

Investor optimism prevails over uncertainty

Despite lingering risks, investor optimism about the near-term outlook set the tone for financial markets during the review period.¹ The global economy seemed to be heading for a smooth landing, and the results of the US presidential election were conclusive. As a result, stock markets rose and credit spreads narrowed, easing global financial conditions. At the same time, rising government bond yields and an appreciating US dollar tightened them, pulling in different directions. Measures of risk premia and volatility ticked up in bond markets, amid signs that investors were pricing in higher fiscal and (geo-)political risks. However, the markets for risk assets mostly shrugged off these uncertainties and sentiment remained positive on balance.

Government bond yields generally rose, especially in the United States. The economy's strength there continued to surprise on the upside, pushing Treasury yields higher despite two consecutive policy rate cuts. More subdued activity in Europe meant that expectations of future rates were mostly unchanged and yields rose by less. Japanese government bond yields edged up as the Bank of Japan continued on its gradual path of policy normalisation. Rising US yields went along with a surge in the US dollar, a trend that intensified in the wake of the election.

Reemerging concerns about the fiscal situation in several jurisdictions, and quantitative tightening in others, added to the upward pressure on yields. Rising term premia, (more) negative swap spreads and widening sovereign spreads suggested that investors demanded a higher compensation to absorb additional debt supply.

Equity and credit markets posted substantial gains. US stocks reached all-time highs following the election, and Chinese stocks surged early in the review period in response to stimulus announcements. Elsewhere, stock market performance was more subdued. Corporate spreads continued to compress, and in some segments fell to multi-year lows. Buoyant risky asset markets counteracted the effect of rising yields and a strong US dollar on overall financial conditions. At the same time, there were signs that investors remained attuned to downside risks, with the costs of hedging in options markets pointing to lingering future uncertainties.

Financial conditions in emerging market economies (EMEs) tightened. With few exceptions, equity markets declined, currencies depreciated against the dollar and bond yields rose. China's stimulus announcement resulted in positive, albeit short-lived, spillovers to equity markets of EMEs with strong trade links to China. In currency markets, somewhat higher volatility reduced incentives for currency carry trades.

Slowing growth in China was reflected in depressed commodity prices. The impact was stronger in segments such as agricultural commodities and base metals, where demand from China is particularly large. Only the prices of gold and silver continued to rise, before retreating after the US election, possibly reflecting their perceived role as a hedge against geopolitical and inflation risks.

¹ The review period covers 7 September to 2 December 2024.

Key takeaways

- Rapidly rising US yields and a soaring US dollar set the tone for fixed income and currency markets. Moves in other core bond markets followed a similar but more muted path, reflecting diverging macroeconomic conditions across regions.
- Risk-taking continued to be buoyant in equity and particularly credit markets, as investors largely shrugged off (geo-)political risks.
- EME financial conditions tightened, with higher bond yields, declining equity markets and headwinds posed by a stronger dollar.

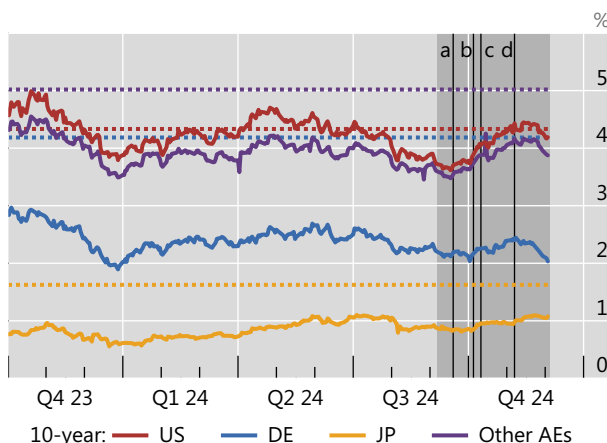
Bond markets diverge as US yields soar

Over the review period, global fixed income markets resumed their divergence on the back of changing perceptions of the future paths of monetary policy and macroeconomic outlooks. While readings generally pointed at inflation converging towards targets, economic activity indicators painted a varied picture, as substantial strength in the United States contrasted with softness elsewhere. Additionally, potential concerns about the fiscal positions in some jurisdictions emerged as another key driver of bond markets. The US dollar appreciated initially with rising US yields and then surged further following the election.

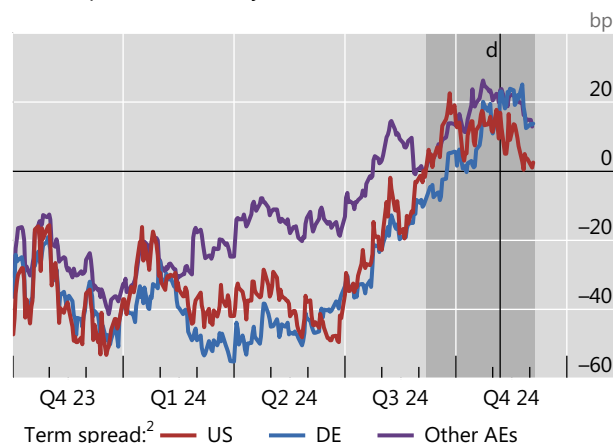
Global bond markets diverge somewhat, with US yields in the lead¹

Graph 1

A. Long-term yields increased...



B. ...and term spreads across advanced economies are now in positive territory



The shaded area indicates 7 September 2024–2 December 2024 (period under review). The dotted horizontal lines in panel A indicate the January 2007–June 2008 average.

^a FOMC rate decision (18 September 2024). ^b US non-farm payrolls release (4 October 2024). ^c US CPI release (10 October 2024). ^d Day after the US presidential election (6 November 2024).

¹ Other advanced economies (AEs) based on simple average of AU, CA and GB. ² Ten-year minus two-year.

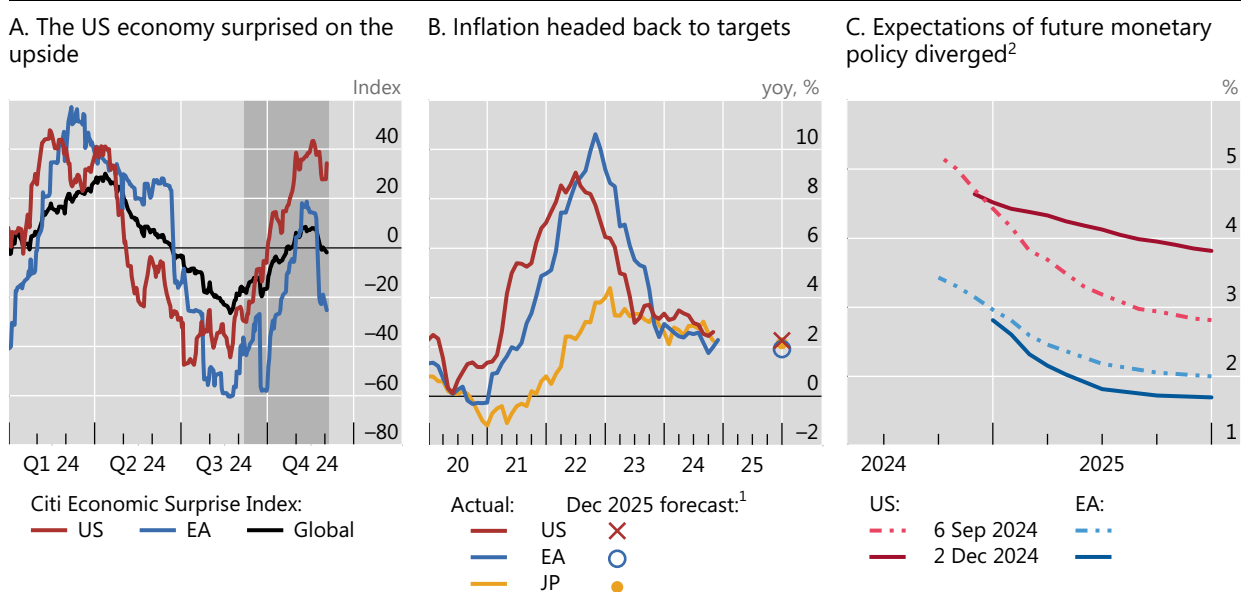
Sources: Bloomberg; BIS.

Long-term yields rose across most advanced economies (AEs), led by soaring US Treasury yields for most of the review period. Despite the Federal Reserve’s 50 basis point rate cut in September, US yields shot up in October. Ten-year Treasury yields rose by over 80 basis points from the trough reached on 16 September, before retracting somewhat late in the review period. Yields in other AEs followed a similar pattern, though with more muted movements overall, particularly in the euro area (Graph 1.A). The upward shift in yields initially went alongside a normalisation of the yield curve. Term spreads turned positive across AEs and yield curves broadly steepened, up until long-term yields retracted somewhat (Graph 1.B).

