Markets swing on perceptions of the policy outlook

Worsening growth prospects and evolving perceptions of the monetary stance shaped financial markets during the review period.[1] Economic indicators deteriorated due to the fallout from the Ukraine war and weakness in China. Market-based expectations of inflation and policy rates fluctuated as monetary tightening quickened globally and energy disruptions intensified in Europe. All these factors swayed financial conditions and contributed to market volatility.

There were two turning points for risky assets and sovereign bonds. The first was in mid-June. After the Federal Reserve raised rates more than expected, investors anticipated falling inflation and a flattening of the policy rates' path. Financial conditions eased and corporate spreads compressed. A seeming paradox emerged from the markets for risky assets and sovereign bonds: while stock indices rallied with few exceptions, the yield curve inverted sharply in the United States – often a harbinger of recessions – and flattened in other jurisdictions. The second turning point was in August. As the policy response to inflation became more forceful and the energy crisis worsened in Europe, financial conditions tightened, risky assets retreated and core yields rose. On balance, investors seemed to anticipate a smooth resolution of the challenges posed by high inflation.

Commodity markets reflected the complex economic outlook. Metal prices continued the decline that had started in the second quarter, not least because of weakening activity in China. While oil prices started falling globally in mid-June, European natural gas prices surged to record highs on disruptions in Russian supplies, with substantial repercussions on industrial equities and electricity costs. The prices of natural gas and electricity remained highly volatile late in the review period, reflecting the confluence of geopolitical developments and possible speculative dynamics in a market with stressed intermediation capacity.

The US dollar appreciated broadly against advanced economy (AE) currencies. Due to previous US monetary tightening, as well as the ongoing European energy crisis, the dollar reached its highest level against the euro and the yen in more than two decades. The pace of dollar appreciation was also unusually quick.

Market developments diverged across emerging market economies (EMEs). Firmer monetary policy measures in the face of elevated inflation kept yields in Latin America considerably above those in Asia and put a cap on the depreciation of several currencies. At the same time, the weakness of the euro, yen and renminbi implied that trade-weighted exchange rates appreciated for several EMEs.

[1] The period under review extends from 1 June 2022 to 12 September 2022.

Key takeaways

- As economic prospects dimmed and the inflation outlook evolved, investors' changing perceptions of the central bank response swayed markets. The US dollar rose to multi-decade highs.
- In June, a risk-on phase went hand in hand with an inverted US yield curve – a seeming paradox. The easing of financial conditions partly reversed in August as the policy response to inflation firmed.
- Inflation was a key factor in EMEs: where it was entrenched, currencies depreciated steadily; where it met a more forceful policy stance, depreciations tapered off.

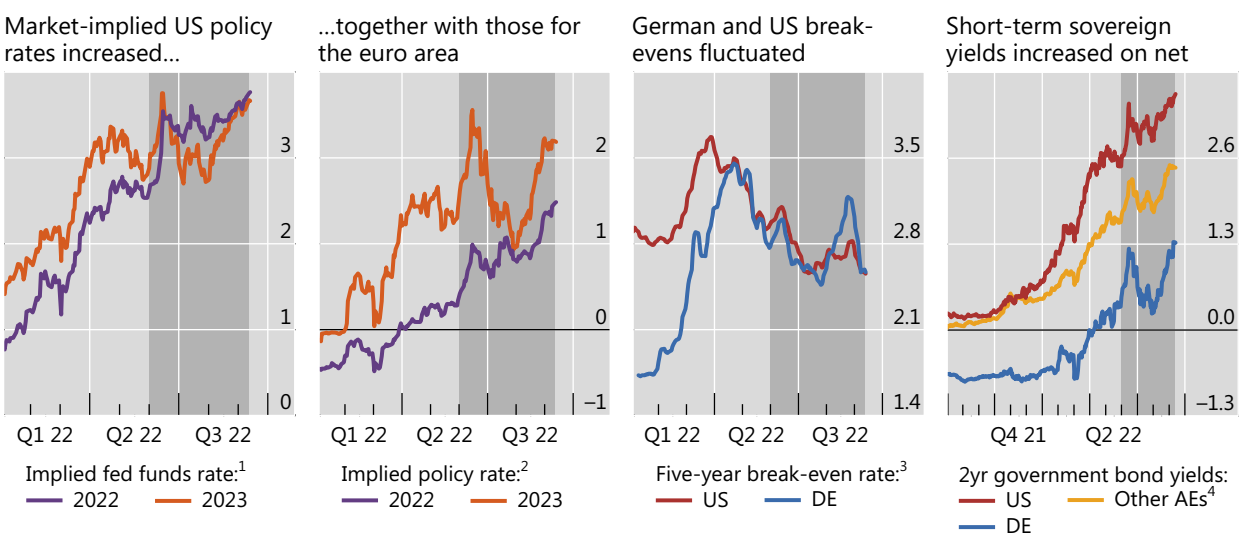
Core yields reflected the policy outlook and growth worries

Efforts to tackle inflation shaped the short end of the yield curve. Early in the review period, investors anticipated further tightening in major AEs on the back of elevated inflation (Graph 1, first and second panels). In mid-June, after the FOMC meeting raised rates more than foreseen, market-based inflation expectations fell (third panel) and the perceived pace of subsequent monetary tightening slowed, particularly for 2023. In August, investors anticipated rising inflation, chiefly due to intensifying energy disruptions in Europe and a buoyant US labour market. In addition, with central banks signalling further tightening, market-implied policy rates for 2023 began to climb again, supporting the rise in two-year sovereign yields (fourth panel).

Longer-term yields danced to the tune of the evolving outlooks for inflation, growth and the policy stance. They dropped alongside short-maturity ones for about six weeks starting in mid-June, when market-based inflation expectations fell

The front end of the yield curve reacted to the policy and inflation outlooks

In per cent — Graph 1



The shaded areas indicate 1 June–12 September 2022 (period under review).

[1] Federal funds rates implied by futures maturing in December 2022 and December 2023. [2] Rates implied by ESTR futures maturing in December 2022 and December 2023. [3] Five-day moving average. [4] AU, CA, DK, GB, JP, NZ and SE.

Sources: Bloomberg; Datastream; BIS calculations.

