

Pandemic twist and inflation challenge markets

Risk appetite proved resilient during most of the review period, but a wake-up call from renewed Covid-19 concerns curtailed the gains in late November.¹ Before the news of a new and threatening virus strain emerged, equity indices had risen strongly in many advanced economies (AEs). Corporate credit spreads in AEs had remained compressed, with issuance close to past records, indicating that financial conditions were still exceptionally accommodative. Government bond yields had increased, particularly sharply at the short end, as investors wrestled with fluid prospects of increased inflation and a removal of monetary accommodation. Government bond yields had also risen in emerging market economies (EMEs), as the fall in their currencies' value against a broadly appreciating US dollar revealed concerns about their economic outlook.

After what had been a strong quarter in most markets, stocks suffered important losses late in the review period. Equity prices in AEs, especially the United States, had climbed on the back of continued strength in both realised and expected earnings. However, the perceived risk of sharp corrections – as implied by option prices – remained elevated, pointing to persistent investor unease. The correction that eventually shook markets at the end of the period erased part of the previous gains in the United States, and left most other markets flat or with some losses.

Resilient risk appetite sustained strong corporate credit through the period. Bond spreads were almost as narrow as at any time since 2010, even for companies at the lower end of the ratings spectrum, although they widened in late November. Investment grade issuance remained strong, while that in the high-yield segment approached record highs. Exceptionally easy credit conditions prevailed beyond public markets, especially in the demand for cryptoassets and the private capital markets that serve smaller and startup borrowers.

Yield curves in AEs rose and flattened, as short-term yields surged midway through the review period, amid sometimes disorderly trading conditions. Central banks in AEs continued dialling down the extraordinary support required by the pandemic, but they generally maintained cautious guidance for the short and medium term. The apparent disconnect between this guidance and the sharp moves in front-end yields raised questions about whether investors disagreed on the outlook for inflation or on the most likely policy response, or whether other factors were at play, such as the forced unwinding of leveraged positions.

Financial conditions continued to tighten for many EMEs. Government bond yields rose, especially outside emerging Asia. US dollar strength, which intensified at end-November, also contributed to the tightening and added to inflationary pressures. This worsened monetary policy trade-offs, especially for countries grappling with pandemic-related challenges against a background of limited fiscal space. The stability of the Chinese renminbi stood out, despite the headwinds from a weakening growth outlook amid challenges for its real estate sector.

¹ The period under review is from 13 September to 29 November 2021.

Key takeaways

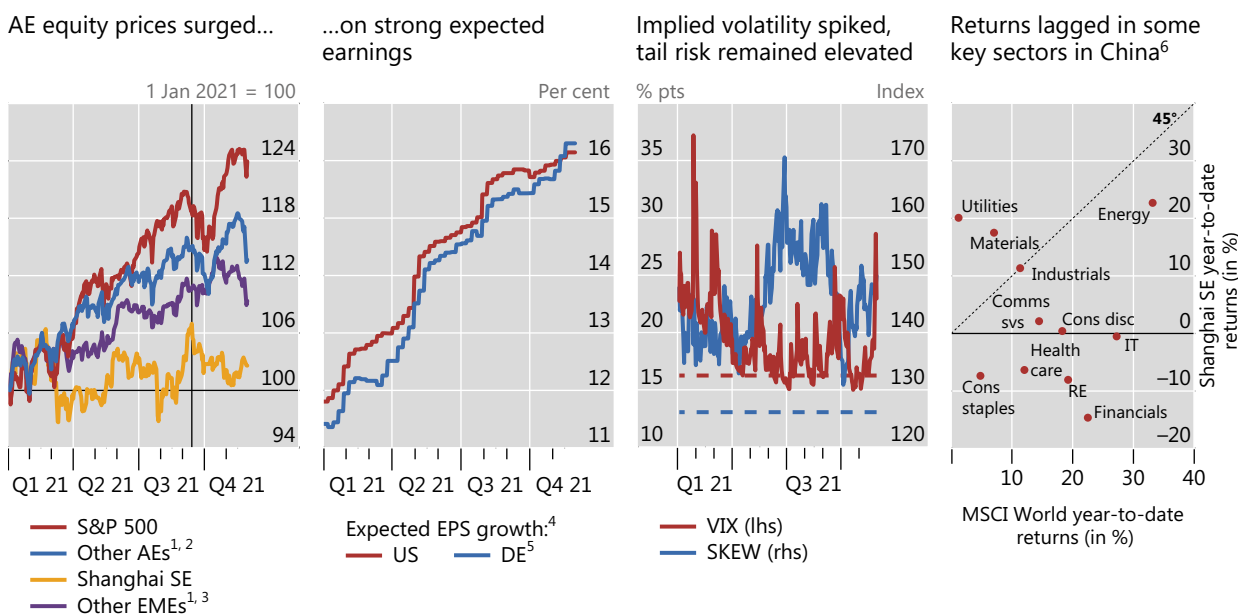
- Advanced economies' equity and corporate credit markets remained well supported, but sentiment was curtailed by concerns over a new virus variant as the period drew to a close.
- Government bond markets saw sharp yield moves, particularly at the front end, as investors' expectations for short-term rates diverged from central bank guidance.
- US dollar strength added to tightening financial conditions in several emerging market economies, where monetary authorities continued to fight persistent inflationary pressures.

