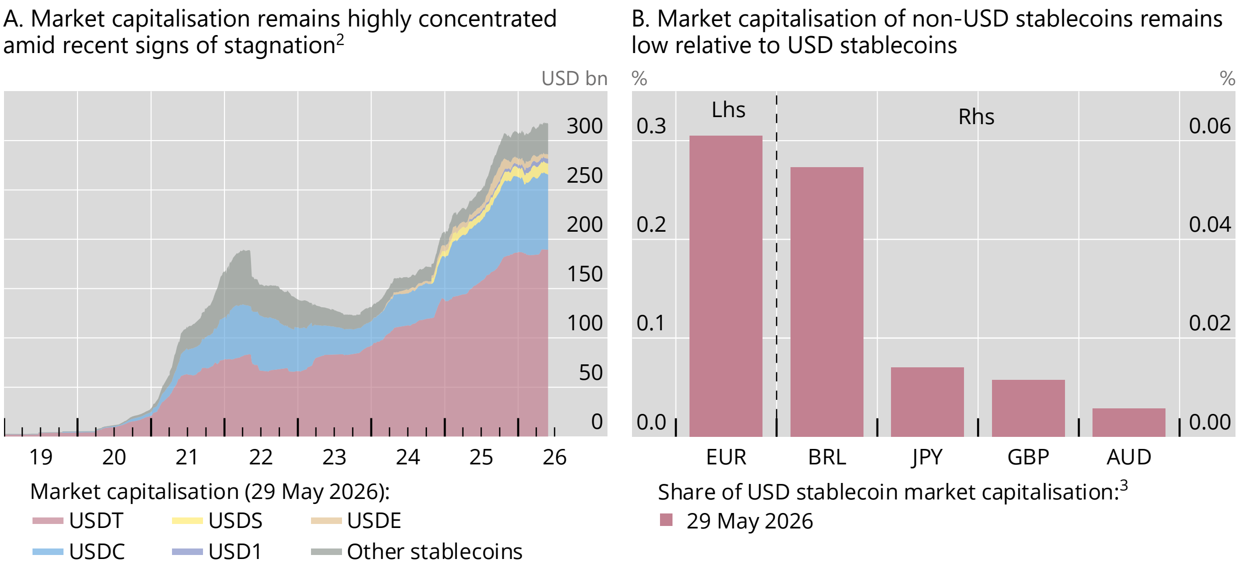
Sources: Boston Consulting Group (BCG); individual stablecoin filing reports; BIS.

In practice, the main use cases of stablecoins so far have been for crypto trading (Graph 1.A) and, to a lesser extent, as offshore stores of value in EMDEs with currency vulnerabilities.[27] As cross-border payment instruments, their performance is uneven once fees, spreads and on-/off-ramp costs are considered.[28] Risks of use for illicit transactions also looms.

Given the prevalence of US dollar-linked stablecoins, reserve portfolios of large fiat-backed stablecoins are heavily concentrated in dollar-denominated instruments. Issuers typically hold combinations of short-dated public debt and claims on banks in the form of cash or reverse repos, in varying proportions (Graph 1.B). Their holdings of Treasury bills have risen to levels comparable with those of large jurisdictions and government MMFs.

Notwithstanding phases of rapid growth, the use of stablecoins remains modest. Stablecoin market capitalisation, for instance, was around $320 billion as of end-May 2026 (Graph 2.A). While the market remained relatively resilient against the broader rout in crypto markets in late 2025 and early 2026, it remains dwarfed by trillions of US dollars in bank deposits. Experience so far also shows that robust domestic regulatory frameworks have not, by themselves, catalysed large non-US dollar regulation-compliant stablecoin markets. Issuance of these coins remains a minute fraction compared with US dollar-pegged issuance (Graph 2.B). Annual stablecoin transaction volume amounted to an estimated $28 trillion in 2025, equivalent to less than three business weeks of settlement volumes of the largest US wholesale payment systems; values net of transactions between wallets owned by the same party are far lower.[29]

Stablecoin market growth concentrated in two US dollar-pegged coins[1] Graph 2



USDT: issued by Tether; USDC: issued by Circle; USDS: Sky protocol; USD1: issued by BitGo, sponsored by World Liberty Financial; USDE: Ethena protocol.

[1] Based on the classification by Kosse et al (2023). [2] Five largest stablecoins by market capitalisation. [3] Fiat-backed stablecoins only.

Sources: Kosse et al (2023); CoinGecko; BIS.

Challenges associated with today's stablecoin arrangements

Stablecoins are salient because they aspire to money-like functionality while dispensing with the institutional underpinnings that sustain trust in today's monetary and financial system. Assessing that aspiration calls for an assessment of two sets of issues. First are issues related to the design of stablecoin arrangements, including financial integrity and moneyness, ie the ability of stablecoins to perform monetary functions, such as providing a means of payment or store of value. Second are issues related to the rails – the operation, scalability, security, governance and settlement properties of public permissionless ledgers. This distinction clarifies what ultimately depends on credible institutions, sound regulation and legal certainty, and what needs to be addressed by network design.

Financial integrity and moneyness

Financial integrity concerns are a central consideration for any role stablecoins might play in the current and future monetary system. Experience to date suggests that stablecoins account for a significant share of illicit on-chain activity. In traditional finance, financial intermediaries are required to play a key role in ensuring anti-money laundering and countering the financing of terrorism (AML/CFT) compliance. Banks and other supervised intermediaries perform KYC checks, monitor transactions, file suspicious activity reports and can stop or reverse payments when warranted. By contrast, stablecoins circulate on public permissionless blockchains, where pseudonymity and the use of unhosted wallets can undermine KYC and AML/CFT compliance and create avenues for evasion. These can include mixers and cross-chain bridges that obscure flows and weaken oversight.[30] Moreover, much stablecoin activity is handled by multifunction cryptoasset intermediaries whose borrowing activities create short-term redeemable liabilities economically similar to deposits, but typically without capital/liquidity buffers or consolidated supervision. This strengthens the case for robust prudential and conduct frameworks alongside AML/CFT controls.[31]

Measures to improve compliance with financial integrity rules are ongoing. Stablecoin issuers maintain control of the outstanding balances of their coins. They have, in many cases, frozen balances at specific on-chain addresses, and blockchain analytics firms are supporting law enforcement in high-profile cases. These are positive developments that show the potential of technological capabilities in blockchains. However, such measures cannot replace routine, large-scale AML/CFT controls in everyday payments. Some jurisdictions are moving towards frameworks that restrict circulation to KYC-verified addresses and require issuers and intermediaries to meet AML/CFT standards akin to those for traditional account-based payments. Yet the borderless nature of public permissionless chains creates a persistent risk of regulatory arbitrage, underscoring the need for internationally consistent approaches.[32]

Integrity by design is essential if programmable rails are to support large-scale coordination of market participants in a safe and inclusive way. Permissioned platforms that embed AML/CFT pre-screening, sanctions screening and auditable data trails in the transaction flow – while aligning with data sovereignty constraints – could uphold financial integrity at scale. In this setting, programmable controls could support proportionate compliance that reduces unnecessary alerts and the burden on intermediaries. At the same time, cross-border supervisory cooperation and technical capacity-building to implement these controls effectively will be key.[33]

Design questions also arise regarding stablecoins' moneyness. At present, stablecoin transfers settle neither directly nor indirectly on central bank balance sheets. By construction, they cannot currently ensure exchange at par across issuers and blockchains under all conditions.[34] Secondary market prices of stablecoins to date deviate from par, even if mostly moderately. Redemption frictions are common, indicating that current stablecoin designs resemble exchange-traded fund (ETF) shares rather than a means of payment.[35]

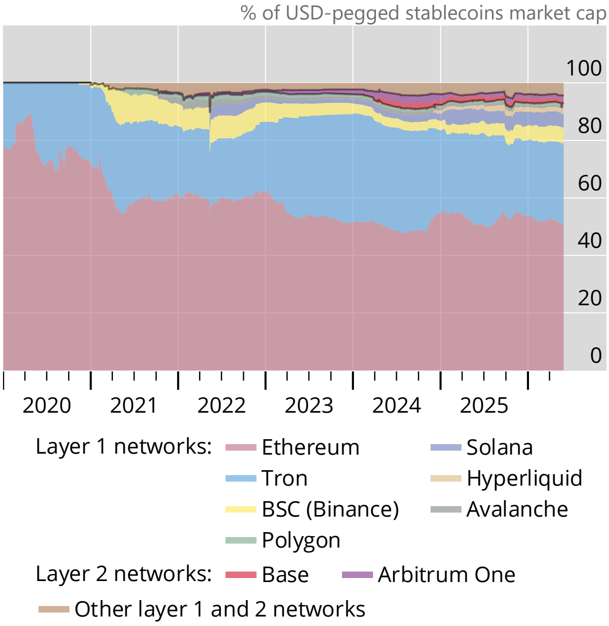
Elasticity, in turn, remains constrained by a cash-in-advance issuance model and by the liquidity and market depth of reserve assets. Easing these balance sheet constraints would require stablecoins to achieve broad payments acceptance, enabling issuers to acquire assets and extend credit through new coin issuance rather than by drawing on their bank balances, as at present.[36]

Public permissionless rails and fragmentation

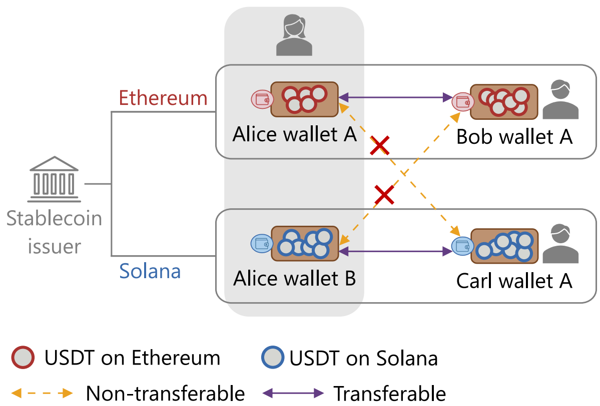
A key impediment concerning the rails is the fragmentation inherent in public permissionless blockchains. Stablecoins and other tokenised assets circulate on a growing array of competing networks (Graph 3.A). Aside from Ethereum and Tron, other base blockchains (layer 1 networks) are also emerging, as well as further secondary networks based on top of these (layer 2) (Box B). Even though stablecoins typically have centralised issuers, the public permissionless blockchains on which they circulate lack a common approach for recognising accounts and verifying identities across the chains. This leads to interoperability challenges: a coin on Ethereum is not equivalent to a coin of the same name on Solana, as they reside on separate ledgers that do not natively communicate with each other (Graph 3.B). This can undermine

Stablecoin fragmentation and the lack of interoperability across blockchains — Graph 3

A. Stablecoin circulation across blockchains



B. Stablecoins lack interoperability across blockchains[1]



[1] A stylised example of how a stablecoin (eg USDT) can be issued natively on multiple blockchains (eg Ethereum and Solana). While this improves availability across blockchains, tokens remain siloed and non-transferable across chains. Without supporting mechanisms, sending stablecoins between wallets on different blockchains may fail, risking permanent loss.