The macroeconomic backdrop, along with expected monetary policy paths, largely underpinned yield movements. Positive macroeconomic surprises continued to accumulate in the United States, but were more short-lived elsewhere (Graph 2.A). As data releases highlighted a resilient labour market and somewhat persistent inflation (Graph 2.B), market participants lifted the expected 2025 path of the federal funds rate (Graph 2.C). Further upward revisions took place following the US presidential election as markets digested the policy changes which were likely to ensue. By the end of the review period, the US term structure flattened again, as near-term yields rose on expectations of a strong economy and fewer policy rate cuts next year. These revisions coincided with signs of increased uncertainty about the level of terminal rates (Box A).

Revisions to the expected monetary policy paths and resulting yield movements were not as pronounced elsewhere. The macroeconomic backdrop in other major AEs was less benign. With weaker growth expected in the euro area in particular, and with inflation even falling below target in September, investors priced in larger rate cuts by the ECB. In Japan, the central bank signalled that it would continue to normalise policy very gradually, as inflation stayed somewhat above target. Long-term Japanese government bond yields rose modestly during the review period, reflecting gradual policy normalisation by the Bank of Japan.

Economic developments and policy expectations largely drive changes in yields Graph 2



The shaded area indicates 7 September 2024–2 December 2024 (period under review).

¹ November 2024 forecast for December 2025. ² Futures curve of policy rates.

Sources: Bloomberg; Consensus Economics; Macrobond; national data; BIS.

Growing uncertainty about terminal rates

Matteo Aquilina, Marco Lombardi and Sonya Zhu^①

With inflation on track towards targets and global economic activity remaining strong, central banks began easing the policy stance earlier this year. At the same time, the uncertainty over the level at which policy rates will eventually settle has been growing. This box documents how disagreement over “terminal rates” has recently evolved, based on the views of policymakers and professional forecasters.

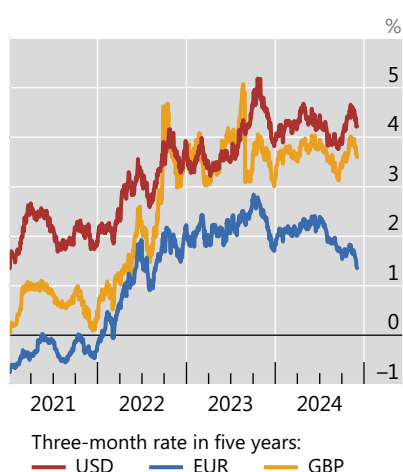
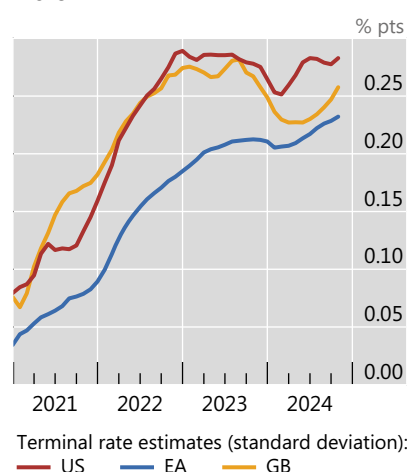
Market participants have held a wide range of views about the short- to medium-term monetary policy outlook since 2021.^② At first, as central banks embarked on policy rate hikes, participants wondered how much tightening would be necessary to rein in inflation. Subsequently, as inflation started declining steadily, market commentary revolved around the question of how long rates would be kept high to ensure plain sailing to targets. More recently, as the easing phase began, the debate in markets has shifted towards terminal rates.

The terminal rate can be viewed as the level of the policy rate that is consistent with inflation at target and economic activity at potential. As such, it is simply the nominal equivalent of the so-called natural rate of interest, or r^* .^③ In this sense, steering policy towards the terminal rate means aiming for a neutral policy stance, ie one that is neither tight nor loose. Similarly to r^* , the terminal rate cannot be observed directly and must be inferred from the dynamic interplay of the variables that help define it: policy rates, inflation and economic activity.

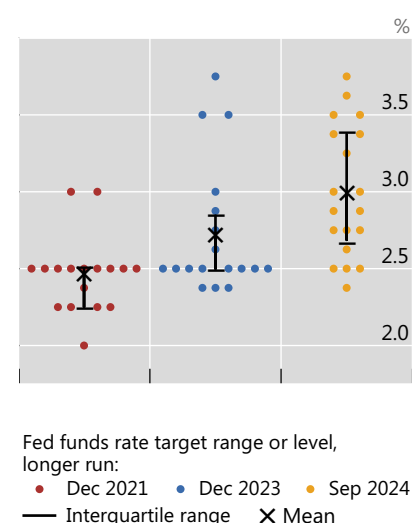
Views of terminal rates among forecasters and policymakers are diverging

Graph A1

A. Forward rates

B. Consensus forecasters disagree more¹

C. Long-term policy rates in the US



¹ For further details on the calculations, see Lombardi, Schimpf and Zhu (forthcoming).

Sources: Lombardi, Schimpf and Zhu, “Heterogenous beliefs and the central bank reaction function”, *BIS Working Papers*, forthcoming; Board of Governors of the Federal Reserve System; Bloomberg; Consensus Economics; authors’ calculations.

The global economy’s apparent resilience despite the sharp policy tightening has led to upward revisions in proxies for terminal rates. Even with the caveat that they also reflect term premia, forward rates give a broad sense of bond market participants’ view of how future short rates will evolve. A reasonable proxy for the terminal rate is the short-term rate expected to prevail five years ahead. Over the past few months, such short-term forward rates rose steadily, back to the levels of late 2023 (Graph A1.A). This has been hinting at a shallower easing trajectory and at an overall higher level of rates at the end of the loosening phase.

In parallel with an upward shift in expectations of terminal rates, the uncertainty surrounding them also increased. One way to gauge this is to consider professional forecasters’ views on the policy stance across different jurisdictions. Professional forecasters in surveys are typically not directly asked about their views on policy rates in the long run, but

one can use their expectations on interest rates, inflation and output to gauge their perceptions of the monetary policy rule, including the perceived level of neutral nominal rates. This can be done by stripping their short-run monetary policy expectations from the component that they ascribe to the cyclical position of the economy, ie their short-run expectations on inflation and output.^④ On this basis, the estimated standard deviation of professional forecasters' perceived terminal rates rose across different jurisdictions from 2021 to 2022 in tandem with inflation. It then started declining somewhat as inflation receded, but has picked up again since mid-2024 in the euro area, the United Kingdom and the United States, even with inflation well on track towards targets (Graph A1.B).

The growing divergence of professional forecasters' views on terminal rates reflects uncertainty about a variety of factors. As argued above, one is the somewhat surprising resilience of economic activity to higher rates. Another relates to the outlook of inflation and to the central banks' expected response to possible future over- or undershooting of targets. But disagreement can also reflect higher uncertainty about the speed and strength of the transmission of monetary policy to economic activity.

The growing uncertainty among professional forecasters also echoes policymakers' own diverging views on terminal rates. This is evident in the United States, where the future policy rate forecasts of Federal Open Market Committee members are regularly disclosed through the Fed dot plot: members' views of the level of policy rates in the *long term* are a reasonable proxy for expected terminal rates. The upward revisions in those rates that took place as the economy repeatedly surprised on the upside coincided with a growing dispersion. At the end of 2023, expected terminal rates were still mostly clustered around 2.5%, as they had been two years earlier. By September 2024, the range had become substantially wider (Graph A1.C).

The growing divergence in views on terminal rates among both policymakers and professional forecasters underscores the challenges central banks face in navigating the current economic waters. Given the associated uncertainties, it also highlights the importance of relying on robust monetary policy frameworks.^⑤

① The views expressed are those of the authors and do not necessarily reflect the views of the BIS. ② See M Aquilina, M Lombardi and S Zhu, "The return of monetary policy uncertainty", *BIS Quarterly Review*, March 2024. ③ For an introductory discussion, see G Benigno, B Hofmann, G Nuño and D Sandri, "Quo vadis, r*? The natural rate of interest after the pandemic", *BIS Quarterly Review*, March 2024. ④ For further details, see M Lombardi, A Schrimpf and S Zhu, "Heterogeneous beliefs and the central bank reaction function", *BIS Working Papers*, forthcoming. ⑤ For an overview of the issues, see BIS, "Monetary policy in the 21st century: lessons learned and challenges ahead", *Annual Economic Report 2024*, Chapter II, 2024.