Risky assets rise on earnings strength

Global markets for risky assets had proved resilient during the period under review, before the resurgence of virus concerns at end-November. Equity markets had posted material gains, which were curtailed or fully erased on the news at the end of the period. Conditions were brisk in corporate credit markets, where issuance and pricing remained very supportive, despite the later souring of investors' sentiment.

Stock markets in AEs gained on strong earnings before the virus-induced setback

Graph 1



The vertical line in the first panel indicates 13 September 2021 (start of period under review). The dashed lines in the third panel indicate 2010–current medians.

¹ GDP and PPP exchange rate weighted-average. ² AU, CA, CH, DK, GB, NO, NZ and SE. ³ BR, CL, CO, CZ, HK, HU, ID, IN, KR, MY, MX, PE, PH, PL, RU, SG, TH, TR and ZA. ⁴ Growth of expected earnings per share (EPS) between end-2020 and end-2023. ⁵ On 23 September the DAX index added 10 members, applying a selection criterion based on market capitalisation. For consistency, pre-22 September data are adjusted to match the new post-22 September level. ⁶ Based on local currency-denominated stock indices.

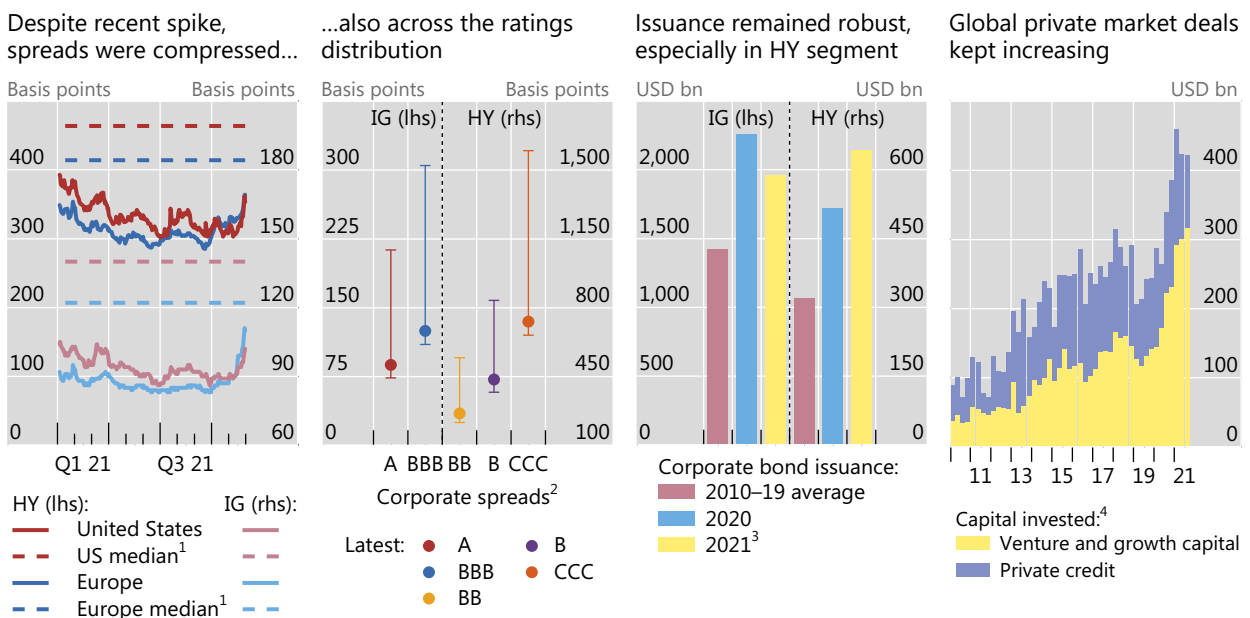
Sources: IMF; OECD; Bloomberg; Datastream; BIS calculations.