Sources: Eidan et al (2026); Hernández de Cos (2026); DeFiLlama; BIS.

the singleness of money in the absence of an agreed clearing and settlement system across ledgers.

The fragmentation within the current crypto ecosystem demonstrates that achieving the positive network effects of money remains challenging. Indeed, the division of blockchain networks raises new questions about the feasibility of achieving stable interoperability across them. This lack of interoperability highlights the inherent trade-offs between decentralisation and security on the one hand and scalability and efficiency on the other.

Moreover, flaws in smart contract design, weaknesses in mechanisms to support interoperability across blockchains and oracles (ie transmitters of off-chain data to the network), and deficient governance structures can undermine the operational reliability of underlying rails. To enhance interoperability across different blockchains, various mechanisms have been developed. These include bridges to transfer tokens or data, native multi-chain issuance where tokens are issued natively by the same issuer on multiple blockchains and interoperability protocols that enable coordination across chains. Oracles, which provide blockchains with external data such as price feeds or real-world event information, are critical in blockchains that lack a trusted intermediary. However, these mechanisms reveal various limitations, particularly in terms of operational resilience and security, and face challenges in effectively ensuring the integrity of external data inputs.[37] These challenges are particularly acute in public permissionless blockchain environments due to the absence of centralised mechanisms or authority to resolve errors or reverse transactions. Collectively, these issues can disrupt transfers, hinder redemptions and erode confidence in both the underlying rails and the tokens circulating on them.

Stablecoin design choices along a continuum

Design, regulation and use cases will ultimately determine whether stablecoins can become more money-like or whether they are likely to resemble securities, such as ETFs. From a system-wide perspective, stablecoin arrangements can be mapped onto a continuum with two polar designs. At one end are money-like stablecoins that aim to function as means of payment with redeemability at par under all market conditions. At the other are stablecoins that operate as investment instruments with possible deviations from par, redemption restrictions and a focus on store of value characteristics. Where on this spectrum an arrangement falls depends on reserve composition, redemption conditions, access to central bank accounts and backstops, and the regulatory framework in which it operates (Box C). The implications for the broader financial system, including banks, MMFs, central banks and sovereign debt markets, could differ markedly across designs. Moreover, disclosure and investor protection frameworks will need to ensure that users understand the risks entailed by the different types of stablecoins.

Money-like stablecoins, particularly if used at scale, would require par redeemability at all times, anchored in low-risk reserves and credible backstops. In practice, this would probably require reserve asset pools consisting of high-quality liquid assets with minimal credit and liquidity risk (such as central bank money). These would need to be supported by adequate regulation and mechanisms that provide intraday liquidity and backstop redemptions under stress.[38] Absent redemption frictions, some form of standing facility access or equivalent support would be necessary to contain runs and prevent destabilising fire sales of reserves.[39]

Stablecoins operating as investment instruments would relax par redeemability in favour of investment style features, with more limited payments functionality. In a design resembling securities, issuers could hold a broader set of reserves, accept deviations from par in the secondary market similar to ETFs and impose redemption fees or gates to manage liquidity mismatches.[40] Such designs align better with a store of value use case, including demand for FX exposure in EMDEs, but they are ill suited as means of payment precisely because transactions would require "questions asked". The greater distance from par would probably limit their integration with retail payment schemes, not to mention wholesale market settlement. From a regulatory perspective, use cases contained within crypto markets may be able to function with less stringent price stability and moneyness standards, but instead with a focus on investor protection, disclosure, market conduct and containment of spillovers to traditional markets.

Box C

Regulatory frameworks for stablecoins

Regulatory frameworks for stablecoins are taking shape across jurisdictions, with a focus on setting safeguards to minimise risks to user protections and financial stability. In this context, a comparison of jurisdictions where regulatory frameworks have been developed or are already in effect – the European Union (EU), Hong Kong SAR, Japan, Singapore, the United Kingdom and the United States – highlights common pillars of par redemption, fully backed reserves and restrictions on interest to holders.[1] Approaches diverge in redemption conditions, reserve composition, central bank access and the calibration of capital. For cross-border activity (eg multi-jurisdictional issuers), such differences may shape business models and the channels through which risks transmit, underscoring the value of continued international monitoring and, where appropriate, greater consistency in regulatory outcomes.

Redemptions. Across major jurisdictions, frameworks for fiat-referenced stablecoins converge on mandatory redemption at par, but differ in timelines and fee treatment. In the EU, e-money tokens must be redeemed promptly and free of charge at one-to-one value in fiat, with limited scope for fees only after recovery plans are triggered. In Hong Kong, holders have a statutory right to par redemption, with requests processed within one business day and subject to reasonable fees, including pro rata claims on reserve assets in insolvency. In Singapore, issuers of regulated single-currency stablecoins must provide a direct legal claim for par redemption within no more than five business days, with any conditions reasonable and disclosed upfront. In Japan, issuers of electronic payment instruments must ensure redemption at face value in fiat under specified terms, although no numeric deadline is prescribed. In the UK, for sterling systemic stablecoins the Bank of England proposes same-day redemption at par, with fees permitted only if fair, transparent and proportionate. In the US, the GENIUS Act requires timely redemption policies with clear, pre-disclosed fees and elevates holders' priority over reserves in bankruptcy.

Reserve assets. Reserve requirements are anchored in full coverage across all six jurisdictions but vary in composition, custody and concentration. Under the EU regime, reserves must fully cover outstanding tokens, with a minimum share held as deposits at banks and the remainder in segregated low-risk and currency-matched assets. Hong Kong requires segregated, high-quality and highly liquid assets held in trust with qualified custodians, with over-collateralisation as a prudential buffer and coverage at or above par at all times. Singapore mandates reserves at least equal to outstanding stablecoins, denominated in the peg currency and held in cash, cash equivalents or very short-maturity government and high-grade supranational debt, segregated in trust with permitted custodians. Japan requires issuers to hold funds corresponding to outstanding instruments, with fund transfer service providers using cash and government or other bonds coupled with statutory segregation, and trust-type issuers holding demand deposits (with forthcoming permission to hold a portion in short-term government bonds). Last year's consultation by the Bank of England proposes that systemic sterling stablecoins maintain at least 40% of backing as unremunerated central bank deposits and up to 60% in short-dated UK government securities, with reserves ring-fenced under statutory trust and kept in the UK. The US GENIUS Act prescribes identifiable one-for-one reserves consisting of US currency, Federal Reserve balances, insured bank deposits, short-dated US Treasuries, certain Treasury-backed repos and qualifying government money market instruments, with strict limits on rehypothecation.

Remuneration. Restrictions on remuneration to holders apply broadly across jurisdictions. The EU prohibits issuers and service providers from paying interest or similar returns on holdings of e-money and asset-referenced tokens. Hong Kong similarly bans interest or yield linked to holding period, par value or market value. Singapore's framework treats regulated single-currency stablecoins as non-interest-bearing instruments intended for payments rather than investment. In Japan, the framework does not contemplate interest to holders. In the UK, the Bank of England proposes that systemic stablecoin issuers do not pay interest to coin holders. In the US, the GENIUS Act prohibits permitted issuers from paying interest or yield solely for holding or using stablecoins.[2]

Central bank accounts. Access to central bank accounts and facilities is generally restricted, with targeted exceptions to support resilience and redemption. In the EU, non-bank issuers typically lack access to central bank services, although licensed e-money institutions, including those issuing stablecoins, are eligible for TARGET accounts for payment system participation. Hong Kong and Singapore do not provide stablecoin issuers with central bank accounts or facilities. Japan confines access to the Bank of Japan's accounts to eligible financial institutions under separate law. The UK proposes granting systemic issuers access to an unremunerated deposit account at the Bank of England for holding backing assets and is considering lender-of-last-resort access, alongside expectations for direct payment system connectivity. In the US, eligibility for Federal Reserve accounts remains governed by existing statutes, though the Federal Reserve has sought comments on a special purpose payment account prototype for eligible institutions to support clearing and settlement.

Capital. Capital requirements range from explicit minima to tailored prudential expectations reflecting business models and risks. Under EU rules, non-bank issuers of e-money and asset-referenced tokens must hold own funds equal to at least €350,000 or a proportion of reserves or fixed overheads, with banks subject to their existing capital regimes and significant tokens facing more stringent standards. Hong Kong SAR sets a paid-up share capital floor for issuers, complemented by broader prudential and conduct requirements. Singapore requires the higher of S$1 million or 50% of annual operating expenses as base capital, alongside liquid asset buffers calibrated to recovery and wind-down needs. Japan applies issuer type-specific prudential regimes, with banks and trust companies under their sectoral frameworks and other issuers required to maintain sound financial condition to meet obligations. The UK proposes an approach for systemic issuers that is aligned with the Principles for Financial Market Infrastructures,[3] with capital sized as the higher of the cost of recovery from the largest plausible loss event or six months of operating expenses, and with both capital and reserves held domestically. The US GENIUS Act mandates that regulators set capital standards that are sufficient to ensure ongoing operations and may include tailored buffers, while clarifying that bank capital rules do not automatically extend to a bank subsidiary's stablecoin operations.

[1] See also the findings of the Financial Stability Board's thematic peer review on global regulatory frameworks (FSB (2025)). [2] Non-issuing third parties may, subject to applicable constraints, be allowed to provide remuneration or similar benefits on holdings or related activities. [3] See CPMI-IOSCO (2012).

Macro-financial implications of stablecoins

If, despite current design challenges, stablecoins began to play a key role in the financial system, as some industry estimates predict, a variety of macro-financial effects could arise.[41] These effects would depend in part on the composition of stablecoin reserves and the corresponding adjustment by the banking sector and other market participants.[42] Additional effects, including on fiscal space, could arise from sizeable foreign demand for stablecoins.

Scenarios for stablecoin reserve assets

Stablecoins' reserve asset composition plays an important role in shaping the macro-financial implications of stablecoin adoption. Three stylised scenarios in a closed economy are considered below. They entail simplified reserve allocations relative to the more diversified portfolios of current issuers (Graph 1.B). In a first scenario, issuers hold only wholesale deposits at banks; in a second, they hold short-dated government bonds (eg treasury bills); and in a third, issuers hold central bank reserves. These scenarios illustrate the varying implications in terms of their first-round effects and subsequent macroeconomic adjustments that could affect credit provision, financial stability and the interaction with monetary and fiscal policy.