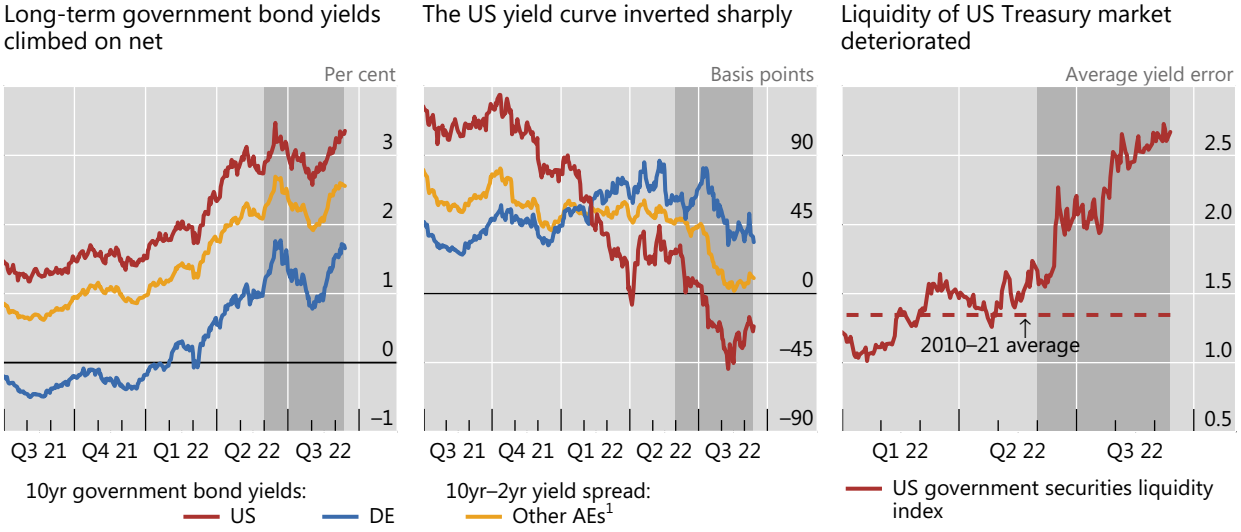
(Graph 2, left-hand panel). Worsening economic prospects also contributed to the decline, as probably did stronger Treasury demand from yield-insensitive traders. As a result, the US curve inverted sharply, in what is typically a harbinger of recessions (centre panel). In most other jurisdictions, curves flattened but largely remained positively sloped, a likely reflection of the less advanced policy cycles, especially in the euro area. In August, long-term yields rose, as investors anticipated increasing price pressures and policymakers reiterated their commitment to fighting inflation.

As sovereign yields fluctuated, liquidity in US Treasury markets deteriorated. It remained considerably worse than the post-2010 average (Graph 2, right-hand panel). In part, the deterioration stemmed from the Federal Reserve allowing its balance sheet to shrink, thus reducing liquidity support, especially for off-the-run bonds.[2]

The pronounced weakening of the economic outlook in Europe affected periphery spreads to German bunds as well as the euro exchange rate. Even as bund yields fell in mid-June and July, spreads for Greek and Italian bonds remained elevated (Graph 3, left-hand panel). They temporarily compressed on indications that the ECB would develop an instrument aimed at preventing pronounced divergence in euro area sovereign yields. This was eventually formalised in July as the Transmission Protection Instrument. In parallel, the euro continued its depreciation vis-à-vis the US dollar to a nadir last seen in 2002 (centre panel). In addition, the pace of depreciation over the review period was among the fastest in the last three decades.

AE yields were volatile and curves flattened, while US Treasury liquidity worsened

Graph 2



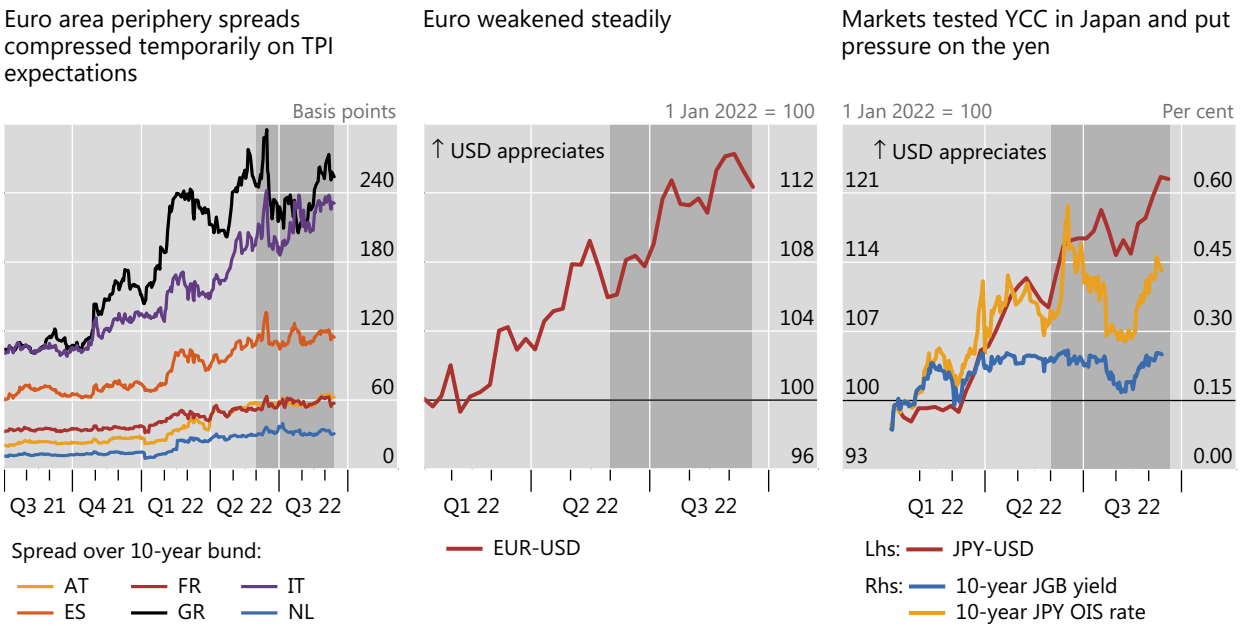
The shaded areas indicate 1 June–12 September 2022 (period under review).

[1] Simple average across AU, CA, DK, GB, JP, NZ and SE.

Sources: Bloomberg; BIS calculations.

[2] See the special feature by Aldasoro et al in this issue for new market conditions indicators, one of which is dedicated to the US Treasury market.