After a faltering start, equity markets gained strong momentum before recoiling at end-November. Early in the review period, stock prices lost ground in most jurisdictions, as persistent pressure on supply chains and rising commodity prices weighed on risk-taking (Graph 1, first panel). In AEs, particularly the United States, equity markets subsequently rebounded on the back of sustained strength in expected earnings (second panel). This positive turn also temporarily boosted the stock prices of EMEs other than China. However, tail risks still loomed large for investors. During most of the review period, perceived downside risk – as derived from option prices – remained high by historical standards (third panel, solid and dashed blue lines). Implied volatility, in turn, spiked when the emergence of the Omicron variant of Covid-19 made the downside risk more tangible (solid red line). The news erased gains in most markets, hitting sectors such as energy, financials, and industrials particularly hard. The S&P 500, however, still managed to end the review period with some gains.

Stock markets were subdued in China, staying largely detached from global trends. Developments in real estate markets and the policy pivot towards greater state oversight of key economic activities compounded concerns about slowing growth. Accordingly, the sectors with the most solid performance year-to-date globally (IT, real estate, financials) suffered valuation losses (Graph 1, fourth panel). The exceptions were energy, materials and industrials, where performance was in line with global benchmarks.

The corporate bond market remained buoyant, especially in its riskiest segments, notwithstanding the recent virus-induced spike. Spreads on investment grade (IG) and high-yield (HY) corporate bonds remained below historical norms in both the United States and the euro area, (Graph 2, first panel). For individual rating categories, spreads stayed at the lower end of their post-Great Financial Crisis (GFC) distribution

Brisk corporate credit markets supported record issuance by lower-rated firms Graph 2



¹ 2010–current. ² Whiskers show fifth and 95th percentiles; data starting in 2010. The corporate spreads displayed are the GDP and PPP exchange rate-weighted average of euro area and US ICE BofA Corporate spread indices. ³ For 2021, issuance data up to 29 November, projected to the full fourth quarter. ⁴ Data for Q3 2021 are still preliminary.

Sources: Bloomberg; Dealogic; ICE BofAML indices; Pitchbook; BIS calculations.

(second panel). Likewise, after a strong third quarter, corporate debt issuance rose comfortably above the average of the pre-pandemic decade (third panel). In particular, HY issuance in both the United States and the euro area surpassed the 2020 peaks on an annualised basis. Against this background, a record 80% of corporate bonds outstanding is currently rated BBB (ie just above HY) or below (HY), up from 75% in 2009.

The exceptionally easy financial conditions in credit markets were visible beyond corporate bonds, which are usually tapped by large companies. Indeed, the private credit markets, which serve smaller – typically, highly leveraged – borrowers, also sustained their post-GFC momentum (Graph 2, fourth panel; see also Aramonte and Avalos (2021, in this issue)). These strong flows continued while survey data indicated a material increase in non-performing loans (from nearly 1% in 2018 to 3% in 2020), declines in estimated recovery rates and a higher likelihood of covenant suspensions and acceptance of payment-in-kind. Resilient risk appetite extended beyond traditional finance, generating a growing demand for cryptoassets. Hence the introduction of the first bitcoin exchange-traded fund in the United States (Box A) and the continued startling growth in decentralised finance (see Aramonte et al (2021) in this issue).

Yield curves wobble amid unusual volatility

During most of the review period, while corporate asset markets remained ebullient, government bond markets saw significant volatility and heightened illiquidity. Two related developments characterised the path of fixed income markets: an apparent disconnect between central bank policy guidance and front-end rates that surfaced in October; and wide fluctuations in the shape of yield curves. As the review period drew to an end, the emergence of the new variant added some volatility to yields, but did not materially affect the disconnect – which had already narrowed somewhat.