The first-round effects are shown as simple, static balance sheet relationships (Graph 4). Each scenario features a distinct immediate impact, as illustrated by the example of a $100 purchase of stablecoins by households with the corresponding amount debited from households' bank deposits.[43]

In the bank deposit reserve scenario, households' purchases of stablecoins displace retail deposits (–$100). These are recycled as wholesale deposits from the

The first-round balance sheet effects of introducing stablecoins under different reserve asset scenarios[1]

Graph 4

Bank deposit reserve scenario

Stablecoin issuer: Assets	Stablecoin issuer: Liabilities	Banks: Assets	Banks: Liabilities	NBFIs (ex SC issuers): Assets	NBFIs (ex SC issuers): Liabilities
+$100 deposits	+$100 stablecoins		–$100 HH deposits		
			+$100 SC deposits		

Government bill reserve scenario

Stablecoin issuer: Assets	Stablecoin issuer: Liabilities	Banks: Assets	Banks: Liabilities	NBFIs (ex SC issuers): Assets	NBFIs (ex SC issuers): Liabilities
+$100 t-bills	+$100 stablecoins	**–$25 t-bills**	–$100 HH deposits	**–$75 t-bills**	
			+$75 NBFI deposits	+$75 deposits	

Central bank reserve scenario

Stablecoin issuer: Assets	Stablecoin issuer: Liabilities	Banks: Assets	Banks: Liabilities	NBFIs (ex SC issuers): Assets	NBFIs (ex SC issuers): Liabilities
+$100 CB reserves	+$100 stablecoins	**–$100 CB reserves**	–$100 HH deposits		

CB = central bank; HH = household; NBFI = non-bank financial institution; SC = stablecoin; t-bills = treasury bills.

[1] Stylised scenarios, showing the initial impact of a $100 purchase of stablecoins by households with the corresponding amount debited from households' bank deposits. All scenarios assume that households use existing deposits to purchase stablecoins rather than, for example, selling assets to banks or obtaining a bank loan, which would imply the creation of additional deposits. The government bill reserve scenario assumes that the stablecoin issuer, using the receipts from the issuance of stablecoins to households, purchases $75 worth of treasury bills initially owned by other NBFIs and $25 initially held by banks. The central bank reserve scenario assumes that the stablecoin issuer can hold reserves at a central bank account, which is currently not possible for stablecoin issuers without a banking licence in many jurisdictions (see also Box C).

Source: BIS.

stablecoin issuer (+$100) back into the banking system (Graph 4, top row). The first-round effect is a compositional shift in banks' liabilities even as the total size of deposits remains unchanged: granular, often unremunerated, retail deposits decline and are replaced by concentrated, potentially more rate-sensitive wholesale deposits from the issuer. Banks' asset levels are initially unchanged at the sector level, but liquidity metrics deteriorate on average. This is because regulatory run-off rates for wholesale deposits are higher than for retail deposits (reducing the Liquidity Coverage Ratio (LCR)) and wholesale deposits are considered a less stable source of medium-term funding (reducing the Net Stable Funding Ratio (NSFR)).[44]

The government bill reserve scenario (Graph 4, middle row) involves a further step. The stablecoin issuer uses its deposits (–$100) to purchase treasury bills (+$100) from other non-bank financial institutions (NBFIs) (–$75) and banks (–$25). This results in an increase in these NBFIs' deposits at banks, with the net change in banks' deposits equivalent to the amount of treasury bills sold by the banks themselves. As in the previous scenario, banks' liquidity position weakens due to the rebalancing of funding from retail to wholesale deposits, with the government bill reserve scenario also featuring a decline in high-quality liquid assets (HQLA).

In the central bank reserve scenario, households' purchases of stablecoins not only reduce retail deposits (–$100) but also lower banks' reserves with the central bank – the most liquid asset – by the same amount (–$100). Reserves are now credited to the issuer's central bank account (Graph 4, bottom row). These shifts weaken banks' liquidity position, on average. The relative strength of the impact across the three scenarios depends on the banking sector's initial position.

Macroeconomic implications

All three scenarios feature an initial weakening of the banking sector's funding position, potentially triggering adjustments by banks that could affect credit provision. Clearly, the effects will depend strongly on the distribution of the impact across banks and available alternatives to bank credit. They will also depend on the degree to which stablecoins substitute or complement current means of payments and stores of value. Predictions about macroeconomic adjustments are therefore uncertain, and quantitative projections will necessarily need to rely on various modelling assumptions (Box D).[45]

Credit provision and financial stability

Stablecoin demand can affect credit provision and financial stability. Rising competition for funding from stablecoins would generally imply rising pressure on banks to raise deposit rates, increasing banks' funding costs. As the marginal cost of bank lending increases, banks would probably reprice loans and rebalance their assets in favour of more liquid ones to reestablish their original liquidity metrics. If stablecoin issuers' deposits with banks were segregated to protect coin holders, their usability for banks' internal treasury purposes would be further reduced, intensifying the pressure on banks' liquidity management. A substitution of retail with wholesale deposits at the aggregate level, most visible in the bank deposit reserve scenario, could also imply distributional effects; larger banks could benefit from relatively cheaper access to wholesale funding markets and would more likely be recipients of fund inflows from stablecoin issuers. Credit to small and medium-sized enterprises (SMEs), if primarily supplied by smaller banks, could thus be adversely affected.[46]

The three scenarios outlined above could have different implications for financial stability. In the government bill reserve scenario, sizeable holdings of bills by stablecoin issuers would raise the possibility of asymmetric, outsize effects on sovereign yield curves during episodes of large redemptions. In a run, fire sales of reserve assets would transmit stress to money markets. In the bank deposit reserve scenario, stress originating from the banking sector could, in the extreme, result in flight-to-safety flows into stablecoins, with banks' greater reliance on wholesale funding amplifying the risk of deposit outflows. In such a situation, the fact that the total amount of deposits remained unchanged at the system level might offer only partial relief, since stablecoin issuers would probably keep their deposits at only a few large institutions. In the central bank reserve scenario, users might consider the stablecoin a close substitute for central bank money. This would raise the risk of large, rapid reallocations of liquidity between banks and stablecoin issuers in times of stress.[47] Of course, the central bank could be in a position to re-intermediate funds to solvent banks against collateral.

To the extent that a greater share of credit would be intermediated by NBFIs, the nature of overall credit supply in the economy might change. On the one hand, procyclicality in lending might increase, since NBFI funding costs and risk appetite tend to be closely tied to market conditions, although to varying degrees across different types of NBFIs.[48] At the same time, the elasticity of credit supply in the economy might fall, as NBFIs do not create credit as elastically as banks.[49] Past episodes have underscored that liquidity mismatches in NBFIs can trigger runs and fire sales, frequently requiring central banks to act as market-makers of last resort to contain systemic stress (see Chapter II). That said, the riskiness of NBFIs varies significantly between different types of institutions and between individual intermediaries.

Competitive effects on intermediation can also deliver benefits to users. By compressing excess margins and raising deposit remuneration, stablecoin competition can reduce payment fees and raise households' and firms' interest income. In response, banks would tend to cut operating costs, invest in digital capabilities and pass through policy rates more swiftly, outcomes that can improve the allocation of credit in the economy over time. While adjustments in the financial sector are difficult to anticipate, historical experience suggests that when new competitors emerge, incumbent intermediaries adapt to sustain lending while offering improved and less costly services. These effects may offset, to a degree, the headwinds to loan supply. Indeed, financial history shows that banks were consistently able to adapt and defend their position in the financial system whenever they faced competition from financial innovation, such as from MMFs or online payment platforms.[50] Finally, the crypto ecosystem itself could play a growing role in credit provision, partly compensating for any disintermediation of the traditional financial system.

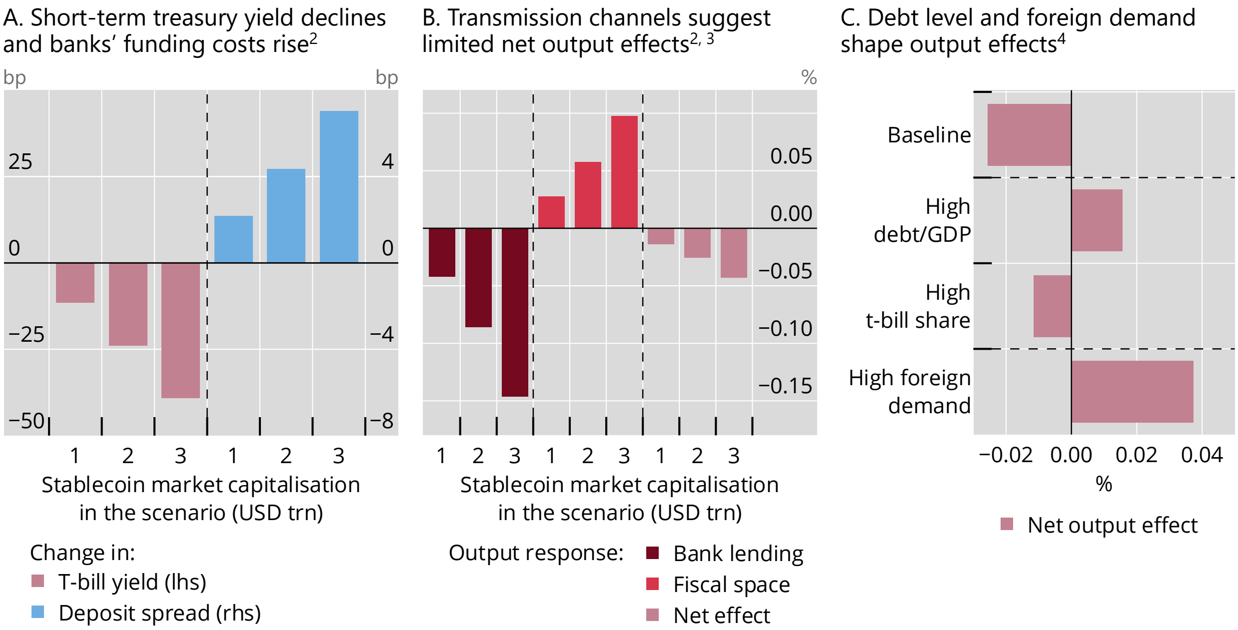
Fiscal space

Under the government bill reserve asset scenario, changes in stablecoin demand can further affect fiscal space. Empirical evidence suggests that increases in stablecoin market capitalisation can push down the short end of sovereign yield curves in issuing jurisdictions.[51] Persistent growth in stablecoins could therefore lower short-term funding costs of some sovereign issuers, providing additional fiscal space to cut taxes or expand spending, and potentially easing aggregate financing conditions by compressing money market yields. In addition, collateral available for repo transactions could shrink. At the same time, frequent stablecoin in- and outflows may weigh on money market liquidity and heighten the volatility of repo rates and yields. Moreover, widespread use of stablecoins for tax evasion could constrain fiscal space by lowering fiscal revenues, while any net reduction in demand for central bank reserves or cash would lower seigniorage revenue.

The additional fiscal space could exert expansionary macroeconomic effects in the issuing jurisdiction, countervailing possible adverse credit supply effects. But quantifying the macroeconomic effects of stablecoins is difficult given the uncertain path of future stablecoin adoption and attendant adjustments by banks and other market participants. In a quantitative macroeconomic model calibrated on US data (Box D), the output effects of stablecoins operating through fiscal space turn out to be positive under the assumption that stablecoin issuers hold government bills as reserve assets, even when accounting for the loss in seigniorage. The net effect on aggregate economic activity is, however, negative in the medium term because the adverse effect on bank funding costs and lending tends to outweigh the benefits of additional fiscal space in the issuing jurisdiction (Graphs 5.A and 5.B). Yet even for substantial scales of potential stablecoin adoption (a market capitalisation of $1 trillion, $2 trillion or $3 trillion), the projected effect is quantitatively modest. Further simulations suggest that the net impact on economic activity remains small when other types of stablecoin reserve assets are considered (Box D). The output analysis abstracts from liquidity benefits arising from stablecoins. Once these benefits are accounted for, stablecoin adoption could conceivably increase welfare even if there is no increase in aggregate output.