The US dollar soared and the yen touched lows not seen since late July, but developments in fixed income markets only partly explained these movements. The dollar appreciated with rising US yields early in the review period, but then surged even further on the US election outcome (Graph 3.A), even as US long-term yields retracted somewhat. Among AE currencies, the yen depreciated notably vis-à-vis the US dollar (Graph 3.B), by some measures in excess of what would be expected based on the yield gap in the respective bond markets. Net short positions in yen currency futures started rebuilding (Graph 3.C), suggesting investor positioning for further yen weakness. Typically, short positions by financial investors, especially hedge funds, suggest a rise in yen carry trades. However, this time leveraged funds held a smaller share of yen shorts due to increased volatility making such bets riskier (see below). Thus, the current positioning may primarily reflect greater currency hedging by asset managers holding yen assets.

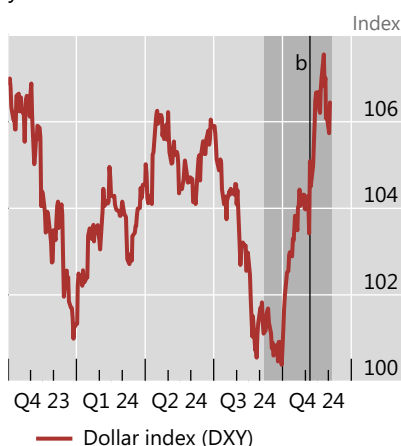
Some indicators in fixed income markets pointed to greater investor uneasiness. For one, the implied volatility of US Treasuries reached the highest level of the year (Graph 4.A) before falling sharply following the election. At the long end of the yield curve, estimates of the term premium edged up through the review period, indicating that investors demanded greater risk compensation for holding long-term US government debt (Graph 4.B).²

² Model-based estimates indicate that the increase in the term premium was not due to inflation risk, which has diminished, but to an increase in the real premium.

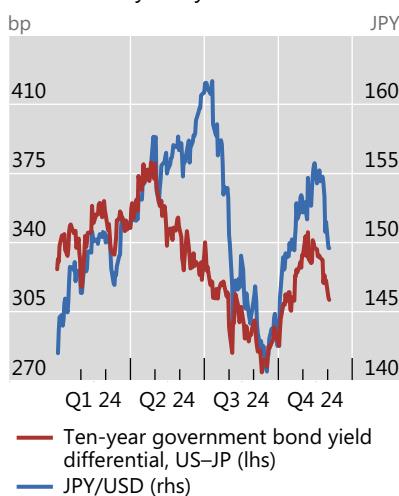
US dollar soars and yen depreciates to levels not seen since July

Graph 3

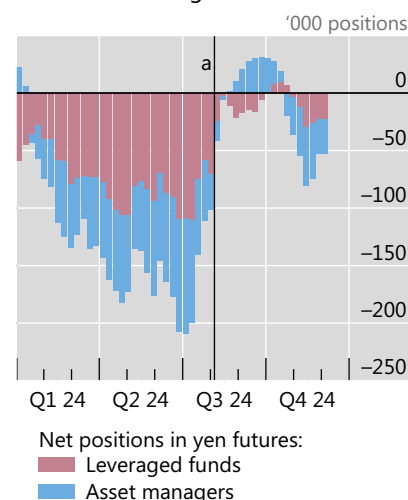
A. US dollar appreciated with rising yields and US election outcome



B. Yen depreciated more than warranted by the yield differential



C. Net short positions in yen futures started rebuilding



The shaded area indicates 7 September 2024–2 December 2024 (period under review).

^a Turbulence in the Japanese equity market (5 August 2024). ^b Day after the US presidential election (6 November 2024).

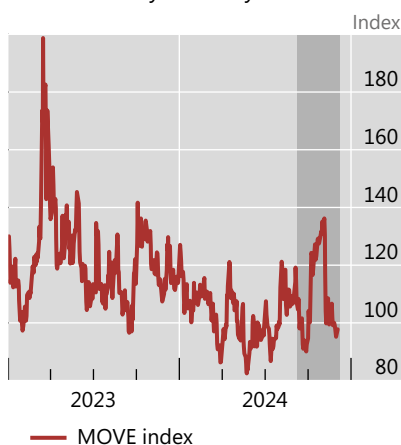
Sources: Bloomberg; LSEG Datastream; BIS.

Higher measures of risk in fixed income markets coincided with tell-tale signs of a possible supply glut of government bonds. Interest rate swap spreads – the swap rate minus the government bond yield – fell rapidly, indicating that government bonds had become relatively cheaper (and their yields relatively higher). The phenomenon was widespread across currencies and maturities, with the euro and Japanese yen spreads joining their US counterparts in negative territory, even at those shorter maturities where spreads had previously been positive (Graph 4.C). Negative

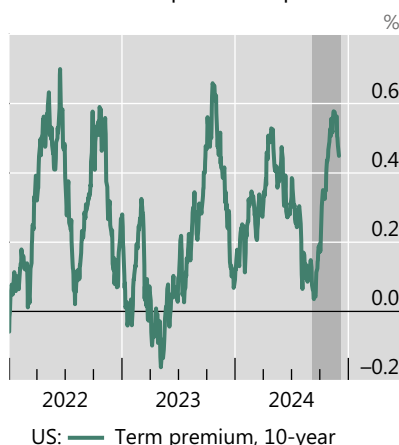
Cautionary signs in fixed income markets

Graph 4

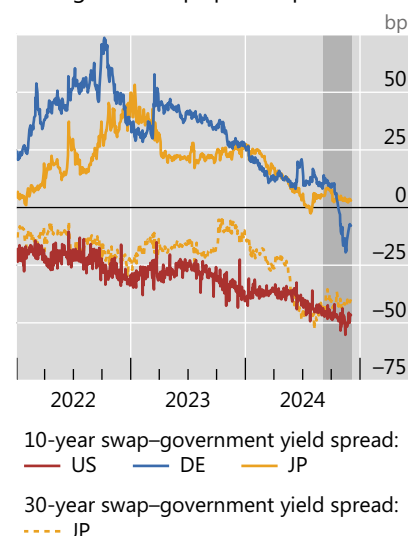
A. US Treasury volatility increased



B. The US term premium spiked



C. Negative swap spreads prevailed



The shaded area indicates 7 September 2024–2 December 2024 (period under review).

Sources: D Kim and J Wright "An arbitrage-free three-factor term structure model and the recent behaviour of long-term yields and distant-horizon forward rates", *FEDS Working Papers*, no 2005-33, 2005; Board of Governors of the Federal Reserve System; Bloomberg; BIS.

swap spreads appeared to reflect pressures on investors and intermediaries due to the need to absorb more government debt supply in the near future (Box B).

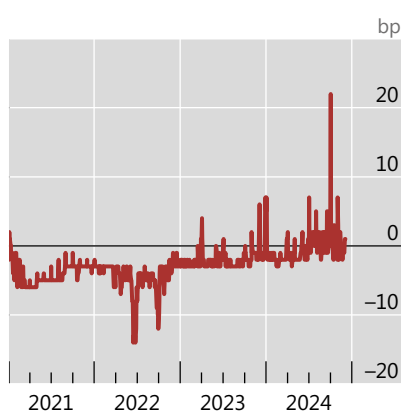
Conditions in short-term funding markets over the review period reflected ongoing quantitative tightening and an increasing shift towards a relative abundance of collateral. In the United States, repo spreads – defined here as the difference between the rate on an overnight repo and the effective federal funds rate – spiked on a few occasions, most notably in September (Graph 5.A). This seemingly reflected the greater repo financing needed to absorb large Treasury issuance as well as constraints on dealers’ balance sheets linked to end-of-quarter regulatory reporting pressures. Repo spreads in Japan, while still negative, showed signs of normalisation in recent months (Graph 5.B), pointing to government collateral becoming less scarce, despite still very ample liquidity. In the euro area too, the reversal of collateral scarcity drove repo rates higher.³ Large sovereign issuance and a dwindling ECB footprint contributed to the gradual increase in repo rates over the past 18 months. This shift was also visible in the rapid reduction in take-up of the ECB Securities Lending Programme, particularly against cash collateral (Graph 5.C): investors had less need to turn to the central bank as they were able to obtain collateral from other sources.