Central banks in the largest AEs began to gradually lift the extraordinary measures deployed during the pandemic, while remaining on a cautious watch. In November, the Federal Reserve confirmed the widely anticipated beginning of its tapering of asset purchases, while the Bank of Canada stopped its securities purchasing programme altogether. The ECB had already indicated in December 2020 that purchases under the Pandemic Emergency Purchasing Programme (PEPP) would last at least until March 2022. Yet most major central banks indicated that the policy rate lift-off, while drawing closer, would not start soon, given the pandemic's lingering effects. Furthermore, they repeatedly stressed that the increase in inflation was transitory, even if more protracted than originally anticipated.

In the wake of a cluster of CPI releases in early October, fixed income markets swung and began pricing in policy rate hikes well in advance of central bank guidance. The extent of the gap can be assessed by comparing the time to lift-off implied by surveys of professional forecasters – typically well attuned to central bank communication – with that implied by overnight index swap (OIS) rates. While the two sets of expectations were perfectly aligned for most AEs in June (Graph 3, left-hand panel, blue dots on the 45-degree line), by late October OIS rates suggested that the first hike would occur much earlier than forecasters anticipated (red dots below the 45-degree line). The gap became particularly large in the case of Australia and the euro area, where the time to lift-off implied in OIS was less than half of that implied by surveys.

Launch of the first US bitcoin ETF: mechanics, impact, and risks

Karamfil Todorov^①

The first US bitcoin (BTC) exchange-traded fund (ETF), “BITO”, started trading on 19 October 2021. The fund debuted as one of the most heavily traded ETFs in market history, attracting more than \$1 billion in assets in the first few days. Subsequently, the ETF accumulated a significant share of all short-term bitcoin futures contracts, reaching about one third of the underlying futures market just 10 days after its launch (Graph A, first panel). This box explains how the futures-based structure of BITO differs from that of more traditional, non-futures-based equity ETFs and analyses the possible implications for prices and risks.

Background

So far, the Securities and Exchange Commission (SEC) has delayed or declined applications to launch an ETF investing directly in bitcoin, due mainly to concerns that the asset is predominantly traded on non-regulated exchanges.^② BITO is the first SEC-approved bitcoin ETF, largely because the fund is based on futures contracts that are traded on the regulated Chicago Mercantile Exchange (CME).

A futures contract is a legal agreement to buy or sell a particular asset at a predetermined price at a specified time in the future. Such a contract allows investors to take positions without holding the underlying asset. Since holding that asset gives rise to cost of carry – which may be positive in the presence of storage costs or negative due to a convenience yield – the futures price is typically different from the asset’s spot price. In the particular case of BITO, the asset is bitcoin and the cost of carry tends to be positive,^③ thus implying that the futures price is generally above the spot price, and that the futures curve tends to be upward-sloping (long-term futures contracts are more expensive than short-term ones).

How it works

To obtain bitcoin exposure, BITO enters into long positions in near-term (one-month) CME bitcoin futures contracts. As the contracts near expiration, the fund gradually sells them and buys longer-dated contracts – a strategy called “roll”. In addition, BITO holds a liquid pool of cash or cash equivalents, such as Treasury bills (Graph A, second panel). When the bitcoin price goes up, BITO uses the gains from the futures contract to expand its liquid pool. Conversely, when the bitcoin price goes down, BITO uses some of its liquidity to pay for the losses on the futures contract. This structure is different from that of traditional bond or equity ETFs, which simply hold bonds and stocks, but is similar to the way commodity or VIX ETFs are structured (Table A).

Futures-based ETFs vs. more standard equity and bond ETFs

Table A

	Futures-based ETFs (eg, bitcoin or commodities)	Standard ETFs (eg, equity or bond)
Holdings	Futures contracts and cash equivalents	Physical stocks/bonds
Creations and redemptions	Predominantly in cash	Predominantly in-kind
Rebalancing	Frequent, due to expiring futures contracts	Rare, except for inflows/outflows
Performance relative to spot	Under/outperforms if futures curve is upward/downward-sloping	Similar, up to a tracking error

Source: Author’s elaboration.