In the event of a significant increase in stablecoin adoption, fiscal parameters could play an important role for the macroeconomic effects (Graph 5.C, second and third bars). High levels of government debt and, to a lesser extent, strong reliance on

Quantifying the macroeconomic effects of stablecoin adoption[1] Graph 5



[1] Simulations are based on a quantitative New Keynesian model with stablecoin issuers, calibrated to US data; see Box D and additional notes to graphs for details. [2] The model-implied impact on the shown macroeconomic variable for each of three scenarios for future total stablecoin market capitalisation ($1 trillion, $2 trillion and $3 trillion). [3] Projected contributions of the bank lending and fiscal space channels to aggregate output, as well as the resulting net output effect. [4] Three margins relative to the baseline model with stablecoin market capitalisation of $2 trillion (panel B; baseline).

Source: Hofmann, Kaldorf and Rottner (2026).

short-term financing raise the benefits of additional demand from stablecoins for the issuing jurisdiction. They improve the overall output effects for the domestic economy, relative to the baseline case (first bar).

Foreign demand for domestic stablecoins, eg reflecting store of value use cases, also has a bearing on domestic macroeconomic implications. Foreign purchases of domestic stablecoins involve net capital inflows. This affects both the bank lending and fiscal space channels. When stablecoin issuers hold government bills as reserve assets, higher foreign demand (for a given volume of stablecoin issuance) implies less upward pressure on bank funding costs. This raises domestic output under broad stablecoin adoption (Graph 5.C, fourth bar).

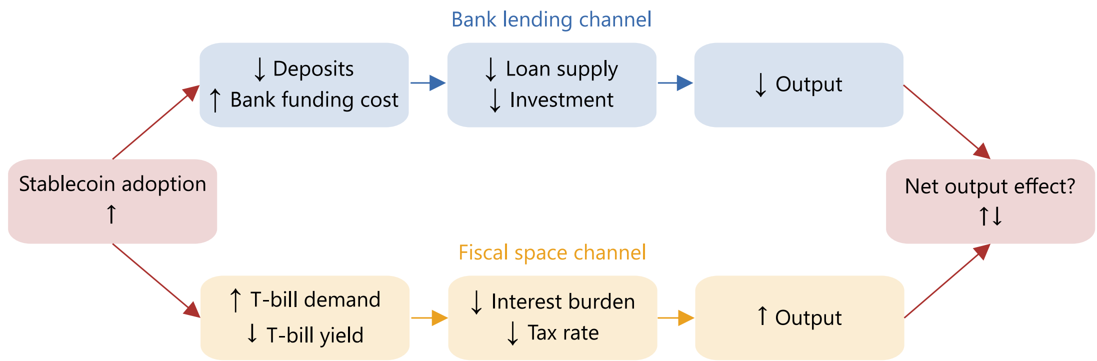
Box D

Quantifying the impact of stablecoins on bank lending and fiscal space

A quantitative model can help to evaluate the channels through which stablecoins could affect macroeconomic outcomes, while taking account of adjustments in a general equilibrium setup.[1] The model considered features domestic and foreign households, a domestic banking sector, (domestic) stablecoin issuers, non-financial firms and the government sector. Domestic households hold stablecoins as an unremunerated alternative to bank deposits and cash, reflecting transactional or other services stablecoins provide. In addition to domestic demand, there can also be foreign demand for stablecoins, depending on the considered scenario.

Stablecoin issuers are required to invest their issuance proceeds in specific asset classes, depending on the underlying regulatory environment. The main scenario considers only short-term government bonds as the stablecoin reserve asset, while alternative scenarios also include wholesale deposits and central bank reserves. To capture the potential fiscal implications of stablecoins, the model features a government that finances expenditure with distortionary taxes and issues short- and long-term debt. The government also receives seigniorage revenues from the central bank, which issues cash.

Bank lending and fiscal space channels of stablecoin adoption[1] Graph D1



[1] Model-implied channels through which stablecoin adoption affects key macroeconomic variables.

Source: Hofmann, Kaldorf and Rottner (2026).

Two countervailing channels that determine the macroeconomic impact are at work in this framework: a bank lending channel and a fiscal space channel (Graph D1). The bank lending channel arises because stablecoin demand by households raises deposit rates and increases banks' funding costs. As a consequence, banks tighten their credit supply to the real economy, which, in turn, lowers investment and output.[2] The fiscal space channel, in turn, arises due to stablecoin issuers' demand for short-term government bonds. As stablecoin issuers bid up the price of treasury bills, the government's funding costs decline. Since the government finances itself with distortionary taxes in the model, the additional fiscal space allows the government to either lower taxes or increase spending, both of which raise output.

As the two channels operate in opposite directions, the overall effect of stablecoins on output is both qualitatively and quantitatively ambiguous (Graph D1). Calibrating the model to data for the United States, however, provides some tentative indication of possible net effects on output by quantifying the impact of the underlying channels. The aggregate output response is modestly negative under the assumption that stablecoins hold government bills as reserve assets but high public debt and high foreign demand can change the direction of this effect (Graphs 5.B and 5.C in the main text). At the same time, the effect depends to some extent on stablecoin design and the regulatory environment.

A bank deposit reserve scenario, in which stablecoin issuers hold some of their reserve assets as wholesale deposits at banks, could result in a more negative impact. There is less additional demand for short-dated government bonds coming from stablecoin issuers, which mutes to some extent the positive effects of the fiscal space channel. An additional effect could come from increased funding costs as banks partially shift from retail to wholesale funding, resulting in increased financing costs for banks.

In a central bank reserve scenario, the model suggests that the net output effect of widespread stablecoin adoption could turn positive. In this case, the stablecoin issuers are assumed to hold a fraction of their issuance proceeds in unremunerated central bank reserves. The impact on the treasury bill and deposit market is largely unchanged relative to the case with only government bills as the reserve asset. However, the allocation of stablecoin profits changes. As the reserves are assumed to be unremunerated, the central bank receives the seigniorage revenue associated with stablecoin issuance. The fiscal authority can use the additional revenue to reduce distortionary taxation, which strengthens the fiscal space channel and generates positive output effects. The effect weakens for remunerated reserves. If the central bank remunerated reserves at the same rate that stablecoin issuers earn on short-dated treasury bills, the central bank reserve scenario would become equivalent to the government bill reserve scenario.

[1] The model is based on Hofmann, Kaldorf and Rottner (2026), which contains the full model description. [2] The model accounts for households benefiting from higher deposit rates due to increased competition between banks and stablecoin issuers, but this effect is second-order.

Monetary policy transmission

The implications for monetary policy transmission are shaped by the resulting funding mix in the financial system. A shift from retail to wholesale funding typically increases the pass-through of policy rates to banks' marginal funding costs and lending rates, thereby strengthening the interest rate sensitivity of loan supply but increasing dispersion across institutions depending on their funding structures. Greater competitive pressure on deposit pricing could also reinforce pass-through to retail rates, affecting transmission on the saving margin.[52]

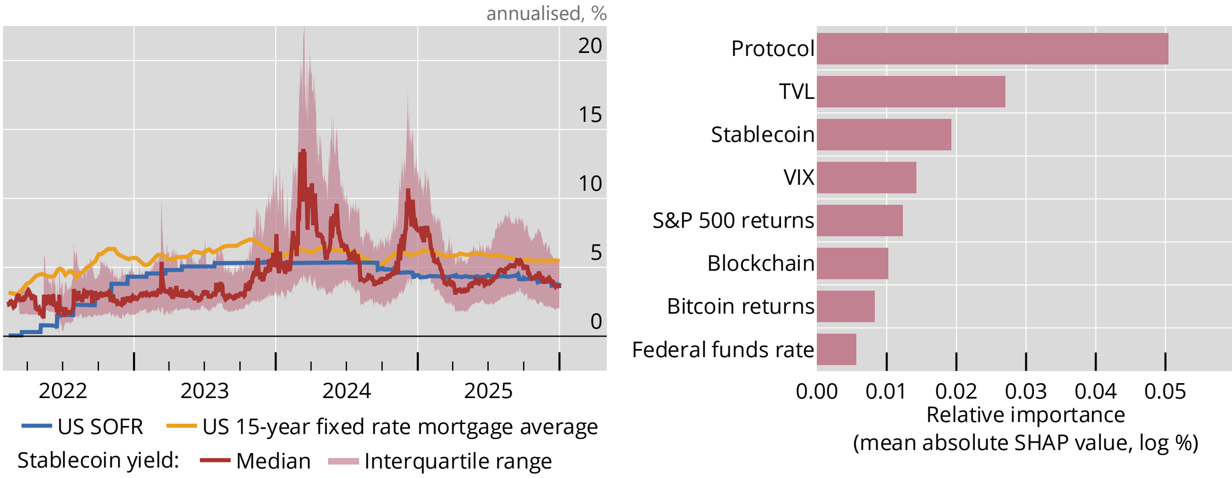
A transition to greater stablecoin adoption could increase uncertainty about monetary policy transmission – similar to the effect of other structural changes in the financial system. To the extent that stablecoins are unremunerated, changes in policy rates would not directly affect stablecoin holders, which as such weakens transmission. Even so, such changes alter the opportunity cost of holding stablecoins, which can indirectly affect stablecoin demand. Moreover, the crypto ecosystem has developed arrangements through which stablecoin holders can earn returns. One example is decentralised finance (DeFi) lending pools, where depositors' stablecoins are lent to borrowers. The evolution of yields earned in lending pools, however, has remained largely disconnected from traditional US interest rates (Graph 6.A). These yields also vary widely across pools. This is because they are strongly driven by DeFi-specific factors, most notably the features of the lending protocol that define how yields are calculated (Graph 6.B). As a result, DeFi yields tend to react mostly to events that directly impact the crypto ecosystem, such as USDC's substantial deviation from parity in March 2023. By contrast, US policy rate changes that steer benchmark rates

Limited pass-through of changes in interest rates to stablecoin yields from lending pools in decentralised finance[1]

Graph 6

A. Stablecoin yields from lending pools are highly volatile…

B. …and are largely shaped by DeFi-specific factors[2]



DeFi = decentralised finance; SHAP = Shapley additive explanation; SOFR = secured overnight financing rate; TVL = total value locked; VIX = Cboe Volatility Index.

[1] See additional notes to graphs for details. [2] Mean absolute SHAP values, representing each factor's importance for predicting log stablecoin yields. Factors specific to the DeFi pool include the pool's protocol (ie the smart contract determining the terms of lending), the total value locked, the stablecoin used for lending and the blockchain on which the pool operates.