Several indicators pointed to the re-emergence of fiscal concerns. US sovereign credit default swap (CDS) spreads widened in advance of the November presidential and congressional elections, amid worries about the fiscal implications of the uncertain outcomes (Graph 6.A). The subsequent narrowing may have reflected a drop in the likelihood of another debt ceiling impasse, as the next president’s party gained a congressional majority. In the euro area, French sovereign spreads remained elevated (Graph 6.B), as the newly appointed government announced larger than

Money markets shift towards collateral abundance

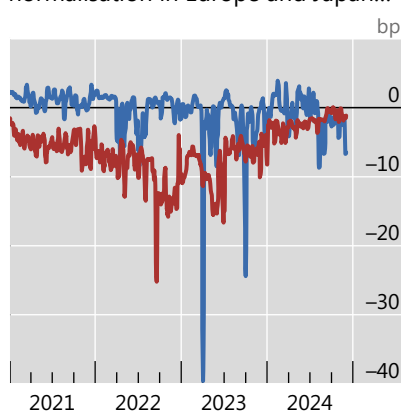
Graph 5

A. US repo spreads spiked...



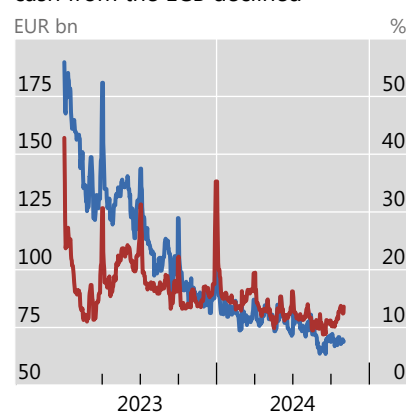
— Overnight SOFR–fed funds effective rate

B. ...while they moved towards normalisation in Europe and Japan...



Overnight repo rate–policy rate spread:¹
— EUR — JPY

C. ...and securities borrowing against cash from the ECB declined



ECB securities lending:
— Total balance (lhs)
— Share lent against cash collateral (rhs)

SOFR = secured overnight financing rate.

¹ Five-day moving average excluding quarter-ends.

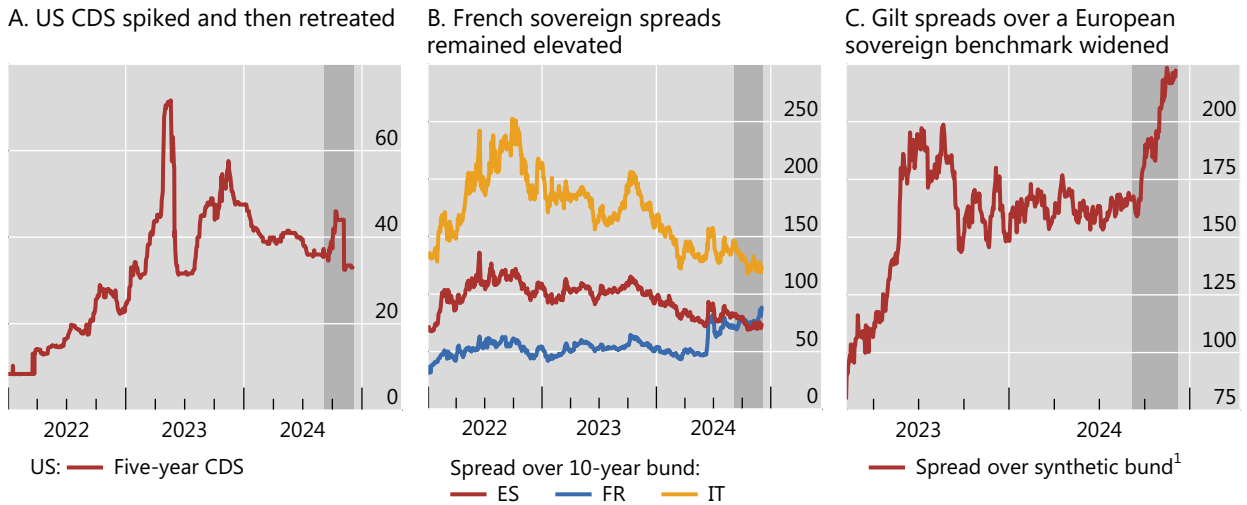
Sources: ECB; Bloomberg; LSEG Datastream; national data; BIS.

³ The abundance of collateral is reflected in higher repo rates as lenders demand a higher rate of interest to lend cash against collateral, such as government bonds.

Fiscal concerns become a greater focal point

In basis points

Graph 6



The shaded area indicates 7 September 2024–2 December 2024 (period under review).

¹ Difference between the yield on 10-year UK government bonds and the yield on 10-year German government bonds adjusted for currency differences using a EUR/GBP 10-year currency swap.

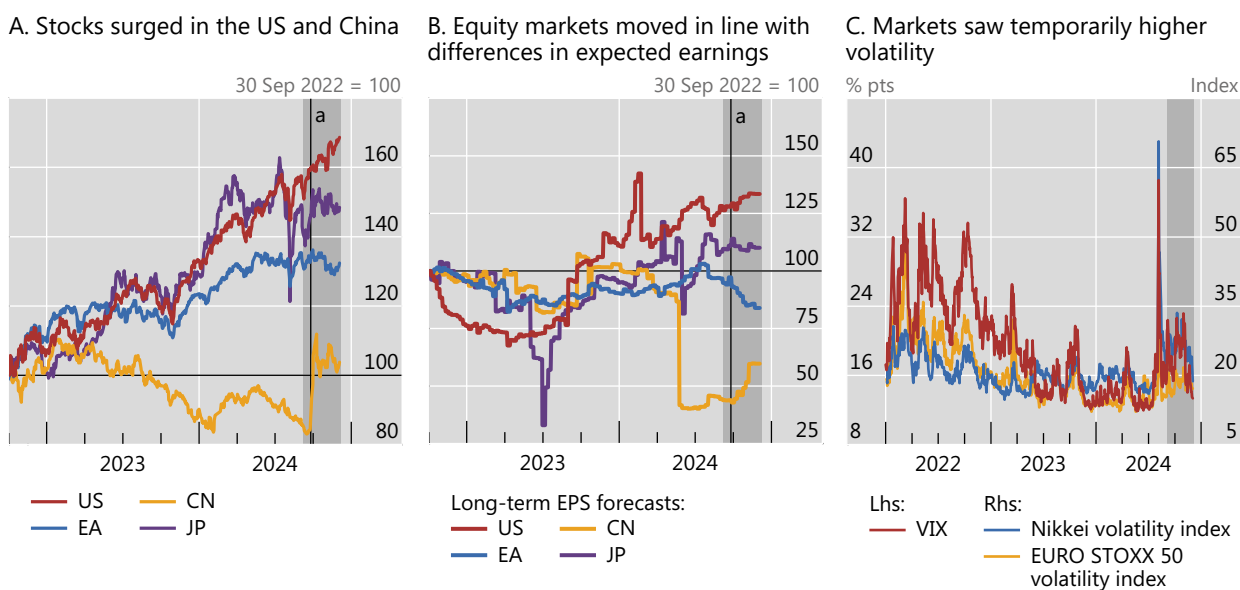
Sources: Bloomberg; LSEG Datastream; LSEG Workspace; BIS.

expected fiscal deficits, while its ability to command a majority in parliament was itself in doubt. The fiscal outlook also appeared expansionary in Japan on the back of the October parliamentary election results. And it became so in the United Kingdom, where the government announced a relaxation of fiscal rules and more borrowing. This sent yields on gilts higher relative to a synthetic benchmark based on German bunds (expressed in the same currency by using FX swaps to convert the yield in euros into a gilt-equivalent yield) (Graph 6.C).

Equity and credit markets march on

Equity and credit markets were undeterred by political and fiscal risks, posting gains as the global economy continued to show strength. Corporate spreads compressed further, even in the euro area and in Asian markets, where the growth outlook was more mixed. The credit spread compression counteracted the effect of rising government bond yields and a stronger US dollar on overall financial conditions. At the same time, investors appeared to be more attuned to downside risks, at least in equity markets, with the VIX lingering at higher levels following the August turbulence, before retreating somewhat after the US election.

Stock market performance varied significantly across major economies. US equities recorded fresh highs (Graph 7.A), as market valuations were buoyed by the Federal Reserve's 50 basis point September rate cut and by the economy's strength. Stocks, especially small caps, shot up further on 6 November once the outcome of the US election became clear. Bitcoin followed a similar pattern, reaching all-time highs. Across the Atlantic, the more subdued performance of major European equity markets was in line with the relatively weaker economy. Expected earnings for European-listed companies deteriorated further and trailed those of their US peers



The shaded area indicates 7 September 2024–2 December 2024 (period under review).

^a China stimulus announcement (24 September 2024).

Sources: Bloomberg; LSEG Datastream; BIS.

by a significant margin (Graph 7.B). To some extent, their relative weakness also reflected a greater weight of more cyclical industrial and energy stocks in the index.

In China, equities rose substantially following the announcement of a large policy stimulus package in late September. That said, the impact on earnings expectations was more muted, as authorities released information on the content of the package in batches. Following the initial jump, Chinese equities moved mostly sideways.