The rebalancing strategy of BITO can erode performance over time in a similar way to that seen in other commodity futures-based ETFs. Facing an upward-sloping futures curve, BITO pays “roll costs” when it rebalances its positions by selling expiring short-term contracts to buy long-term ones. Commodity futures-based ETFs provide examples of substantial cumulative erosion due to an upward-sloping futures curve (Graph A, third panel). Likewise, had it been launched in 2018, BITO would have underperformed spot prices by about 18% on a cumulative basis over the following four years to date (fourth panel).

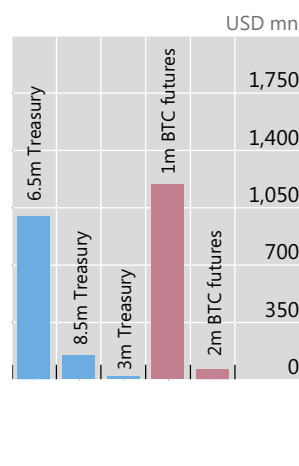
Futures-based bitcoin ETF: share of the market, holdings and performance

Graph A

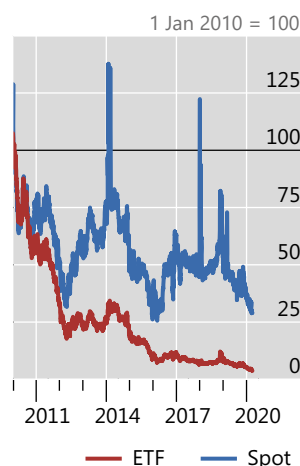
BITO quickly became a key player in the market¹



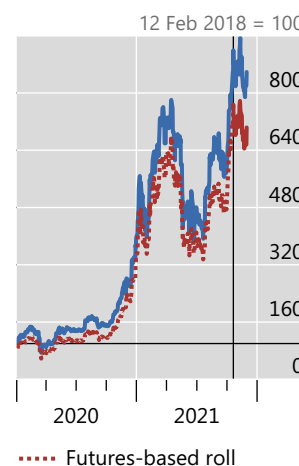
The ETF holds futures and cash equivalents²



Underperformance of gas futures-based ETF vs spot



Hypothetical BTC futures-based ETF vs spot³



¹ Total dollar position of the first US bitcoin (BTC) exchange-traded fund (ETF) BITO in the nearest two futures contracts divided by the total dollar open interest in those contracts. ² Holdings as of 4 November 2021. Futures holdings are reported in terms of exposure values; Treasury holdings are reported as market values. The chart excludes “net other assets/cash”. ³ For better visibility, the graph starts in January 2020. The vertical line marks the launch of BITO (19 October 2021). For the period before the launch, the ETF return is approximated with a rolling futures position that rolls over a period of one week before expiration. Rolling over a week is a common strategy for many commodity ETFs; see K Todorov, “Passive funds affect prices: evidence from the most ETF-dominated markets”, *BIS Working Papers*, no 952, July 2021. The bitcoin ETF does not have a clearly defined rolling period in the prospectus.

Sources: Bloomberg; author’s calculations.

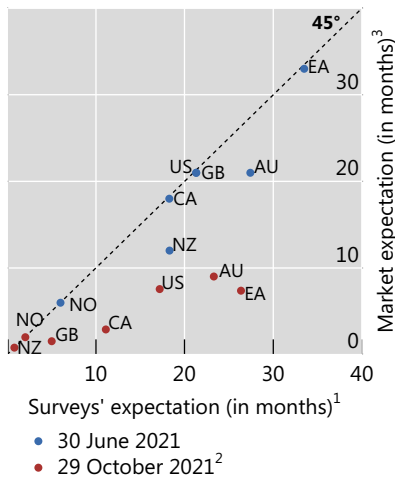
Impact on prices and risks

In general, a futures-based ETF is likely to affect prices in two main ways. The first effect works through flow rebalancing: when an ETF buys futures contracts in response to inflows, it pushes futures prices up, and vice versa for outflows. The second effect works through calendar rebalancing: as the ETF gradually sells futures contracts before expiration, their prices fall. At the same time, as the ETF buys longer-dated futures contracts, their prices increase.^④ The predictable rebalancing behaviour of the ETF may also give rise to “front-running” incentives, motivating investors to purchase longer-dated bitcoin futures in anticipation of the ETF rolling into those contracts. The price impact in the futures market can also spill over to spot prices through investors’ hedging behaviour, especially for assets with physical settlements of the futures contract and large storage costs. A prominent example is the drop of oil spot prices into negative territory in April 2020, when futures-based ETFs probably contributed to the increase in storage costs and the subsequent decline in spot prices.^⑤