Sources: Federal Reserve Bank of St Louis; Bloomberg; CoinGecko; DefiLlama; BIS.

in core markets do not seem to strongly affect stablecoin yields to date, pointing to persistent market segmentation.[53]

Stablecoin dollarisation

The macroeconomic effects of stablecoins can reach beyond the borders of the jurisdiction in whose currency a stablecoin is issued. In addition to affecting macroeconomic conditions in the domestic economy, foreign demand for stablecoins has implications in other economies, particularly EMDEs. Experiences from previous decades with dollarisation can provide some clues as to how dollarisation through stablecoins might evolve. At the same time, stablecoin dollarisation can give rise to new challenges and transmission channels.

To some degree, the demand for foreign currency-denominated stablecoins ("foreign stablecoins") resembles more conventional financial dollarisation, in which households hold foreign currency deposits or cash as a store of value. Deposit dollarisation has tended to rise during periods of macroeconomic instability, including episodes of high inflation and sovereign debt strains (Graph 7.A). While data on cross-country stablecoin flows are probably less reliable than those on foreign currency deposits and are available for only a few years, the evidence so far suggests that similar factors are relevant for stablecoin flows (Graph 7.A).[54] If stablecoins are used for cross-border payments, eg remittances, this may add to the stock of (foreign) stablecoins. And if past experience of deposit dollarisation is taken as a guide, dollarisation through stablecoins could prove quite persistent (Box E).

Dollarisation through stablecoins also raises new challenges. For one, foreign stablecoins provide a readily accessible substitute for domestic currencies in jurisdictions with restrictions on foreign currency deposits. Relatedly, rising demand for foreign stablecoins (ie US dollar-referenced stablecoins held by non-US residents) could also lead to more volatile, and potentially more sizeable, capital flows.

Box E

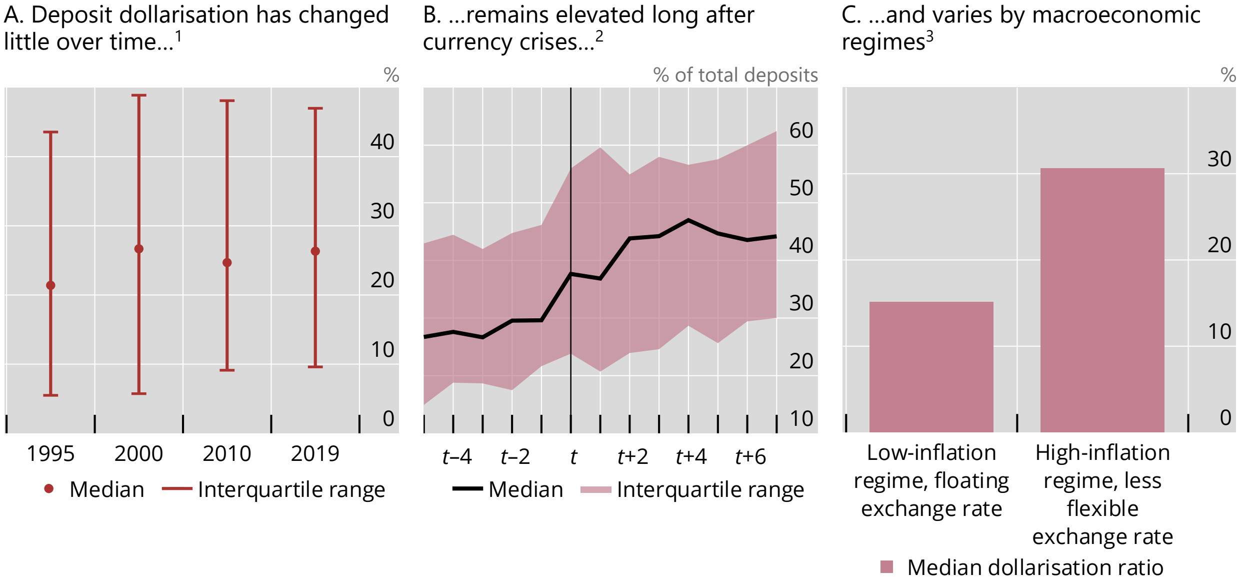
Deposit dollarisation and stablecoins

The use of foreign currency-denominated stablecoins ("foreign stablecoins") as a store of value bears some resemblance to conventional dollarisation. Holding foreign currency assets as a store of value – be they deposits or cash – has a long tradition, especially in a number of emerging market and developing economies (EMDEs). Indeed, the prevalence of deposit dollarisation – which shares certain similarities with dollarisation via stablecoins in its current form – has changed little over the past decades (Graph E1.A).[1] Foreign stablecoins could lead to further dollarisation by providing fast and round-the-clock access to foreign currency assets, potentially bypassing domestic foreign exchange (FX) restrictions and capital controls. The possible use of foreign stablecoins for remittances could add to these trends.

Macroeconomic and financial instability have been some of the key factors associated with higher deposit dollarisation in the past (Graphs 7.A and E1.B). Foreign currency deposits provide a hedge against domestic currency depreciations. And while volatile inflation should curb the share of domestic currency in the domestic depositor's portfolio, a higher volatility of the *real* exchange rate – taking into account differences in price levels between countries – discourages holding foreign currency.[2] Various market failures and low institutional credibility have also accounted for dollarisation trends.[3] Meanwhile, FX restrictions imposed on regulated banking systems have curtailed the use of foreign currency deposits – something that stablecoins circulating with limited regulatory and supervisory oversight can challenge (Graph 7.B).

Deposit dollarisation over time

Graph E1



[1] Distribution of the ratio of foreign currency deposits to total deposits (dollarisation ratio) for a sample of up to 136 economies, subject to data availability, including both advanced economies and EMDEs. [2] Dollarisation ratio for the years before and after currency crises (year *t*; 25 crises in 25 EMDEs during 1981–2005). [3] Median dollarisation ratio for years corresponding to different macroeconomic regimes in a sample of 107 EMDEs during 1995–2019. High-(low-)inflation regime refers to years where the five-year moving average of the inflation rate is at or above (below) 5%. The exchange rate arrangement classification is based on Iltzetzki et al (2019, 2021).

Sources: Ha et al (2023); Hofmann, Mehrotra and Paulick (2026); Ilzetzki et al (2019, 2021); Levy-Yeyati (2021); Mueller et al (2025).

What are the implications of deposit dollarisation for monetary policy? While a smaller part of domestic liquidity would be directly affected by domestic interest rates, monetary policy would have additional wealth effects as exchange rate changes affect the domestic currency value of foreign currency deposits. Monetary expansions have tended to have greater inflation effects in economies with higher deposit dollarisation, perhaps in part as the possibility to shift to foreign currencies is readily available.[4] While shifts to foreign currency deposits could make domestic money demand unstable, dollarisation generally has not impeded inflation control.[5] That said, if an increase in foreign currency deposits subsequently leads to capital outflows out of the domestic banking system, monetary policy's impact on bank lending could weaken.[6]

Experience with deposit dollarisation suggests that, once established, it tends to persist. As one example, the share of foreign currency deposits remains sizeable for several years following currency crises (Graph E1.B). Several factors are likely to matter, including the time and effort it takes to build trust in a currency that has been battered by inflation and crises. There could also be costs in opening and closing accounts, and behavioural inertia that prevent further shifts. That said, a number of economies have seen declines in deposit dollarisation in the past. Sound policy regimes have played a role in de-dollarisation, including the introduction of inflation targeting regimes (Graph E1.C). Prudent fiscal policy and legislation to safeguard monetary policy independence, together with financial market development and prudential regulations to encourage the use of local currency instruments, are also likely to have been important.[7]

While deposit dollarisation bears some resemblance to the store of value use of stablecoins, other forms of dollarisation – also familiar from the past – might also become increasingly relevant. Liability dollarisation, such as the foreign currency-denominated loans of firms and households, has historically been a major source of financial fragility when borrowers do not have foreign currency income. It may have led to more procyclical monetary policy in downturns, due to considerations that lower policy interest rates could lead to steep depreciations and adverse balance sheet effects.[8] If greater foreign stablecoin use leads to higher borrowing in foreign currency, vulnerabilities could rise significantly. Finally, should the use of foreign stablecoins expand to settlement of real transactions ("real dollarisation"), this could further impair the reach of domestic monetary policy, weaken monetary transmission and curtail monetary sovereignty.[9]

[1] Deposit dollarisation here refers to any foreign currency deposits, be they in US dollars or other currencies (for example, euro deposits prevalent in central and eastern Europe), and regardless of their maturity. The share of foreign currency deposits in total deposits can be considered a de facto measure of deposit dollarisation, as opposed to de jure measures such as adopting a foreign currency as legal tender. [2] See Honohan and Shi (2001). [3] See Levy-Yeyati (2006). [4] See Levy-Yeyati (2006). [5] See Reinhart et al (2014). [6] See Balino et al (1999). [7] See Levy-Yeyati (2021) [8] See Hausmann and Panizza (2010). [9] See Cipollone (2026).

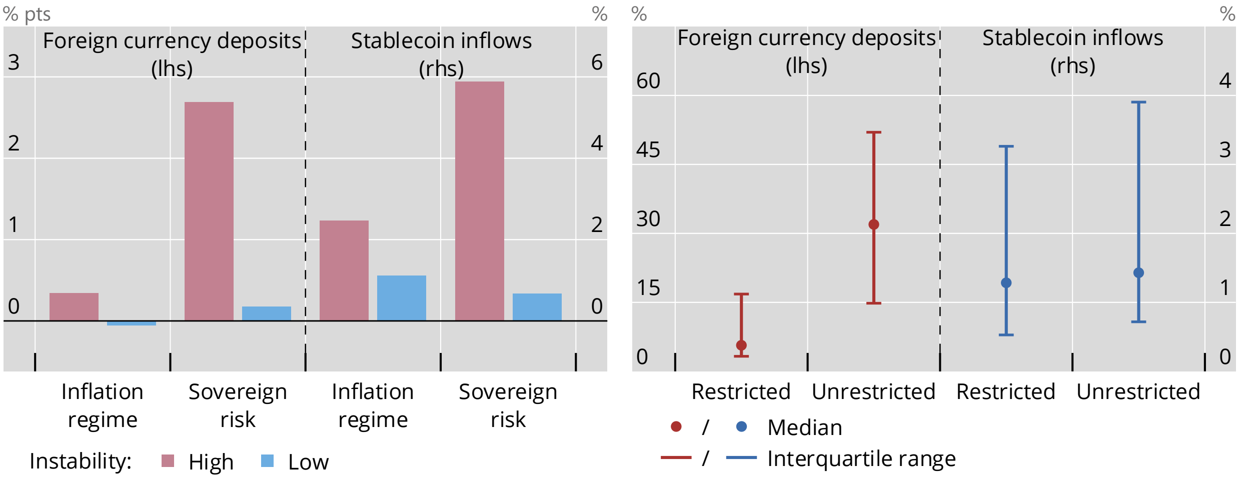
Circulating partly outside the regulatory perimeter, stablecoins may be used as a conduit to evade capital controls. Controls on cross-border stablecoin transactions can mitigate capital flow management circumvention to a degree, particularly when domestic intermediaries are barred from facilitating unapproved coins.[55] A number of countries, especially EMDEs, have set up restrictions on cross-border stablecoin use. Such measures are, however, likely to be imperfect given the digital bearer-like nature of tokens and the availability of unhosted wallets. While deposit dollarisation has been lower in economies with approval requirements on domestic foreign currency deposits, inflows into stablecoins have been broadly similar in economies with or without restrictions on stablecoin use between residents and non-residents (Graph 7.B).