Euro area spreads pointed to persisting concerns; euro and yen depreciated Graph 3



JGB = Japanese government bond; OIS = overnight indexed swap; TPI = Transmission Protection Instrument; YCC = yield curve control policy.

The shaded areas indicate 1 June–12 September 2022 (period under review).

Sources: Bloomberg; BIS calculations.

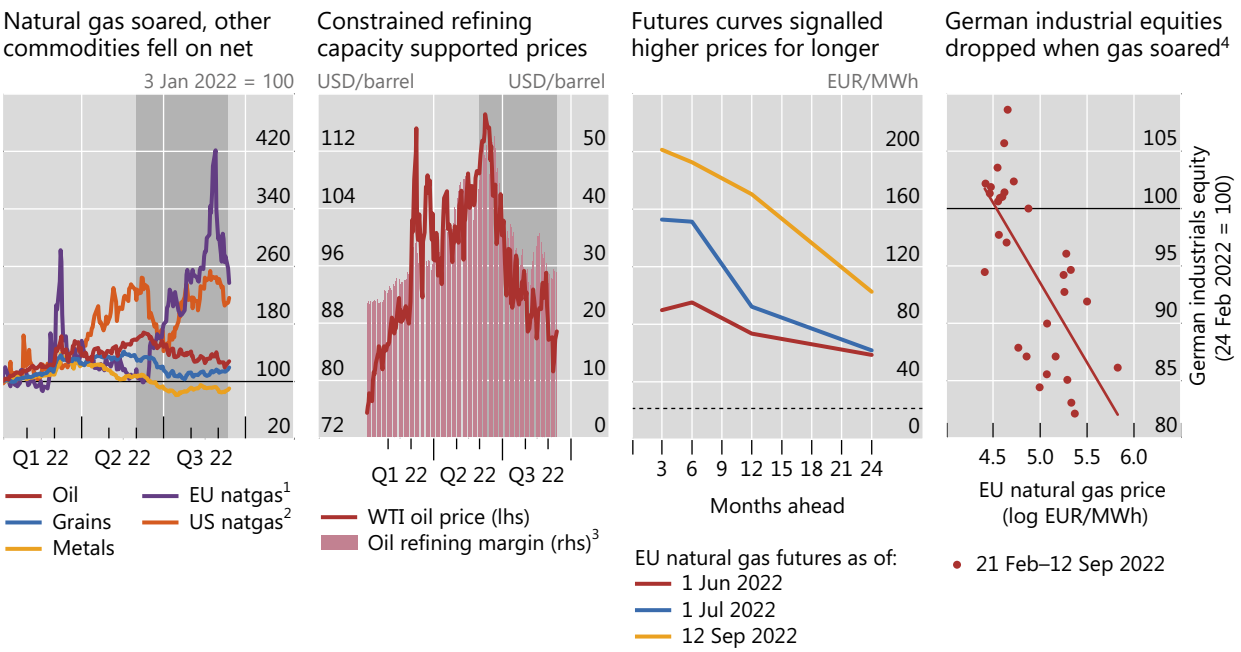
Japanese yields remained low, but upward pressure briefly tested policy. Even as 10-year rates rose before mid-June in other AEs, those of Japanese government bonds remained constrained by the yield curve control policy, which set a 25 basis point cap. Markets put this policy to the test as investors bet on increasing 10-year rates in derivatives markets. As a sign of this pressure, the gap between swap rates and cash yields widened rapidly in June (Graph 3, right-hand panel). However, the dimming economic outlook and perceptions that US inflation would fall lowered US yields and eased the upward pressure on Japanese ones, starting in mid-June. As a consequence, the swap-cash spread compressed markedly and the yen appreciated on the narrower US-yen yield differential. As long-term yields rose globally towards the end of the review period, this differential widened again and the yen's depreciation resumed.

Natural gas prices soared on supply disruptions

Except for natural gas, commodity prices remained, on net, below the high watermarks reached after the start of the Ukraine war (Graph 4, first panel). For grains, the decline partly reflected tentative agreements to resume dry bulk shipping from Ukraine. For industrial metals, the drop, which took prices below end-2021 levels, was driven by normalising supply chains and slowing activity in China. Oil prices were volatile but declined on balance. Snarled supply chains in the energy sector added to the prices of oil-derived products, such as diesel and gasoline (second panel).[3]

[3] See the special feature by Avalos and Huang in this issue for an in-depth discussion.

Markets anticipated lasting energy crisis in Europe, with broad repercussions Graph 4



The shaded areas in the first and second panels indicate 1 June–12 September 2022 (period under review). The dashed horizontal line in the third panel indicates the 2010–21 average price of one-month futures.

[1] Title Transfer Facility (TTF). [2] Henry Hub. [3] The chart shows the "3:2:1 crack spread", which is the difference between the price of a standard basket of refined products and the cost of crude oil. [4] TTF for natural gas and Germany-Datastream Industrials index for equity. End-of-week data.

Sources: Bloomberg; Datastream; BIS calculations.