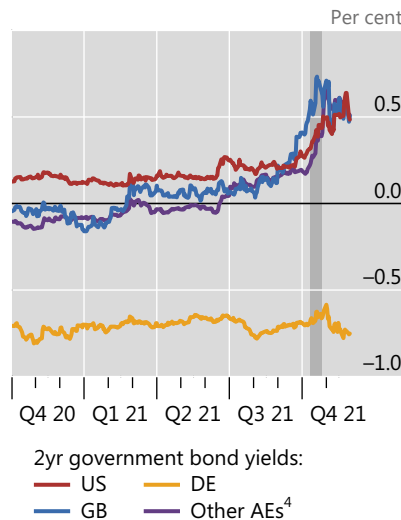
The bitcoin ETF may amplify volatility in prices and create risks for investors if the fund is a large share of the futures market. Experience suggests that futures-based ETFs can exacerbate price movements and create additional volatility when they have a large footprint in the underlying asset. For example, heavy ETF-induced trading unsettled VIX futures prices and contributed to the spike in VIX in February 2018.^④ This led to investor losses and subsequent delisting of the largest inverse VIX ETF. The trading by BITO could also spill over to fixed income markets through its holdings of cash equivalents. If the ETF were to liquidate these instruments in response to bitcoin depreciation or excessive outflows, that could put pressure on bond markets. At present, BITO is unlikely to cause such disruptions, as it holds mostly highly liquid short-term Treasuries and it is small relative to the market for these instruments.

① The views expressed are those of the author and do not necessarily reflect the views of the BIS. The author thanks Claudio Borio, Stijn Claessens and Nikola Tarashev for valuable comments. ② Spot-based bitcoin ETFs predated BITO in several non-US jurisdictions, including Canada and some European countries. ③ This is presumably due to a negative convenience yield, related to demand from investors using futures to lever up. ④ See K Todorov, “Passive funds affect prices: evidence from the most ETF-dominated markets”, *BIS Working Papers*, no 952, July 2021. ⑤ See S Aramonte and K Todorov, “Futures-based commodity ETFs when storage is constrained”, *BIS Bulletin*, no 41, April 2021.

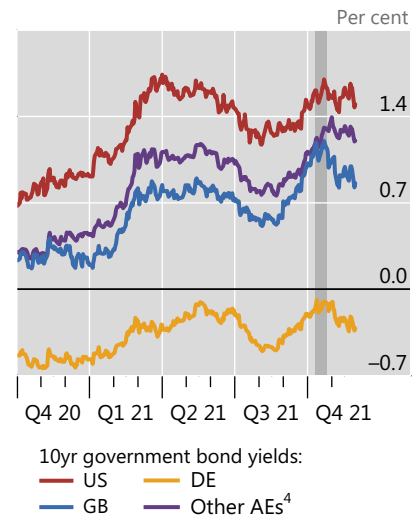
Divergent expectations regarding months to lift off



Short-term yields surge as investors reassess the path of inflation



Long-term yields wiggle with the economic outlook



The shaded area in the centre and right-hand panels indicates 11–26 October 2021 (release of September 2021 CPI data).

¹ Based on Bloomberg's weighted average of policy rate forecasts. ² Date selected to capture markets' reactions to the 11–26 October 2021 cluster of CPI releases. The picture remains roughly unchanged also when considering market expectations as of 29 November 2021. ³ Based on implied policy rates derived from OIS contracts. ⁴ Simple average across AU, CA, DK, NZ and SE.

Sources: Bloomberg; BIS calculations.