Stablecoins vs foreign currency deposits[1]

Graph 7

A. Periods of macroeconomic instability see larger flows to foreign currency deposits and stablecoins[2]

B. Restrictions on stablecoin use may have smaller reach than those on foreign currency deposits[3]



[1] See additional notes to graphs for details. [2] Average annual change in the foreign currency deposit ratio and average annual gross stablecoin inflows as a share of GDP in different macroeconomic environments. [3] Share of foreign currency deposits and gross stablecoin inflows to GDP under different regulations.

Sources: Auer, Lewrick and Paulick (2025); Ha et al (2023); Hofmann, Mehrotra and Paulick (2026); Kose et al (2022); Levy-Yeyati (2021); Mueller et al (2025); IMF; Chainalysis; BIS.

The adoption of foreign stablecoins could also link conventional FX markets with the crypto ecosystem. Recent evidence points to rising inflows of non-US dollar fiat currencies into stablecoins (Graph 8.A). These flows can weaken the domestic fiat currency in the spot market (Graph 8.B, red line) and reveal frictions to arbitrage between the crypto and conventional FX markets (blue line). They may also increase the cost of buying dollars through the FX swap market.[56]

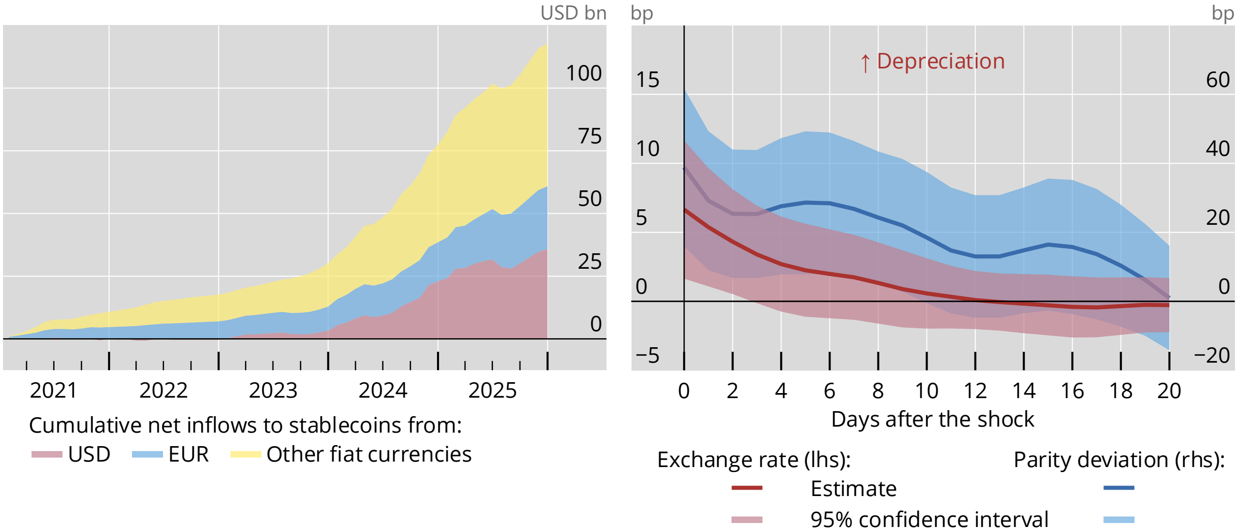
If foreign stablecoin usage expands from the (still limited) store of value holdings to sizeable transaction settlement, the domestic currency's unit of account role would erode, further weakening the reach of domestic monetary policy. Foreign monetary conditions – those of a stablecoin's reference currency – would exert larger influence on the domestic economy. This would be particularly problematic when the monetary stances in the domestic and foreign economy – and their business and financial cycles – were not aligned. Even when stablecoins do not pay interest directly, any indirect remuneration to holders would still be affected by foreign monetary policy. Widespread digital currency substitution could sharply curtail domestic monetary policy autonomy.[57]

Notwithstanding these risks, currency substitution pressures can, at the margin, sharpen incentives to entrench sound macroeconomic policies and upgrade domestic payment options. The ready availability of foreign stores of value raises the premium on ensuring price stability, maintaining prudent fiscal positions and setting up efficient domestic payment systems. Past de-dollarisation episodes suggest that sustained improvements in policy frameworks and the development of markets and instruments in local currency can gradually reverse foreign currency use. In this sense, the challenge posed by foreign stablecoins could catalyse reforms that ultimately strengthen monetary sovereignty.[58]

Demand for foreign stablecoins connects FX markets with crypto ecosystem[1] Graph 8

A. Increasing inflows to US dollar-pegged stablecoins from non-USD currencies

B. Stablecoin inflows depreciate the local currency and widen stablecoin-fiat currency parity deviations[2]



[1] See additional notes to graphs for details. [2] Impact of a 1% increase in net inflows into US dollar-pegged stablecoins; regressions based on 27 fiat currencies. Cumulative change for the exchange rate. The parity deviation refers to the price gap between obtaining dollar exposure by purchasing US dollar-pegged stablecoins and obtaining the corresponding exposure through traditional FX markets.

Sources: Aldasoro, Beltran and Grinberg (2026); BIS.

Moving towards the next-generation monetary system

The discussion in the previous sections highlights that stablecoins present both benefits and challenges. They leverage the technological innovations of tokenisation, enabling features such as programmability and atomic settlement. However, widespread adoption of stablecoins in their current form would also come with macroeconomic and financial risks. Most critically, they threaten financial integrity and provide channels for regulatory evasion, while also raising dollarisation risks in EMDEs. More generally, stablecoins in their current form do not uphold the properties that support trust in money, which might dent the foundations of monetary stability if, despite their drawbacks, stablecoins were adopted widely.

As digital innovations mature, the central policy challenge is to connect novel instruments to the core monetary and financial system without diluting the foundational properties that underpin trust in money. The aim is to reinforce the foundations of payment and settlement even as new capabilities are introduced. Harnessing tokenisation to improve the rails of the monetary system calls for careful design choices that safeguard the properties of money while enabling efficiency gains. The assessment of cost and benefits should be holistic, recognising how policy choices may influence the payment market structure as well as the broader macroeconomic and financial environment in which novel payment instruments operate at both domestic and global levels.

While moving towards the next-generation monetary system, policymakers need to act on two fronts. One involves addressing the shortcomings of existing stablecoin arrangements to mitigate risks. The second relates to the broader vision of bringing technological innovation into the two-tiered system.

Addressing issues in current stablecoin arrangements

Technological advances and regulatory measures play a crucial role in addressing the risks associated with current stablecoin arrangements. A number of risks can be mitigated with policy interventions. Key measures include capital requirements for stablecoin issuers and liquidity requirements for stablecoin reserve holdings, such as foreseen in many regulatory frameworks. Other measures include instituting protections for coin holders, exploring conditional access to central bank liquidity under stringent safeguards and establishing well defined disclosure and resolution mechanisms for issuers. When complemented by strong risk management practices that avoid moral hazard, such measures could reduce the risk of runs and strengthen the resilience of stablecoin arrangements. At the system-wide level, enhancing regulatory capabilities, monitoring and infrastructure will be key to assessing financial stability risks.[59]

Certain structural vulnerabilities related to stablecoins present more complex challenges. For example, the use of stablecoins on public permissionless blockchains introduces significant challenges in addressing financial integrity concerns, such as AML/CFT. New tools harnessing artificial intelligence and the public ledger of transactions can provide solutions,[60] but the integrity challenges remain substantial. Furthermore, fragmentation across multiple blockchains introduces new operational risks, hinders interoperability and limits the realisation of network effects, posing additional obstacles to the development of a resilient, cohesive and efficient system. Alongside these concerns, there is a need to adequately regulate the underlying platforms. In particular, in public permissionless blockchains, governance lacks transparency and accountability remains unclear.

At the same time, as with any structural change in the financial system, policymakers should be mindful of new vulnerabilities that may build up. For example, a setup in which stablecoins hold government debt at scale may disincentivise necessary fiscal consolidation in the issuing economy, raising risks for monetary policy down the road (see Chapter II). A rapid sale of reserve assets by stablecoins may prompt the need for central bank intervention. Economies with high demand for foreign stablecoins, in turn, could potentially face tighter financial conditions.

Notably, many challenges are shared across jurisdictions. In this light, there is particular value in international cooperation to tackle risks. Already, regulatory cooperation on financial integrity is well developed, and multiple standard-setting bodies are cooperating on the implications of stablecoins for their own area of work.

Cooperation on the regulation and supervision of stablecoin issuers is an area of further development. This could include cross-border supervisory colleges and resolution planning for significant issuers, common data templates and cooperation arrangements that explicitly cover financial stability. Where regulatory regimes deliver comparable outcomes, proportionate mutual recognition could also reduce frictions while preserving safeguards and legal clarity.[61]

Bringing technological innovation into the two-tier system

Another priority for policymakers is to integrate technological advances into the two-tier system. Indeed, the possibility to provide programmability, atomic settlement and fast payments is not limited to stablecoins. Providing central bank money in new ways – either as tokenised central bank reserves on a programmable platform or via synchronised links to reserve accounts – could anchor par redeemability of tokenised private money and support network effects by helping to overcome fragmentation. Adverse macroeconomic implications associated with widespread adoption of poorly designed stablecoins could be mitigated, while still enabling new competitors to challenge banks and other incumbent financial institutions.

Several initiatives showcase how the benefits of tokenisation could be reaped. Pilot projects have explored how jurisdiction-specific policies and regulatory requirements can be encoded in a shared protocol for cross-border compliance. They have also addressed how actors can collaborate on analysis while respecting data sovereignty. Together, these efforts indicate that next-generation correspondent banking can increase the speed of cross-border payments, reduce errors and failures, and strengthen integrity.[62] In parallel, banks are experimenting with tokenised deposits to automate margining and intraday liquidity. These experiments show how programmability can reduce pre-funding and operational frictions within prudential perimeters.