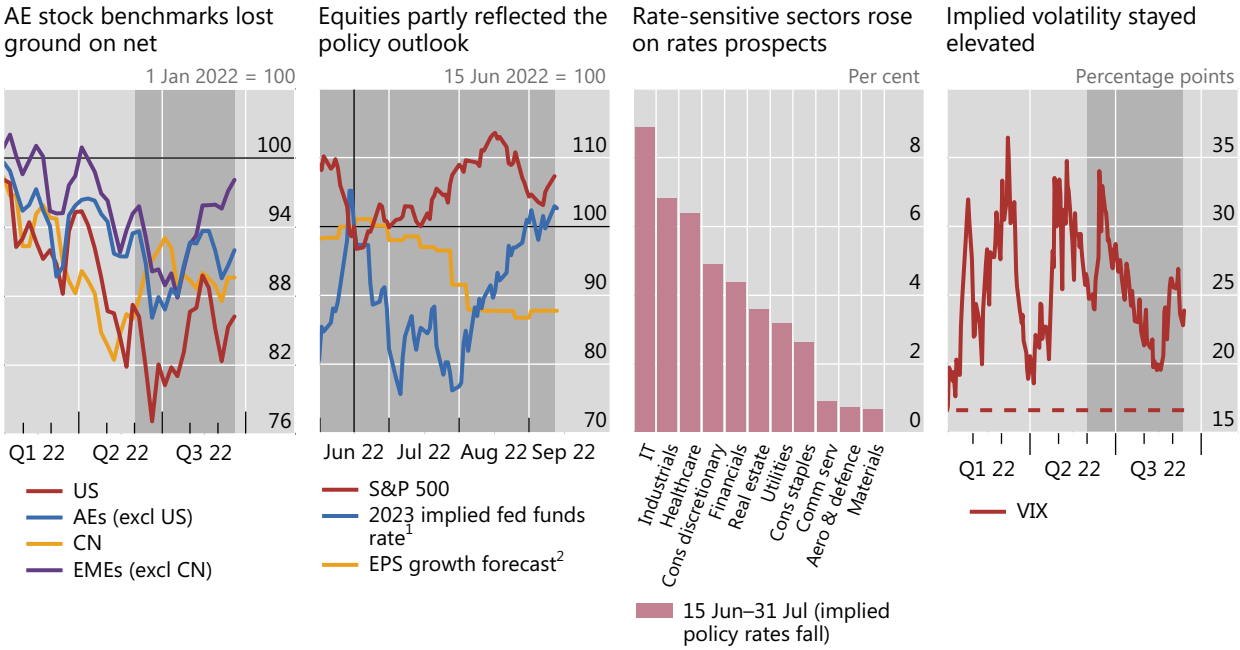
Disruptions in natural gas markets were widespread and threatened to be long-lasting. With sharp cuts in flows from Russia and efforts to fill storage ahead of the winter season, European gas prices soared and remained volatile even after a partial retracement. European gas futures signalled growing expectations that dislocations would be persistent, as prices at the two-year maturity rose over the period under review, to a level five times higher than the historical norm (Graph 4, third panel).

The increase in European natural gas prices had broad spillovers. First, attempts to replace gas delivered by pipeline to Europe with sea-borne shipments of liquified natural gas raised prices globally, despite the traditional geographical fragmentation of this market. Second, electricity prices for current and future delivery soared in countries more reliant on natural gas for power generation, reaching unprecedented heights. Prices remained very volatile, possibly indicating speculative dynamics in markets with reduced intermediation capacity. Third, energy-intensive sectors suffered. For instance, the stock prices of German industrial firms fell markedly when natural gas prices spiked (Graph 4, fourth panel). Similarly, those of firms for which natural gas is a key production input declined much more than broad equity indices.

Fight against inflation and growth woes drove risky assets

Equity markets were volatile as investors' perceptions of the policy outlook evolved. In mid-June, AE stocks began rising – even though earnings forecasts fell – as market-

The policy outlook influenced global stocks; perceived risks remained elevated Graph 5



The shaded areas in the first, second and fourth panels indicate 1 June–12 September 2022 (period under review). The vertical line in the second panel indicates 15 June (June 2022 FOMC meeting). The dashed horizontal line in the fourth panel indicates 2010–current median.

[1] Federal funds rates implied by futures maturing in December 2023. [2] Expected earnings per share growth between end-2021 and estimated end-2023.

Sources: Bloomberg; Datastream; BIS calculations.

based expectations of inflation and policy rates declined (Graph 5, first and second panels). Starting in August, however, equities reversed course, with energy disruptions putting pressure on prices in Europe and policymakers reiterating their commitment to fighting inflation globally, leading investors to anticipate higher future rates. Differences in returns across sectors confirmed that the interest rate outlook shaped equity markets. Indeed, the stocks of traditionally rate-sensitive industries, such as information technology, gained most as implied policy rates fell after mid-June (third panel). Throughout the review period, investors' concerns about downside risks were visible in option-implied equity volatility, which remained above its historical average (fourth panel).

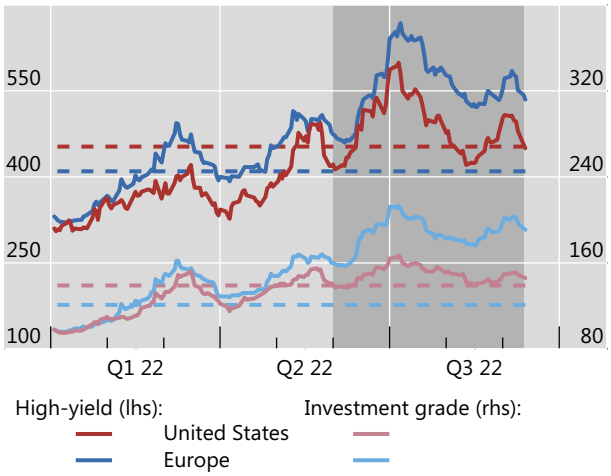
EME equities, except Chinese stocks, largely tracked AE benchmarks for most of the review period. EME stocks rose steadily through August and increased on net (Graph 5, first panel). Chinese indices diverged due to local factors, chiefly persistent problems in the real estate sector and recurring lockdowns to manage the lingering pandemic.

Corporate bond spreads broadly tracked equity market dynamics. In terms of levels, spreads remained mostly above historical averages in Europe but were in line with the long-run norm in the United States (Graph 6, left-hand panel). An upward trend in the gap between high-yield (HY) and IG spreads indicated stronger differentiation based on credit risk (right-hand panel). The long-term increase in the share of BBB bonds held by IG indices continued to bolster IG spreads (Box A).

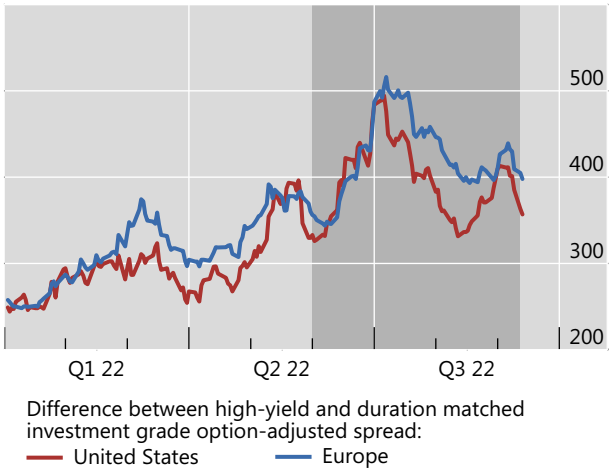
Credit spreads remained unusually wide in Europe

In basis points — Graph 6

IG spreads changed little on net in the United States



Wider HY-IG differentials hinted at lingering concerns about credit risk



HY = high-yield; IG = investment grade.