Notwithstanding the large gains of US equity indices, investors appeared to be growing warier of potential risks. After the volatility of early August subsided, the VIX continued to fluctuate within higher ranges (Graph 7.C). It then retreated as the (near-term) uncertainty surrounding the US election was resolved. However, the term structure of the VIX became upward sloping again, with higher expected medium-term volatility.

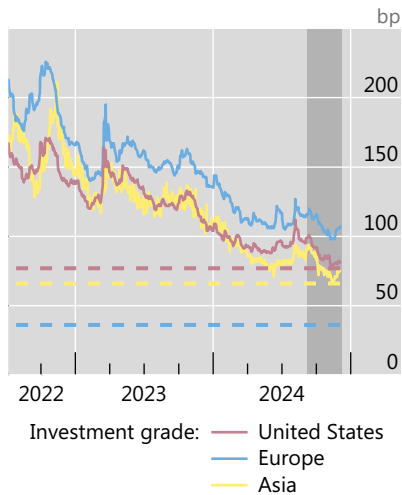
Conditions in credit markets around the globe remained unusually accommodative. Corporate credit spreads stayed compressed relative to their historical watermarks, in both the investment grade and high-yield segments (Graphs 8.A and 8.B), in some cases reaching lows not seen since the mid-2000s. Indeed, some analysts started referring to conditions in corporate funding markets as the “valuation conundrum”.

Several underlying forces appeared to put a lid on corporate spreads. For one, debt default rates moderated in the United States (Graph 8.C). Furthermore, corporates’ immediate refinancing needs subsided as the maturity wall was pushed out until late 2025–26. In addition, US corporate debt markets continued to see strong foreign demand, with almost two years of consecutive net foreign purchases, according to Treasury International Capital data. Finally, compressed spreads also reflected higher government bond yields rather than lower corporate yields.

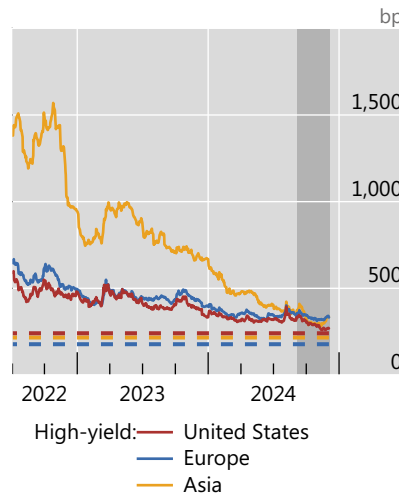
Credit markets pull ahead, with spreads at multi-year lows¹

Graph 8

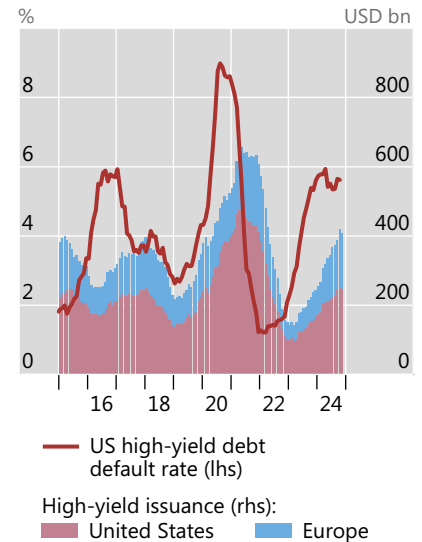
A. Credit spreads continued to compress...



B. ...especially in the high-yield segment



C. Corporate issuance continued to rise



The shaded area indicates 7 September 2024–2 December 2024 (period under review). The horizontal dashed lines in panels A and B indicate 2005–current minima.

¹ See technical annex for details.

Sources: Dealogic; ICE Data Indices; Moody's; BIS.

Bank lending conditions eased amid a surge in bank equity prices in the United States. Stock prices of banks began to rally following the September policy rate cut, especially for regional banks with large commercial real estate (CRE) portfolios. The outperformance of CRE-exposed banks reflected shifting investor sentiment towards

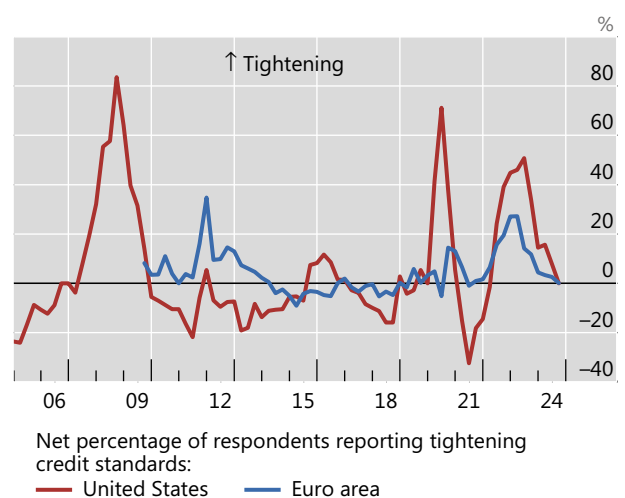
Bank stocks rally and lending terms ease

Graph 9

A. Bank stocks rallied on the rate cut and the election outcome



B. Lending standards were no longer tightening



The shaded area indicates 7 September 2024–2 December 2024 (period under review).

^a FOMC rate decision (18 September 2024). ^b Day after the US presidential election (6 November 2024).

¹ CRE = commercial real estate. See technical annex for details.

Sources: Board of Governors of the Federal Reserve System; LSEG Datastream; BIS.

risk in the sector (Graph 9.A). Bank stock prices rose further after the US presidential election, as investors looked to some regulatory easing. Rising stock prices went hand in hand with easing lending standards (Graph 9.B); declining non-performing loan ratios supported this shift in both the United States and Europe.

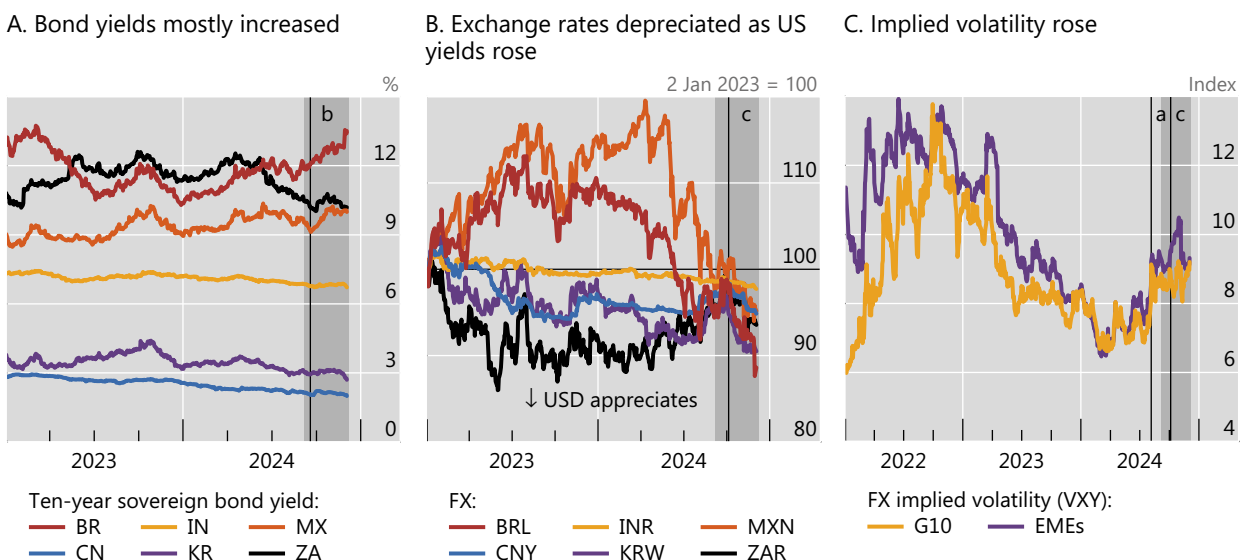
EME financial conditions tighten

EMEs faced headwinds and financial conditions tightened. With few exceptions, equity markets declined, currencies depreciated and bond yields rose. China’s stimulus announcement caused visible, albeit short-lived, positive spillovers to equity markets of EMEs with stronger trade links to China. Some EME currencies also depreciated on domestic political and fiscal uncertainties.

Bond yields in EMEs diverged across regions, reflecting differences in the macro backdrop, monetary policy cycles and exposure to US developments. Yields in major Latin American economies increased notably (Graph 10.A), tracking their US counterparts more closely than those in other EMEs. Bond yields in Mexico proved especially sensitive to US developments, while those in Brazil reflected mainly strong domestic economic activity and monetary tightening amid rising inflationary pressures. Most Latin American countries also maintained an expansionary fiscal stance, putting further upward pressure on yields. In emerging Asia, by contrast, many central banks cut policy rates for the first time in the cycle and yields rose substantially less. At the end of the spectrum, Chinese government bond yields stayed low, amid subdued growth and policy easing.