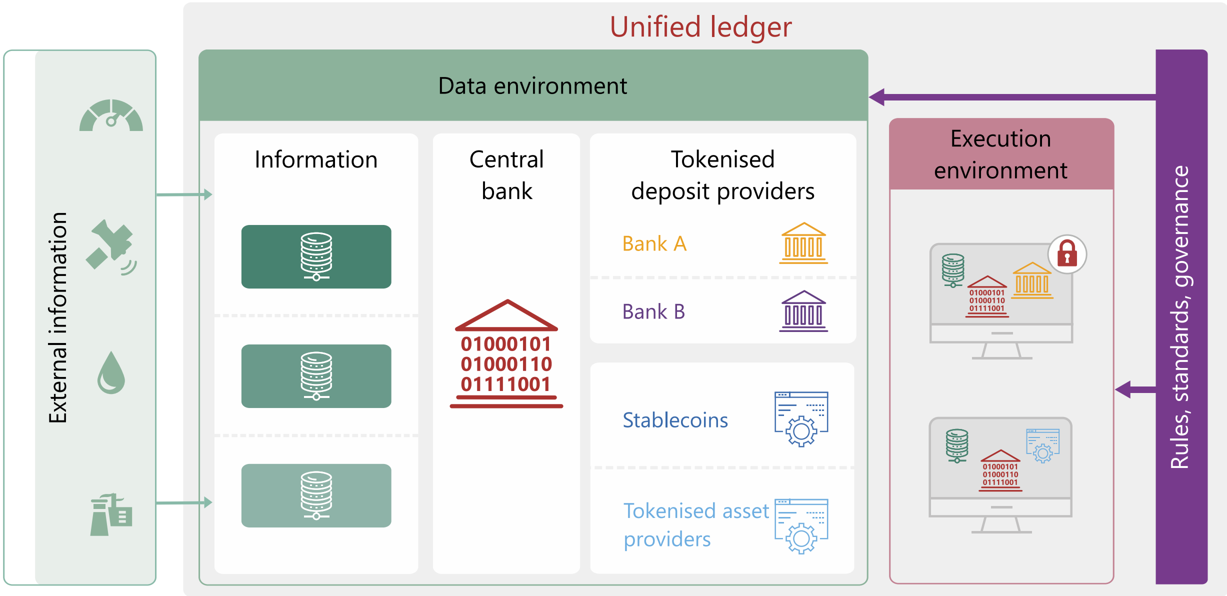
The potential benefits of tokenised cross-border rails may extend to collateral mobility and liquidity management more broadly. Programmability can enable continuous collateral management and support intraday repos. Tokenised wholesale operations in simulated settings have also shown how monetary policy operational frameworks could be codified in smart contracts.[63]

A proposed organising principle is for tokenisation to build on the two-tier architecture anchored by central bank reserves, while upgrading functionality through programmable platforms. A "unified ledger" that integrates tokenised central bank reserves, tokenised commercial bank money, other regulated private money and tokenised assets in the same venue can combine messaging, reconciliation and asset transfer (Graph 9). It can also support atomic settlement in a manner consistent with legal finality. There may be different ways to implement interoperability across such an ecosystem, including by establishing a system of fully interoperable ledgers. Within this design, maintaining trust in the currency and fostering the safety and efficiency of the payment system remain core central bank functions: central bank money is the trust anchor and the basis for the singleness of money, and it needs to be available as a settlement asset wherever this is desirable for the public interest and practical.[64]

A unified ledger could support a diversity of regulated private monies – including tokenised commercial bank deposits and, where appropriately designed and supervised, other reserve-backed private instruments – provided that participation is conditioned on strong safeguards. These would include redeemability at par against central bank money at the wholesale layer, robust governance and risk management, transparency over backing assets and compliance with financial integrity and consumer protection requirements. By allowing contingent execution of actions – such as delivery versus payment (DvP) – on programmable rails, such platforms can reduce operational frictions and errors. They can also shorten settlement cycles and lower pre-funding needs, while enabling healthy private innovation at the user interface level.[65] Interoperability across platforms, in turn, requires careful

Unified ledger, anchored in central bank money, to host different forms of tokenised private money

Graph 9



The lock indicates that some operations may be performed on confidential encrypted data.

Sources: Shin (2023); BIS.

architectural choices that balance composability against governance and data requirements.[66]

A key question for central banks is whether and how to provide central bank reserves for token arrangements in ways that preserve singleness, elasticity and integrity, while ensuring secure, scalable infrastructures that harness positive network effects. Delivering on this objective entails choices about the technical form of central bank reserves, the governance and access model for tokenised platforms, liquidity facilities and legal and data frameworks. Each choice involves trade-offs in the innovation process and must take account of potential system-wide implications, underscoring the need for a holistic assessment of macro-financial interactions. In this context, the prototype developed in Project Agorá illustrates how public-private collaboration can provide a common framework to identify, assess and balance these trade-offs.

The technical form of central bank money on tokenised rails could, among other options, be based on linking existing reserve accounts to a programmable platform or issuing tokenised claims on reserve accounts. Platform governance and access models will be pivotal in safeguarding monetary sovereignty and financial integrity while fostering competition and inclusion. Defining who may hold and use tokenised central bank money – and under what prudential and conduct requirements – is central to ensuring stability and maintaining a level playing field. Broader non-bank access to central bank settlement accounts, or liquidity facilities and backstops, can bring benefits in some cases, but it also raises questions on risk management, supervision and necessary guardrails. Clear governance arrangements for operating the platform where central bank money is provided, including roles and responsibilities for the public and private sectors, are necessary to ensure resilience, accountability and alignment with the foundations that establish trust in money.

Platform resilience and interoperability are preconditions for scaling safely for, and coexisting with, legacy systems. Tokenised rails must meet high cyber and operational standards, with robust contingency procedures, backup capabilities and error handling mechanisms for edge cases such as erroneous instructions or disputed transactions.

In the meantime, further enhancements and innovations in the conventional payment ecosystem can and should continue. For wholesale transactions, upgrades to real-time gross settlement (RTGS) systems can deliver tangible benefits, including basic forms of programmability, without necessarily moving towards a fully tokenised financial system. Moreover, a further extension and alignment of RTGS operating hours with retail fast payment systems could further enhance the safety of the payment ecosystem within a currency area. Interlinking fast payment systems, further aligning operating hours and messaging standards and other enhancements to correspondent banking could further improve cross-border payments.[67]

Overall, a promising way forward is a coordinated, phased approach in which central banks promote innovation while preserving the institutional foundations of trust in money. By offering tokenised central bank reserves and facilities on permissioned, interoperable platforms, and by articulating clear governance and access policies, central banks can anchor a next-generation monetary and financial system that improves the old while enabling the new. Public-private collaboration, internationally consistent approaches and standards and rigorous experimentation will be critical to ensure that tokenised rails generate virtuous network effects domestically and across borders. Such an approach can be calibrated to national circumstances and, by design, should take into account cross-border spillovers through close cooperation among authorities.

Conclusion

Policy design should ensure that any form of money, public or private, is safely integrated into the monetary system. For any role touching systemic payment systems or wholesale settlement, preserving the singleness of money requires timely redeemability into central bank money at par value and elastic provision of liquidity. Within a two-tier architecture, central banks can offer tokenised central bank reserves, providing the anchor for tokenised deposits and other – well designed and regulated – tokenised monies. When governance and access policies are well specified, this can help to harness the opportunities of tokenisation while maintaining trust in the monetary and financial system.

Policy choices should be guided by a holistic perspective that evaluates how design features for new instruments – stablecoins or others – may shape the payment ecosystem as well as macroeconomic and financial outcomes. Any projections assuming widespread adoption of new instruments and infrastructure remain uncertain given the financial system's flexibility in adjusting to new conditions. But scenario analysis can inform about the range of possible outcomes on credit provision, policy transmission and international spillovers.

As work progresses towards the future monetary system, policymakers should foster innovation while preserving confidence in money. Achieving this requires coordination across technical, legal and policy domains. Given the global footprint of digital finance, deeper cooperation among authorities will be needed to support consistent, interoperable outcomes. Aligned implementation of international recommendations and practical tools for supervision – such as information-sharing arrangements, supervisory colleges and common data/reporting templates – can close monitoring gaps and support financial stability assessments.[68] International cooperation will be indispensable to avoid harmful fragmentation or regulatory arbitrage. It will also help to ensure consistent regulatory outcomes and to promote financial stability. Through sustained collaboration, authorities can enable private innovation to flourish on safe and efficient rails that serve the public interest.

Endnotes

1 The classic statement of money as memory is Kocherlakota (1998). A more modern exploration of similar ideas can be found in Auer, Monnet and Shin (2025).

2 On the "no questions asked" principle, see Holmström (2015). On money as a unit of account, see Doepke and Schneider (2017).

3 This refers to the receiver's assessment of the money itself, not the identity of the payer. Modern anti-money laundering and countering the financing of terrorism (AML/CFT) requirements oblige intermediaries to verify customer identities and monitor transactions for suspicious activity, but these checks concern the parties to the transaction rather than the creditworthiness or acceptability of the settlement medium.

4 For example, during the so-called wildcat banking era in the United States, banks issued notes that often traded at a small discount when far from their home state. These deviations appeared harmless until a shock hit confidence; then discounts widened abruptly, merchants refused unfamiliar notes and commerce stalled. What had looked like a tolerable approximation to singleness proved fragile. On 19th century US banking, see Rolnick and Weber (1982) and Rolnick et al (1998), among others.

5 On the importance of intraday credit, see Borio (1995). Bagehot (1873) provides the classic treatment of lender of last resort; Mehrling (2011) restates it for modern times in terms of the dealer of last resort. For a recent assessment of the importance of elasticity in the monetary system, see Banerjee et al (2025).

6 Of course, singleness may fail for bank deposits above deposit insurance limits, when there is no explicit or implicit government backing to ensure that all deposits are interchangeable at par value.

7 Monetary sovereignty can be broadly defined as the ability of a jurisdiction to make decisions and exercise influence over the monetary system within its borders.

8 See Claessens and Rice (2026).

9 On settlement infrastructures, see CPSS (2003); on the importance of central bank independence, see Carstens (2025).

10 See Goodhart (1988) and BIS (2023, 2025).

11 On programmability and atomic settlement, see BIS (2023, 2025); on the comparison of tokenised deposits and stablecoins and implications for the singleness of money, see Garratt and Shin (2023).

12 Other frictions include mismatched message formats in cross-border payments, settlement fails in securities markets, fragmented KYC standards, reliance on batch processing at core processors and limited application programming interface access for third-party innovators.

13 See eg Feyen et al (2021) for an overview.

14 DLT refers to a family of shared data and execution technologies that maintain a synchronised, tamper-evident record across multiple nodes through

consensus. Tokenisation is the representation of physical or intangible assets as digital tokens on a programmable platform (see eg Aldasoro et al (2023)).

15 A smart contract is machine-executable code that automatically enforces predefined actions on a programmable platform when stated conditions are satisfied (see eg BIS-CPMI (2024)).

16 See Maechler (2025). The distinction is by design choices and governance, not the underlying technologies. In practice, there can be further features of networks that go beyond the bounds of this simple distinction, including public permissioned networks; these are not dealt with here in depth.

17 See eg Schär (2024) and the references therein for a discussion of the benefits and challenges associated with public permissionless blockchains.

18 A blockchain is a type of distributed ledger that organises records into discrete data bundles that are cryptographically linked in sequence. Blockchains can be operated in permissionless or permissioned settings and are one among several designs within DLT.

19 See Garcia Ocampo et al (2026).

20 Tokenised deposits are digital representations of commercial bank money recorded on a programmable platform. They confer a direct claim on the issuing bank and are redeemable at par for central bank money of the same currency.

21 Hybrid designs increasingly blend permissionless and permissioned features. For example, some private, permissioned layers run on top of public permissionless base networks, aiming to combine broad reach and programmability with stronger governance, privacy and compliance. "Network of networks" approaches have also been explored. These connect separate permissioned applications while keeping sensitive data compartmentalised and enabling coordinated transactions across them. Permissioned networks of networks, for instance, seek to connect applications while preserving privacy and enabling atomic transactions across sub-ledgers, representing a hybrid approach under regulated governance.