The shaded areas indicate 1 June–12 September 2022 (period under review). The dashed horizontal lines in the left-hand panel indicate 2005–current medians.

Sources: ICE BofAML; BIS calculations.

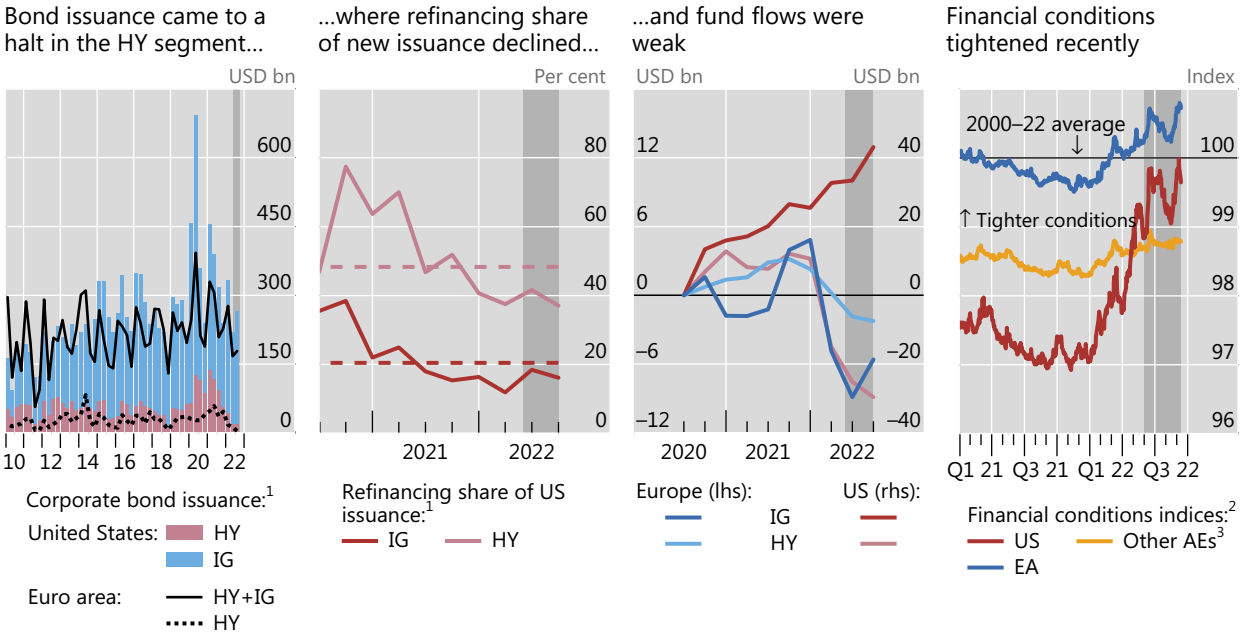
New credit issuance dropped during the review period. The drop was broad-based, but most pronounced in Europe and in the HY segment – where issuance came virtually to a halt (Graph 7, first panel). This occurred while bank credit was generally holding up, despite a tightening of credit standards. There were two factors behind patterns in bond issuance. First, from the perspective of borrowers, rising rates reduced the appeal of refinancing outstanding debt, especially in the HY space (second panel). Second, investor demand, as proxied by fund flows, remained weak in the HY segment (third panel).

Private credit and structured finance also saw declines in issuance. Private credit deals fell below 2021 levels, contracting after a decade of sustained growth.[4] The flow of collateralised loan obligations (CLOs) investing in new leveraged loans remained broadly stable, after dipping earlier in the year, partly due to losses on warehoused loans as the Ukraine war broke out. Just as with bonds, the issuance of "refinancing" CLOs came to a halt. Dynamics in the European CLO market suggested that investors might be underestimating tail risk (Box B).

Overall, financial conditions in AEs evolved in line with the markets for risky assets. They eased starting in mid-June, as equities rose and corporate spreads narrowed, and tightened in August. In terms of levels, conditions were somewhat less accommodative than the historical norm in the euro area but remained marginally loose in the United States and especially in other AEs (Graph 7, fourth panel). Real rates also remained below long-term averages in some countries.

[4] Occupying an opaque corner of financial markets, private credit funds deserve close monitoring. See S Aramonte, "Private credit: recent developments and long-term trends", *BIS Quarterly Review*, March 2020, pp 11–13, and S Aramonte and F Avalos, "The rise of private markets", *BIS Quarterly Review*, December 2021, pp 69–82.

Bond issuance dropped as financial conditions tightened on net — Graph 7



HY = high-yield; IG = investment grade.

The shaded areas indicate 1 June–12 September 2022 (period under review). The dashed lines in the second panel indicate 2010–current averages.

[1] For Q3 2022, issuance data up to 12 September 2022, extrapolated to full quarter. [2] Goldman Sachs Financial Conditions Index (FCI): a weighted average of country-specific risk-free interest rates, exchange rates, equity valuations and credit spreads, with weights that correspond to the estimated impact of each variable on GDP. A value of 100 indicates average conditions. A higher (lower) value indicates tighter (looser) conditions. [3] AU, CA, CH, GB, JP, NO, NZ and SE.