EME bond yields drift higher and currencies depreciate

Graph 10



The shaded area indicates 7 September 2024–2 December 2024 (period under review).

^a Japanese equity market turbulence (5 August 2024). ^b FOMC rate decision (18 September 2024). ^c US non-farm payrolls release (4 October 2024).

Sources: Bloomberg; JPMorgan Chase; national data; BIS.

EME currencies generally depreciated against the greenback, while their volatility increased. The depreciation was particularly large for Latin American currencies. The Mexican peso depreciated further on the likelihood of trade tariffs under the new US administration (Graph 10.B). The Brazilian real tumbled in December as the highly anticipated measures to curb public spending were thrown into doubt. In Asia-Pacific, the Korean won was briefly shaken by a bout of domestic political instability. Still, while EME currency volatility picked up in October (Graph 10.C), it decreased somewhat for most EME currencies with the US election results, in line with retreating near-term implied volatility in other markets.

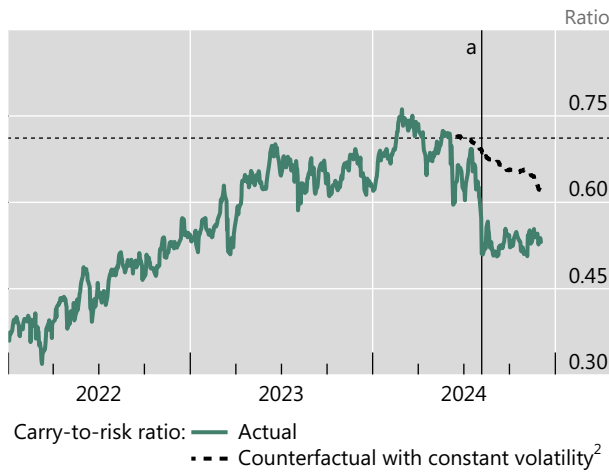
Higher volatility in foreign exchange markets during the review period reduced the incentive for carry traders to rebuild their positions following the August unwind. Carry-to-risk ratios declined substantially, and mostly because of the increase in volatility (Graph 11.A). Furthermore, option-implied measures of skewness showed that investors have grown warier of the potential downside risks associated with these strategies: jurisdictions with the highest interest rate differential to the United States are those where the currency depreciation risk is higher (Graph 11.B).

EMEs with strong links to China saw their equity markets benefit from the Chinese government’s stimulus announcement. Following China’s stock market jump, which erased more than a year of losses in a single day (Graph 12.A), other markets quickly followed suit. The impact was especially noticeable in Brazil and some other Latin American commodity exporters such as Chile. Within emerging Asia, the Korean and Thai stock markets were among the most affected. However, such spillovers were short-lived, and EME equity indices declined rapidly thereafter.

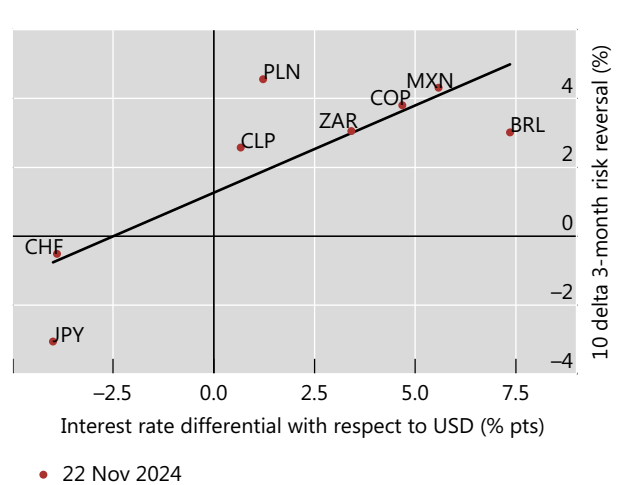
Higher volatility reduces incentives for currency carry trades

Graph 11

A. Carry trades less attractive due to higher volatility¹



B. Currency crash risk in options explained the carry

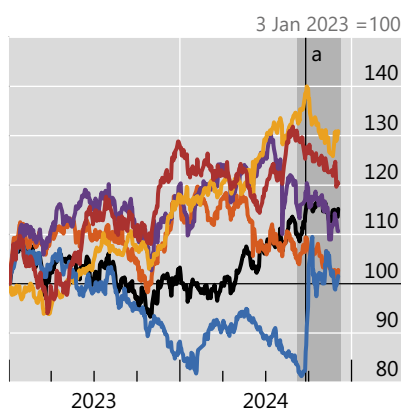


^a Turbulence in the Japanese equity market (5 August 2024).

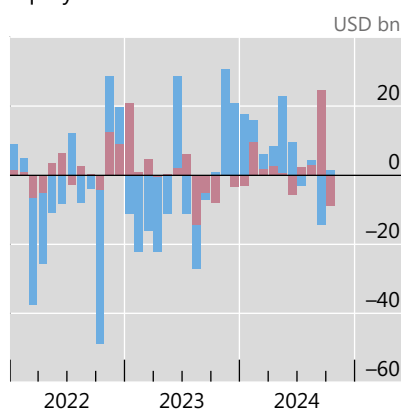
¹ Implied volatility of three-month at-the-money JPY currency options. Median across: BRL, MXN, PLN and ZAR. ² Implied volatility fixed at the level on 3 June 2024. The dashed horizontal line denotes the value on 3 June 2024.

Sources: Bloomberg; JPMorgan Chase; LSEG Datastream; Macrobond; BIS.

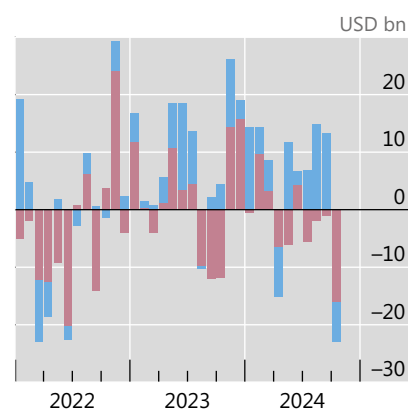
A. Some equity markets reacted to China's stimulus announcement



B. China saw a spike in portfolio equity inflows



C. Other EMEs mostly saw bond inflows



Equity indices:

- BR (red line)
- CN (blue line)
- IN (yellow line)
- KR (purple line)
- MX (orange line)
- ZA (black line)

China:

- Equity (red bar)
- Debt (blue bar)

Other EMEs:¹

- Equity (red bar)
- Debt (blue bar)

The shaded area indicates 7 September 2024–2 December 2024 (period under review).

^a China stimulus announcement (24 September 2024).

¹ See technical annex for details.

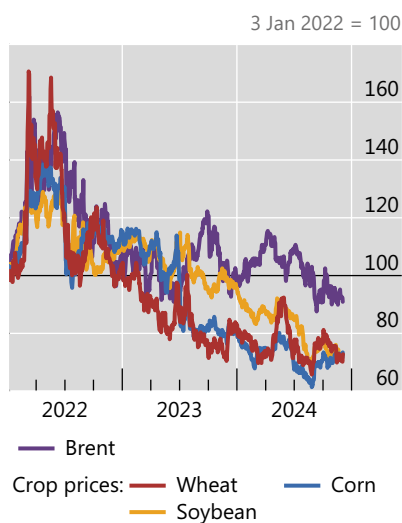
Sources: Bloomberg; IIF; BIS.

EME portfolio flows at times diverged, while remaining volatile. In China, the surge in equity markets at the beginning of the review period went hand in hand with a sharp, albeit brief, rebound in equity inflows (Graph 12.B). Inflows into other EMEs concentrated mostly in portfolio debt early in the review period (Graph 12.C), but were also volatile, posting sharp outflows across debt and equities in October.

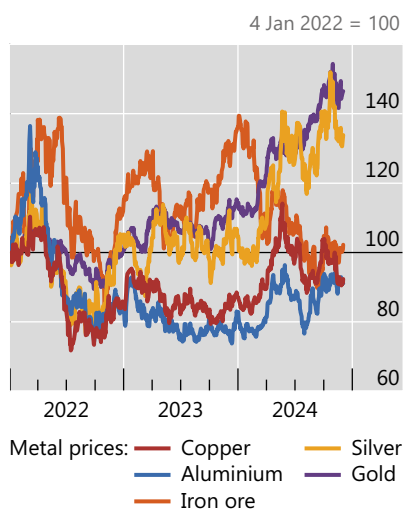
Stronger macroeconomic headwinds in China were also a key driver of commodity prices. The prices of agricultural commodities remained low, despite a brief surge at the time of the stimulus announcement. Oil prices were flat over the review period, notwithstanding a severe escalation of hostilities in the Middle East in October (Graph 13.A). Except for the price of iron ore, which did rise with the announcement, those of industrial metals also declined. Only gold and silver continued to climb, possibly reflecting geopolitical risks, but their prices then sank in the weeks following the US election (Graph 13.B).