22 For a discussion of frictions in cross-border payments and the potential for tokenisation to address some of these, see eg G7 Working Group on Stablecoins (2019), CPMI (2022), Garratt et al (2024) and BIS (2025).

23 For more details on Project Agorá, see BIS (2026).

24 This chapter focuses on fiat-backed stablecoins, the largest share of stablecoins in terms of market capitalisation and trading volume. See Kosse et al (2023) for a discussion of other types of stablecoins.

25 See eg CCAF-Fii (2026) for an overview.

26 A hosted wallet is a custody arrangement in which a third-party provider (eg an exchange or platform) manages private keys and assets on behalf of the user. An unhosted wallet (also called self-hosted, self-custody or non-custodial) is a custody arrangement in which the user controls the private keys and assets (see eg BIS-CPMI (2024) and the sources discussed therein).

27 On the use of stablecoins, see also Auer, Lewrick and Paulick (2025), Aldasoro, Frost and Ito (2026), Chainalysis (2026a) and Schär et al (2026). As on-ramps and off-ramps for leveraged crypto trading, stablecoins facilitate position-taking and leverage (Gorton et al (2025)). Tokenised investment funds have emerged as a

yield-bearing complement on public permissionless networks, but liquidity remains thin and participation typically restricted to allow-listed holders (see eg Aquilina et al (2025) and Azar et al (2025)).

28 It is often claimed that cross-border remittances are an area where stablecoins are attractive. In practice, the costs of on-ramps and off-ramps to stablecoins mean that the total, or all-in, cost of a cross-border stablecoin transaction may be as high or higher than a bank transfer. See Du et al (2026).

29 Adjusted annual stablecoin transaction volumes are from Chainalysis (2026b). According to company data, Clearing House Interbank Payments System (CHIPS), the largest private sector US dollar clearing and settlement network, clears and settles about $2.2 trillion in domestic and international payments each business day. According to Visa data, cited in Aldasoro, Frost and Ito (2026), adjusted stablecoin transaction values are closer to $390 billion annually – less than 1% of the total value.

30 For empirical analysis of illicit use of stablecoins, see eg Chainalysis (2026a) and Griffin et al (2025). Risks related to the use of unhosted wallets are discussed in eg FATF (2026).

31 For a discussion of liquidity and capital requirements to enhance regulation of stablecoins and multifunction cryptoasset intermediaries, see Goel et al (2026) and Garcia Ocampo et al (2026), respectively.

32 Good practices include placing explicit AML/CFT obligations on stablecoin issuers and intermediaries, programmable controls such as allow-/deny-listing and freeze/burn functions, proactive secondary market monitoring with blockchain analytics, and enhanced measures for interactions with unhosted wallets (FATF (2026)). Allow-listing approaches are applied by tokenised investment funds but pose additional operational challenges (Aquilina et al (2025)).

33 For a discussion of compliance challenges and policy implications associated with unhosted wallets and the use of stablecoins, see eg Minto et al (2026), Aldasoro et al (2025a), BIS (2025) and CPMI (2023).

34 In addition to settlement in central bank money, robust regulatory and supervisory frameworks for issuers of private money also contribute to the singleness of money (BIS-CPMI (2024)).

35 See eg Adrian et al (2025) and Aldasoro et al (2025a).

36 See Borio et al (2026).

37 Flaws in design could lead to a variety of operational and financial issues (see eg Aronoff et al (2026) and Eidan et al (2026)). For instance, unintended creation or destruction of tokens could destabilise token supply, while frozen balances might prevent users from accessing their funds. Failures in bridges can block or misroute cross-chain transfers, potentially causing delays or even permanent loss of assets. Oracles might feed incorrect external data that lead to transactions being wrongly paused or rerouted. Additionally, unclear governance over upgrade authority could delay critical actions by issuers, leaving the system vulnerable to inefficiencies.

38 See Bank of England (2025).

39 See Aldasoro et al (2024) and Goel et al (2026).

[40] See Huang and Keister (2025) and Voellmy (2021).

[41] Some forecasts by the industry see the stablecoin market at $2 trillion–4 trillion by 2030 (see eg Citi (2025)).

[42] A growing number of studies are assessing the effects of stablecoin issuance on the financial sector, and of different scenarios for remuneration of stablecoins. See eg Cong (2025), Nigrinis (2025) and CEA (2026).

[43] The stylised examples are based on the simplifying assumption that households' balance sheet size remains unchanged.

[44] See eg Bouis et al (2024) and Coste (2024) for a discussion. If, under an alternative assumption, banks create additional deposits by eg purchasing assets (eg treasury bills) from households, which then use these deposits to purchase stablecoins, the balance sheet size of the banking sector increases (+$100 treasury bills on the asset side; +$100 deposits from the stablecoin issuer on the liability side). This would mitigate, but typically not offset, the decline in the banking sector's LCR and would be largely neutral for the NSFR under standard assumptions.

[45] For an analytical perspective centred on balance sheet accounting, see Benigno and Hofmann (2026).

[46] Altavilla et al (2026) model how deposit rate competition from stablecoins raises banks' marginal funding costs and shifts portfolios towards liquid assets. Bindseil (2026) analyses the liquidity implications of segregating stablecoin reserve deposits at banks. Wang (2025) examines distributional effects from a retail-to-wholesale funding shift and potential SME credit headwinds. Liao and Caramichael (2022) map how reserve composition and inflow sources affect credit intermediation, finding that two-tier, bank deposit reserve scenarios are broadly neutral for lending, whereas central bank reserve scenarios risk deposit migration and credit disintermediation.

[47] Ahmed and Aldasoro (2025) document Treasury bill yield sensitivity to stablecoin inflows and outsized redemption effects. Goel et al (2026) highlight run externalities via fire sales of reserve assets. Altavilla et al (2026) point to amplification when flows are intermediated through concentrated wholesale markets. Bindseil (2026) notes risks when stablecoins are perceived as close substitutes for central bank money.

[48] Financial stability implications will depend on the robustness of the NBFIs filling the void in credit supply. Empirical research suggests that NBFIs may curtail lending by more than banks during episodes of stress (Aldasoro et al (2025b)).

[49] If stablecoins were to become a widely accepted means of payment, stablecoin issuers could create credit to some degree, eg by purchasing government bonds in the primary market (Borio et al (2026)).

[50] See Hempel et al (2026).

[51] See Ahmed and Aldasoro (2025).

[52] On the potential effects on the pass-through of changes in policy rates, see eg Altavilla et al (2026) and Hofmann, Kaldorf and Rottner (2026). Monetary policy adjustment may also be needed to offset unintended effects on the monetary policy stance that could arise due to stablecoin adoption. In the central bank reserve scenario, the compression of banks' reserve holdings and retail liabilities

tends to shrink bank balance sheets and could curtail credit supply (see eg Bouis et al (2024) and Clouse (2024)). To preserve aggregate reserves in the banking sector and maintain its policy stance under "non-abundant" reserve frameworks, the central bank may need to expand assets by lending to banks or purchasing securities.

53 See also Barbon et al (2026) for an analysis of impediments to policy rate pass-through to DeFi lending pools.

54 See eg Auer, Lewrick and Paulick (2025) and Hofmann, Mehrotra and Paulick (2026) on the drivers of deposit dollarisation and stablecoin flows.

55 For a discussion of the risk of evasion of capital controls, see Graf von Luckner et al (2024) and Auer, Lewrick and Paulick (2025). He et al (2022) discuss related policy implications. Reuter et al (2025) show that lower frictions in cross-border payments can increase capital flows.

56 See Aldasoro, Beltran and Grinberg (2026).

57 See Benigno et al (2022).

58 See eg Waller (2025).

59 See eg Bindseil (2026), FSB (2025) and Goel et al (2026).

60 See Aldasoro et al (2025c).

61 See also FATF (2026), FSB (2025), CPMI (2023) and CPMI-IOSCO (2022).

62 See BIS (2024a; 2024b).

63 See Federal Reserve Bank of New York-BIS (2025) and BIS (2025).

64 For previous discussions, see BIS (2023; 2025).

65 A tokenised "trilogy" of central bank reserves, commercial bank money and government bonds could provide a robust foundation for network effects on programmable rails. Tokenised central bank reserves anchor singleness and provide elastic settlement liquidity, tokenised deposits allow private innovation at the customer interface and tokenised government bonds may unlock efficiencies in securities settlement and collateral management. By rooting executable money and assets in trusted balance sheets, the trilogy aligns technological advances with the institutional bedrock of the current system (BIS (2025)).

66 Composability is the ability to assemble modular building blocks (eg tokenised money and assets, smart contracts) into higher-order workflows that execute as a single, coordinated transaction.

67 For retail payments, fast payment systems, which allow for real-time or near real-time around-the-clock transfers of funds between end user accounts, are being rolled out in a rising number of jurisdictions. Such systems can have a transformational impact on domestic payment efficiency and financial inclusion (see eg Aurazo et al (2024)). Tokenised central bank money for retail purposes is economically similar and could have similar benefits (Frost et al (2025)).

68 See also FSB (2025).

Additional notes to graphs

Graph 5.A: Projected change in the treasury bill (t-bill) yield and the deposit spread. The latter is a measure of banks' funding costs and is defined as the difference between the deposit rate and the risk-free rate.

Graph 5.C: The three margins are: (i) the public debt-to-GDP ratio rises from 122% to 175%; (ii) the treasury bill share increases from 18% to 24%; and (iii) 50% of stablecoins are held abroad.

Graph 6: Excludes observations for which the stablecoin yield was equal to or below zero or above 50%, or for which the DeFi lending pool's TVL was equal to zero.

Graph 6.B: The underlying regression includes three lags of log yields as control variables for which the results are not shown.

Graph 7.A: For "high instability", the inflation regime comprises years where the five-year moving average of the inflation rate is at or above 5%; sovereign risk comprises years with sovereign debt crises (foreign currency deposits) and years with low sovereign credit ratings (stablecoins). For "low instability", the inflation regime comprises years where the five-year moving average of the inflation rate is below 5%; sovereign risk comprises years without sovereign crises (foreign currency deposits) and years with high sovereign credit ratings (stablecoins). High (low) sovereign credit ratings refer to the three highest (lowest) ratings in Kose et al (2022). For foreign currency deposits, data for 1995–2019; for stablecoins, 2019–23; for up to 190 economies subject to data availability. Data for stablecoin inflows exclude outliers below the 2.5th and above the 97.5th percentiles.

Graph 7.B: Restrictions on foreign currency deposits refer to approval requirements on domestic foreign currency deposits (2000–19); for stablecoins, restrictions on stablecoin use between residents and non-residents (2022–23). Distributions for foreign currency deposits are based on annual data; for stablecoins, sum of gross inflows over 2022–23. The sample covers up to 132 economies.

Graph 8.A: Cumulative sum of daily net inflows from fiat currencies into US dollar-pegged stablecoins (USDT, USDC, DAI and BUSD); sample as in Aldasoro, Beltran and Grinberg (2026).

Graph 8.B: The sample period spans from January 2021 to November 2025.

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