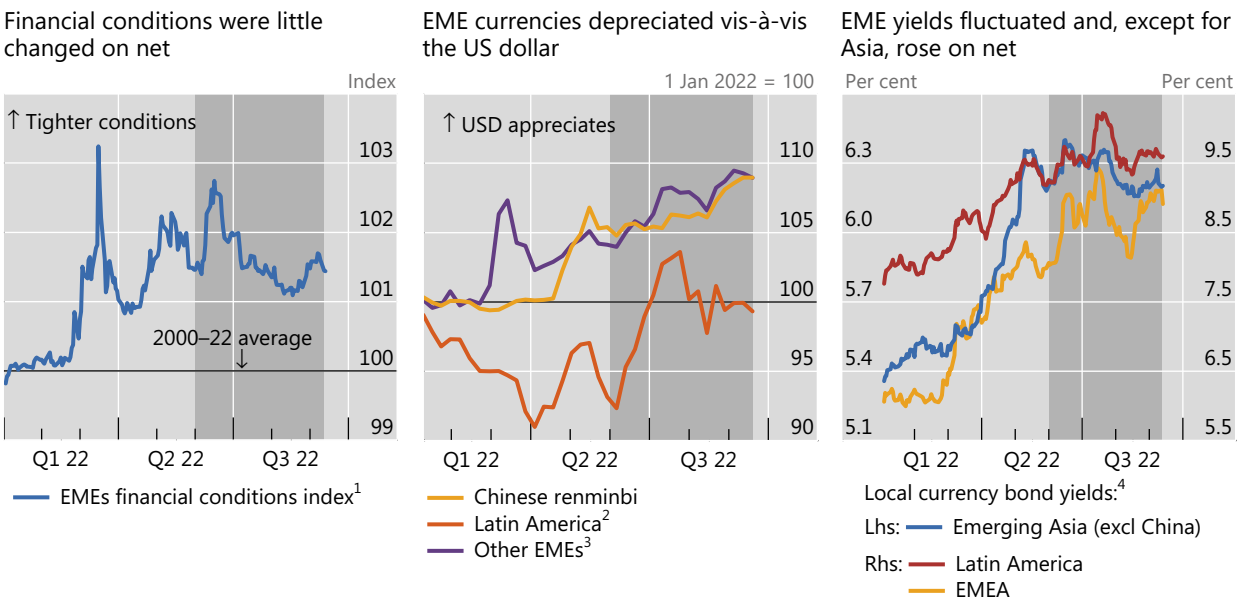
Sources: Bloomberg; Dealogic; EPFR; BIS calculations.

Inflation differences steered developments in EMEs

Financial conditions in EMEs fluctuated as the effect of depreciating currencies was partially offset by falling yields. After a marked tightening that followed the war in Ukraine, financial conditions eased starting in mid-June and ended the review period roughly unchanged (Graph 8, left-hand panel). The easing occurred even as the US dollar remained strong after appreciating markedly against EME currencies (centre panel). This easing hinged on decreasing US sovereign yields and, later, declining local currency bond yields (right-hand panel).

EME financial conditions were stable, despite a strengthening US dollar

Graph 8



The shaded areas indicate 1 June–12 September 2022 (period under review).

[1] Goldman Sachs Financial Conditions Index (FCI): a weighted average of country-specific risk-free interest rates, exchange rates, equity valuations and credit spreads, with weights that correspond to the estimated impact of each variable on GDP. A value of 100 indicates average conditions. A higher (lower) value indicates tighter (looser) conditions. [2] BR, CL, CO, MX and PE. [3] CZ, HK, HU, ID, IL, IN, KR, MY, PH, PL, RU, SA, SG, TH, TR, TW and ZA. [4] Simple averages of JPMorgan Chase GBI Global sub-indices, traded yields.

Sources: Bloomberg; JPMorgan Chase; BIS calculations.

Cross-country patterns in EME sovereign yields mostly reflected differences in inflation rates. On the back of a more aggressive monetary policy in EMEA[5] and Latin America, especially Brazil and Mexico – which had started tackling inflation already in 2021 – yields remained markedly higher in those regions than in Asia. In China, yields moved sideways as lockdowns and persistent pressures in the real estate sector clouded the economic outlook, thus spurring public support.

Yield differentials relative to the United States were important catalysts of EME capital flows. The effect was particularly pronounced for China, whose yield curve was below that of the United States. As such, outflows from Chinese bond funds continued after the large drawdown in May but tapered in the third quarter, as yield differentials to US Treasuries remained at slightly negative levels (Graph 9, left-hand panel). In contrast, outflows were muted for other EMEs, where pre-emptive monetary tightening contributed to positive yield differentials.

On the whole, EME currencies depreciated against the US dollar, but with notable differentiation across countries. A deteriorating current account deficit weighed on the Colombian peso, and persistently elevated inflation sapped the Argentine peso and Turkish lira (Graph 9, right-hand panel). In turn, dependence on expensive commodities was a headwind for some currencies, such as the Pakistan rupee. The dimming growth outlook in China, together with a negative differential relative to the US yield curve, contributed to a continued weakening of the renminbi. On the back

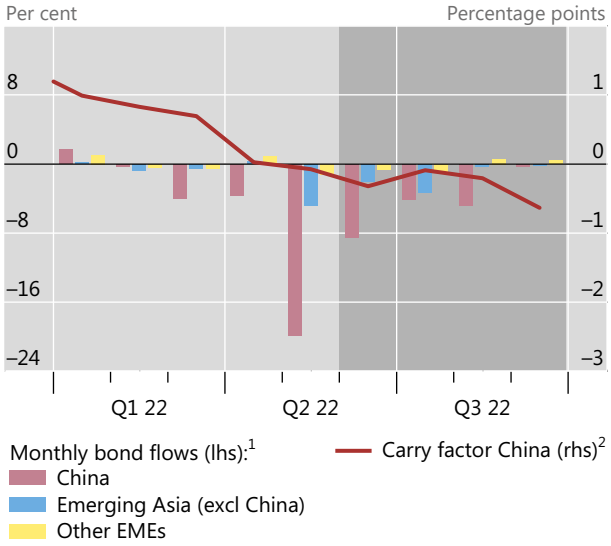
[5] Europe, the Middle East and Africa.

of an early tightening cycle and an attractive carry profile, some Latin American currencies proved more stable towards the end of the review period.

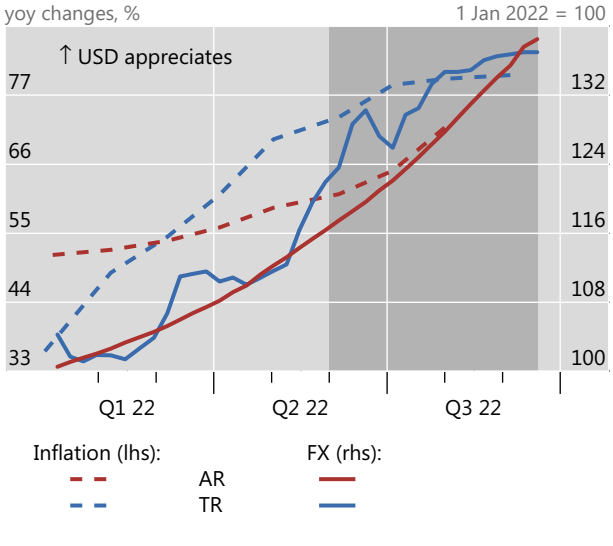
Bond fund outflows from China lingered; inflation weighed on some currencies

Graph 9

Chinese bond funds saw outflows as rate differentials turned negative



Accelerating inflation weighed on the Argentine peso and Turkish lira



The shaded areas indicate 1 June–12 September 2022 (period under review).