On balance, the outcome in EMEs of rising yields, depreciating currencies and declining stock markets was a tightening of financial conditions. The tightening was overall much larger than in AEs and the United States in particular (Graph 13.C).

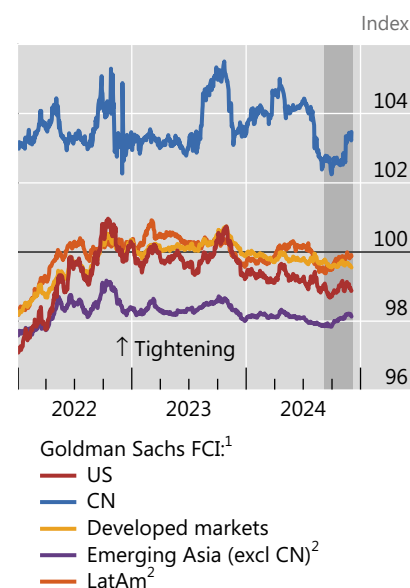
A. Agricultural commodities and oil prices remained low



B. Prices reached all-time highs for precious metals, but not industrial metals



C. EME financial conditions were tightening



The shaded area indicates 7 September 2024–2 December 2024 (period under review).

¹ A value of 100 indicates average conditions. A higher (lower) value indicates tighter (looser) conditions. ² See technical annex for details.

Sources: Bloomberg; Goldman Sachs Global Investment Research; national data; BIS.

Negative interest rate swap spreads signal pressure in government debt absorption

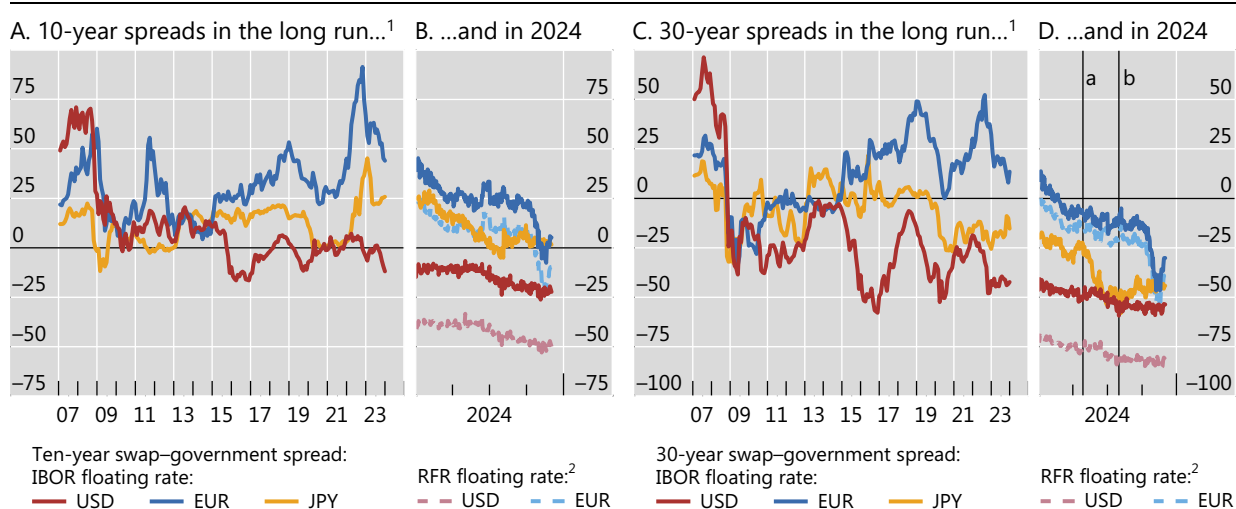
Matteo Aquilina, Andreas Schrimpf, Vladyslav Sushko and Dora Xia^①

Interest rate swaps are contracts in which counterparties agree to exchange a series of fixed rate payments for a series of floating payments linked to a benchmark rate. The swap *spread* is the difference between the interest rate swap rate and the yield on a government bond of the same maturity. The swap *rate* refers to the fixed rate in the swap; it reflects expectations of future floating rates and can therefore be interpreted as the price that ensures that both the receiver and the payer of the fixed rate view the contract as fairly priced from the start. Swap rates and bond yields are tied together by arbitrage. Absent costs involved in the arbitrage and compensation for risks, swap spreads should not deviate much from zero. Prior to the Great Financial Crisis, spreads were generally positive, as swap rates exceeded cash bond yields, in part due to some credit risk reflected in the swap rate.^② More recently though, the constellation has flipped, with negative swap spreads being increasingly common across currencies and maturities.

Interest rate swap spreads have shifted from positive to negative territory

In basis points

Graph B1



^a Bank of Japan press conference (26 April 2024). ^b Bank of Japan press conference (31 July 2024).

IBOR = interbank offered rate; RFR = risk-free rate.

¹ Monthly averages of daily values. ² Swap rates, and hence swap spreads, are lower when the floating rates are indexed to risk-free rates because the latter are overnight, so virtually risk-free. The effect is larger for US dollar swaps, because the RFR is a collateralised rate.

Sources: LSEG Workspace; authors' calculations.

Swap spreads in US dollars were negative for some time post-Great Financial Crisis (Graph B1)^③ but have become more persistent even at 10-year tenors (Graph B1.B). More recently, negative swap spreads have also become more common in other major currencies, such as the euro and Japanese yen (Graph B1.D). Negative swap spreads, at least in theory, represent an arbitrage opportunity, and should therefore be quickly brought back to zero. Market participants could exploit a negative swap spread by holding a government bond funded through repo, paying the fixed rate in the swap and earning the floating, thus pocketing the difference between these rates.^④

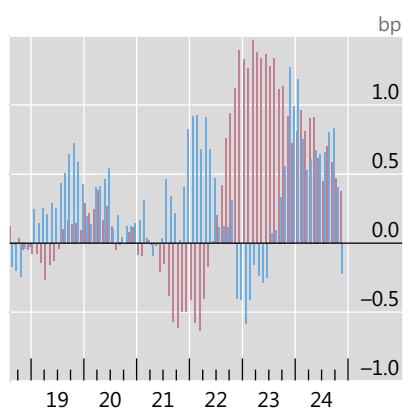
Negative swap spreads are not arbitrated away because they capture intermediation costs rather than a “free lunch”. Negative spreads compensate intermediaries for holding government bonds on their balance sheets and entering swaps as fixed rate payers. Both swap and bond markets are intermediated by bank-affiliated dealers who require remuneration for using their balance sheets and taking on associated risks. When dealers absorb a large amount of bonds, they incur funding costs in the repo market for financing the long bond position. Additionally, they

tend to hedge the interest rate risk by paying the fixed swap rate and receiving the floating rate. When doing so, dealers also need to factor in balance sheet costs from internal risk management and prudential rules, as well as opportunity costs of other uses of their balance sheet capacity. If these costs are high enough, dealers will recoup them through a negative swap spread. Moreover, if dealer balance sheets are constrained, non-bank players such as hedge funds may need to be incentivised to step in, deploying repo leverage to assume similar positions as dealers.

Supply-demand imbalances in government bond markets

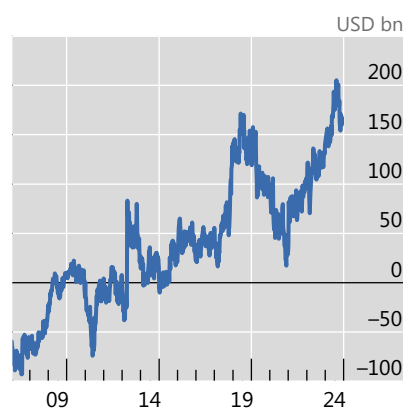
Graph B2

A. Higher yields reflect “soft” auctions



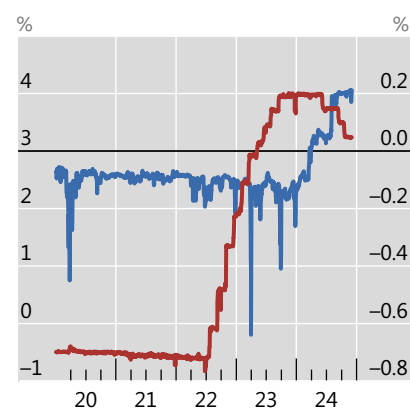
10-year Treasury auction yield surprise:¹
■ 10-year tail ■ 30-year tail

B. Bonds on dealer balance sheets



— Dealers' net position in US Treasuries²

C. Government bonds' funding costs



One-week repo rate:
— EUR (lhs) — JPY (rhs)

¹ Auction yield minus when-issued yield; 12-month moving average. ² Net US Treasury positions of primary dealers, across all tenors.