[1] Flows to local currency bond funds, scaled by previous month's assets. [2] The 10-year local currency sovereign bond yield minus the 10-year US Treasury yield; monthly average.

Sources: Bloomberg; EPFR; national data; BIS calculations.

Box A

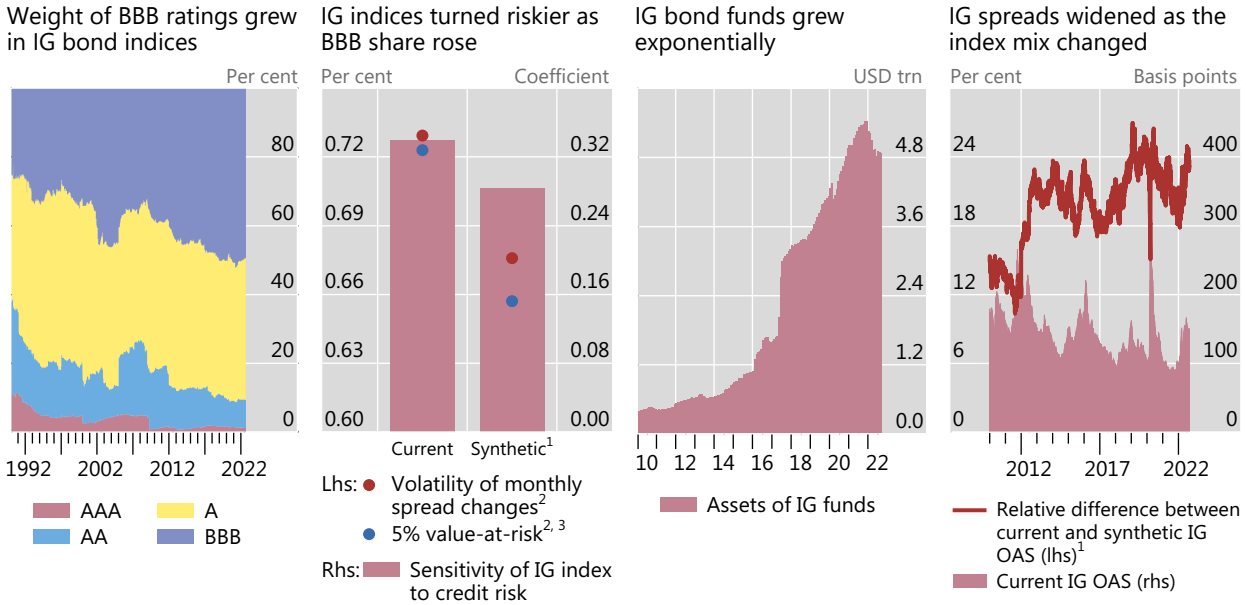
The increasing risk of investment grade indices: implications for investors

*Sirio Aramonte and Karamfil Todorov*①

Investment-grade (IG) corporate bond indices have grown riskier over time. The share of bonds rated BBB, the lowest rung of the IG segment, has been increasing for the past 30 years. At present, BBB bonds in one of the main US IG indices represent half of the total, up from 25% in 1990 (Graph A, first panel). The increase was mostly at the expense of bonds rated AA and above, whose current share is less than 10%, down from more than 35% 30 years ago. In this box, we explore the drivers of these changes and the implications for investors.

Investment grade indices have become riskier over the past 30 years

Graph A



IG = investment grade; OAS = option-adjusted spread.

[1] Weighted average of ratings-specific sub-indices, where the weights reflect the composition of the IG index at the start of 1990. [2] Annualised. [3] Displayed on an inverted scale.

Sources: Bloomberg; EPFR; ICE BofAML; BIS calculations.

The steady decline in the credit quality of IG indices reflects two broad trends in corporate markets. The first is search for yield in an environment of persistently low interest rates. Bonds rated BBB are particularly attractive to IG-focused investors that seek to earn higher yields, including many mutual funds.② The second broad trend is the general increase in issuance by BBB-rated firms, which accelerated with the launch of several central bank asset purchase programmes that further reduced these companies' cost of funding.③,④

The declining credit quality of IG indices has translated into a meaningfully higher risk of losses for investors. IG indices tend to be more sensitive to non-diversifiable credit risk than "synthetic" versions of these indices based on the rating composition in 1990 (Graph A, second panel, red bars). A moderate increase (one standard deviation) in credit risk would go hand in hand with an 11 basis points larger drop in current IG indices, as compared with synthetic ones. Given the present size of IG funds, this means that the change in the index's composition since 1990 would translate into an additional loss of $5 billion for investors. The higher risk is also visible in measures of tail risk (5% value-at-risk) and volatility (second panel, blue and red dots).

Understanding the implications of the increased riskiness of IG indices is particularly relevant for small investors. Funds benchmarked to IG indices have increased rapidly over the past decade and manage $4.8 trillion as of 2022 (Graph A, third panel). Investors in these funds are probably attracted by the increased income from riskier IG indices – their yield spread to Treasury bonds is currently 25% higher (35 basis points) than it would have been with 1990 rating shares (fourth panel). At the same time, small investors tend to rely on benchmarks to gauge the risk profile of funds⑤ and may not be fully aware that the riskiness of IG funds has increased, despite their unchanged IG label.

① The views expressed are those of the authors and do not necessarily reflect the views of the BIS. ② B Becker and V Ivashina, "Reaching for yield in the bond market", *Journal of Finance*, vol 70, no 5, October 2015. ③ For a recent study on the real economy implications of the demand for risky IG bonds, see V Acharya, R Banerjee, M Crosignani, T Eisert and R Spigt, "Exorbitant privilege? Quantitative easing and the bond market subsidy of prospective fallen angels", *BIS Working Papers*, no 1002, February 2022. ④ K Todorov, "Quantify the quantitative easing: impact on bonds and corporate debt issuance", *Journal of Financial Economics*, vol 135, no 2, 2020. ⑤ B Sensoy, "Performance evaluation and self-designated benchmark indexes in the mutual fund industry", *Journal of Financial Economics*, vol 92, no 1, 2009.

Box B

Are CLO investors underestimating tail risk in European markets?

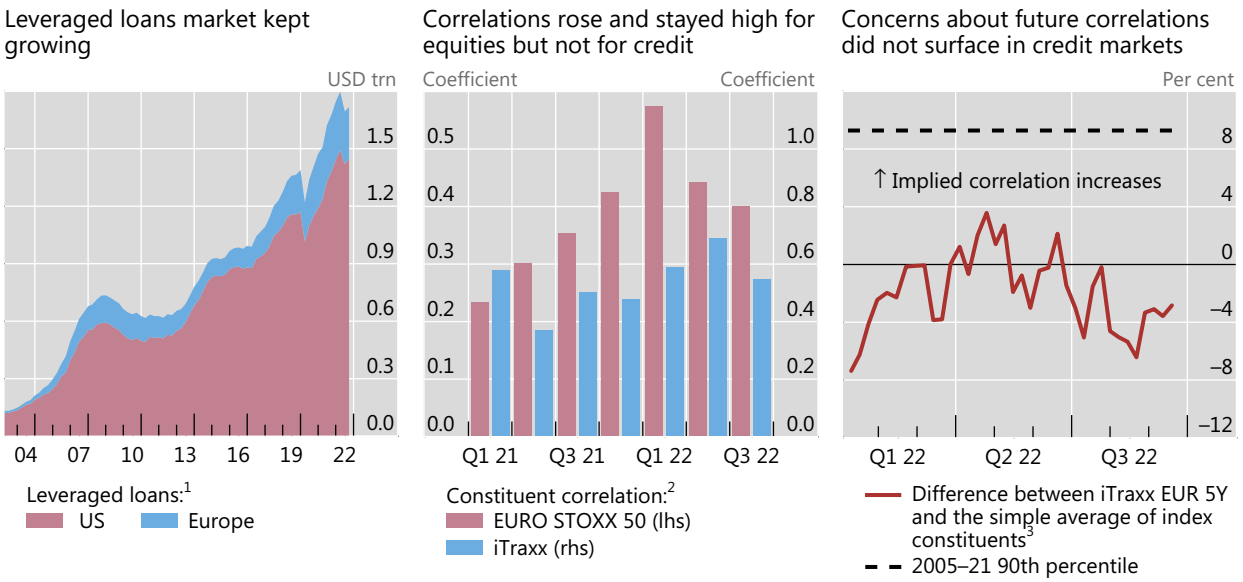
*Sirio Aramonte, Kirstin Detering and Karamfil Todorov*①

Collateralised loan obligations (CLOs) are among the largest holders of leveraged loans. CLOs are tranched securitisations, meaning that they invest in risky pools of leveraged loans using funds raised by issuing notes, or tranches, with different risk profiles. The most senior notes typically have AAA ratings because they are insulated by the junior tranches from all but the largest losses, which are more likely when defaults are highly correlated. CLOs are popular with ultimate investors for three main reasons. First, investors can fine-tune the desired risk exposure to a large market, as leveraged loans amount to more than $1.5 trillion overall in the United States and Europe (Graph B, left-hand panel). Second, CLOs' floating rates are appealing for investors seeking hedges against rising interest rates. Third, CLOs tend to engage in search for yield, enhancing the income stream.②

This box explores the potential implications of the energy crisis in Europe for AAA-rated CLO tranches, which are very sensitive to broad-based disruptions. Persistent issues with the supply of electricity or industrial inputs in Europe might worsen the outlook for many firms simultaneously, thus raising the risk of correlated defaults. Such a scenario could generate principal losses for AAA tranche investors, chiefly banks and insurers.③ Even in the absence of outright credit losses, price declines due to increased risk premia could generate mark-to-market losses.

European credit investors appeared unfazed that asset correlations could rise

Graph B



[1] For institutional leveraged loans, outstanding amounts are based on the S&P-LSTA leveraged loan index for the United States and the S&P European leveraged loan index for Europe (LSTA = Loan Syndications and Trading Association). From Q3 2018 onwards, outstanding amounts are based on JPMorgan leveraged loan indices. [2] Average stock return correlation for EURO STOXX 50 components and average correlation among relative CDS spread changes for iTraxx components. [3] The line shows the relative difference between the spread on a broad CDS index and the average spread of index constituents. This difference increases when investors perceive higher correlations among defaults.

Sources: Bloomberg; JPMorgan Chase; Thomson Reuters Loan Pricing; BIS calculations.

European CLO markets could be particularly exposed to correlated defaults. First, partly due to the smaller size of the European leveraged loan market relative to the US one, European CLOs have less diversified portfolios. Second, there is a higher overlap across the portfolio holdings of various European CLOs, which further limits investors' ability to diversify. Lastly, the European CLO market is relatively illiquid, which could amplify price swings in times of stress.④

Given the geopolitical forces at play and the structure of European CLO markets, it is noteworthy that market prices are sending divergent signals about default correlations. On the one hand, investors in equity markets have recognised that, due to the fallout of the Ukraine war, the outlooks for European companies are more intertwined than in the past. Indeed, realised correlations among stock returns rose sharply in Q1 2022 and remained somewhat elevated relative to the previous year. On the other hand, investors in European credit markets appear to see only a limited increase in default risk co-movement. This assessment rests on two observations. The first is that the correlations of changes in credit default swap (CDS) spreads increased only slightly after the Ukraine war and dipped below Q1 2021 levels by mid-year (Graph B, centre panel). The second is that a common market-based proxy for future default risk correlation rose after the war's outbreak but subsequently eased back to early 2022 levels (right-hand panel).

On balance, the jury is still out on whether defaults will be more correlated in the future. It is not unusual that equity and credit markets send divergent signals about correlations, which may reflect investor segmentation.⑤ However, if equity markets turn out to be correct in their assessment, the risk in AAA-rated CLO tranches is currently underpriced.

① The views expressed are those of the authors and do not necessarily reflect the views of the BIS. ② S Aramonte, S Lee and V Stebunovs, "Risk taking and low long-term interest rates: evidence from the US syndicated term loan market", *Journal of Banking & Finance*, vol 138, May 2022. ③ For a detailed discussion of possible spillovers from the CLO market, see S Aramonte and F Avalos, "Structured finance then and now: a comparison of CDOs and CLOs", *BIS Quarterly Review*, September 2019, pp 11–14. ④ M Wang and L Wang, "Global CLO market mid-year outlook", Citi Research, July 2022. ⑤ H Zhu and N Tarashev, "The pricing of portfolio credit risk", *BIS Working Papers*, no 214, September 2006.