Sources: Bloomberg; LSEG Datastream; authors' calculations.

Downward pressure on swap spreads can originate either from a greater supply of government bonds in cash markets or a greater demand to receive the fixed rate in swap markets. In cash bond markets, investors' inability or unwillingness to absorb debt issuance or sales by other bond holders at prevailing prices exerts upward pressure on bond yields, pushing swap spreads lower. In swap markets, asset managers, institutional investors and corporate debt issuers are typical receivers of the fixed rate in the swap. The greater these players' demand to receive the fixed rate, the greater the downward pressure on swap rates and hence swap spreads.⑤

In recent months, pressure points primarily originating in the cash bond markets have caused noticeable imbalances in supply and demand. Recent Treasury auction results underscore this, with some monthly auctions clearing at a higher yield (lower price) than expected since 2022 (Graph B2.A). These “soft” auction results reflect investors' lukewarm interest in absorbing the supply of government debt and that dealer bond inventories have swollen to record levels this year (Graph B2.B).

Negative swap spreads have also emerged more recently in the euro area and Japan. A common driver with the United States is the additional expected bond issuance given the upward trajectory in debt supply. But jurisdiction-specific drivers are also at play. For one, as the euro area and Japanese central banks embarked on quantitative tightening (QT), expectations that the private sector would need to play a bigger marginal role in absorption pushed bond yields higher, compressing swap spreads. The 30-year yen swap spread dropped into deeply negative territory in April, when the Bank of Japan announced the exit from its ultra-loose balance sheet policy. The spread then decompressed in July, when the central bank revealed that the pace of QT would be slower than previously expected. In the euro area, swap spreads tumbled in October, as QT's effects were felt in markets via pressure on bond yields. And the steep fall in euro swap spreads coincided with a drop in the demand to tap the ECB Securities Lending Facility to source collateral (see main text) – a sign that government bond collateral in private hands was no longer scarce.

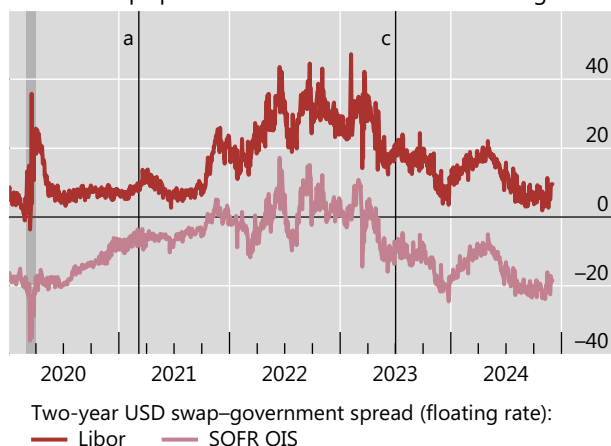
Another common driver of swap spreads has been the rise in funding costs in repo markets as central banks abandoned negative policy rates. In this case, the ECB was ahead of the Bank of Japan by almost two years (Graph B2.C). Since then, dealers have had to pay *positive* repo rates to fund their long positions in government bonds. Furthermore, the relative abundance of government bond collateral, due to increased issuance and less central bank heft, has put additional upward pressure on repo rates.

The shift away from Libor mechanically lowered swap spreads

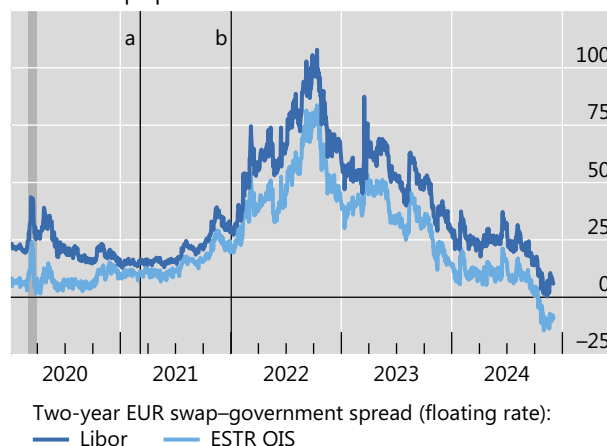
In basis points

Graph B3

A. USD swap spreads based on SOFR are often negative



B. EUR swap spreads based on ESTR are lower



The shaded area indicates 1–31 March 2020 (Covid-19 financial turmoil).

ESTR = euro short-term rate; OIS = overnight index swap; SOFR = secured overnight financing rate.

^a UK Financial Conduct Authority announces cessation of Libor (5 March 2021). ^b EUR Libor is no longer published (1 January 2022). ^c USD Libor is no longer published (1 July 2023).

Sources: LSEG Workspace; authors' calculations.

Finally, there are technical reasons for more negative swap spreads, notably the shift in reference rates in swaps away from Libor benchmark interest rates to so-called risk-free rates. Before the switch away from Libor, the swap rate was the fair price at inception of a series of expected future rates that embodied credit risk. Now that swap contracts are referenced to (nearly) risk-free rates in the floating leg, the swap rate itself is lower, which means that swap spreads also will be lower or more negative (Graphs B1.B and B1.D). In fact, the emergence of negative spreads at shorter tenors (eg two years) is mainly due to the shift towards risk-free benchmarks following the cessation of Libor (Graph B3). Benchmarks based on collateralised rates, such as the secured overnight financing rate (SOFR), result in even lower swap rates, and thus more negative swap spreads (Graph B3.A). SOFR-based spreads will also be influenced by repo market developments, as seen in the March 2020 dash for cash episode.^⑦, ^⑧

^① The views expressed are those of the authors and do not necessarily reflect the views of the BIS. ^② Credit risk played a bigger role when swap rates were linked to benchmarks based on unsecured term bank funding rates (eg Libor) and because counterparties in the swap were exposed to each other's credit risk (typically mitigated through collateralisation) – a risk significantly reduced through the shift to central clearing. ^③ S Sundaresan and V Sushko, "Recent dislocations in fixed income derivatives markets", *BIS Quarterly Review*, December 2015. ^④ See eg N Boyarchenko, P Gupta, N Steele and J Yen, "Negative swap spreads", Federal Reserve Bank of New York *Economic Policy Review*, October 2018; and U Jermann, "Negative swap spreads and limited arbitrage", *The Review of Financial Studies*, vol 33, no 1, 2019. ^⑤ See S Klingler and S Sundaresan, "An explanation of negative swap spreads: demand for duration from underfunded pension plans", *The Journal of Finance*, vol 74, no 2, 2018; and, S Hanson, A Malkhozov and G Venter, "Demand-and-supply imbalance risk and long-term swap spreads", *Journal of Financial Economics*, vol 154, 103814, 2024. ^⑥ The added sensitivity of long-maturity bonds to interest rate risk is another reason why negative swap spreads tend to be more prevalent at longer maturities. ^⑦ See A Schrimpf and V Sushko, "Beyond LIBOR: a primer on the new benchmark rates", *BIS Quarterly Review*, March 2018; and D Wu and R Jarrow, "The Treasury – SOFR swap spread puzzle explained", 2024, available on SSRN. ^⑧ Since the discontinuation of Libor, the difference between swap spreads based on the two types of rates is constant, as the ISDA fallback solution for legacy cleared derivatives transactions consists of a constant add-on risk spread.

Technical annex

Graphs 8.A and 8.B: For Asia, ICE Asian Dollar indices.

Graph 8.C: US high-yield debt default rate based on Moody's 12-month rolling US speculative grade default rates. High-yield issuance based on a 12-month rolling sum.

Graph 9.A: Simple average of Bancorp, Citizens Financial Services, Dime Community Bancshares, Flagstar Financials, FVC Bankcorp, Live Oak Bancshares, Peapack-Gladstone Financial, Servisfirst Bancshares, Uscb Financial Holdings and Valley National.

Graphs 12.B and 12.C: Other EMEs = BR, CL, ID, IN, KR, LK, MN, MX, MY, PH, PK, TH, TW and VN.

Graph 13.C: For emerging Asia, GDP-PPP weighted average of ID, IN, KR, MY, PH and TH; for LatAm, GDP-PPP weighted average of BR, CL and MX.