The relative shift in lift-off expectations raised questions about an apparent disconnect between central bank guidance and fixed income markets. Market repositioning aside (see below), such a disconnect could arise from differences in perceptions of the outlook – most notably as regards inflation – or a misunderstanding of central banks' reaction function. In analysing these alternative explanations, Box B presents suggestive evidence supporting the former. As the period under review wore on, some central banks gradually pivoted to less accommodative guidance, which appeared to soften the disconnect with market perceptions.

The disconnect had a forceful expression at the front end of AE term structures. With mounting evidence that supply shortages and energy price surges sustained the inflationary momentum, short- to medium-term yields increased markedly after the CPI releases (Graph 3, centre panel). Indeed, under market pressure, the Reserve Bank of Australia abandoned its yield control programme in late October, a few days before the Board meeting in which monetary policy decisions are routinely taken. Yields fell somewhat as the Omicron variant emerged in late November.

Long-term yields also saw some volatility during the review period. They had been on the rise since mid-August, particularly outside the United States (Graph 3, right-hand panel). In most AEs, 10-year yields had increased between 40 and 60 basis points between August and early October, in a move that seemed to closely track the sudden increase in energy prices. As volatility took off in October at the front end of the yield curve (centre panel), longer yields eased, notably in the United Kingdom and the United States.

Front-end yields and central bank guidance: what can explain the disconnect?

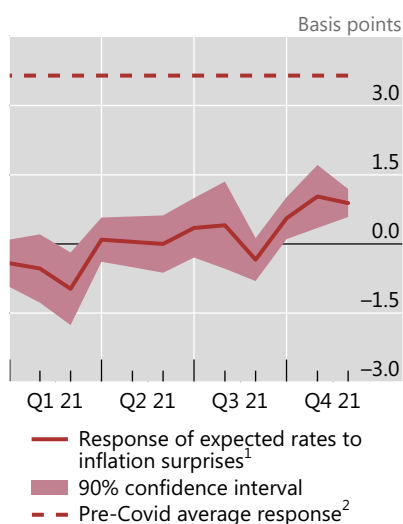
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The increase in advanced economies' front-end government yields between late September and late October exhibited signs of a disconnect from central bank policy guidance. This is because central banks had expressed the view that inflationary pressures were temporary, and policy rate increases, according to their guidance, were still some time away. In principle, two drivers could have accounted for the disconnect: investors' disagreement with respect to central banks' inflation outlook, or a misunderstanding of their reaction function.^③ This box examines these drivers and provides suggestive evidence that the disconnect was more likely to have stemmed from disagreements on the inflation outlook.

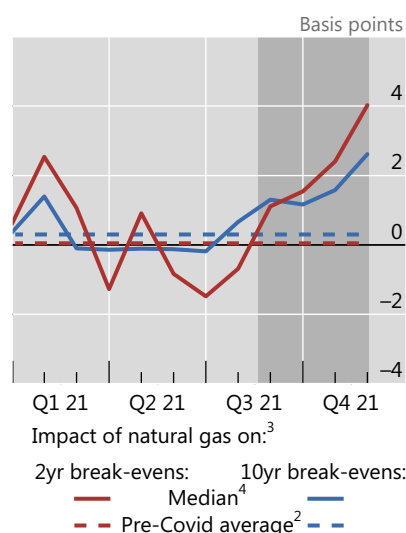
The disconnect seems to hinge on the inflation outlook

Graph B

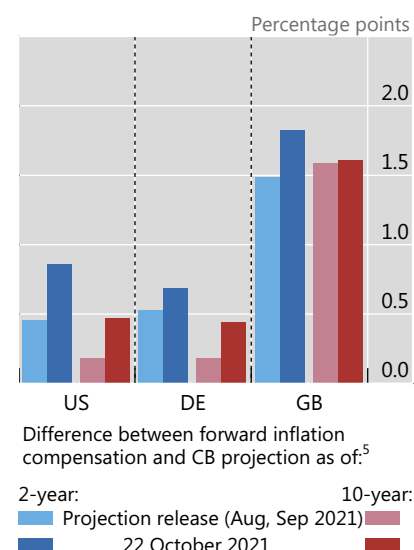
Market reaction to inflation surprises remains below pre-Covid norms



The impact of natural gas prices on break-evens has strengthened



Inflation compensation diverged further from central bank projections



The shaded area in the centre panel indicates 20 August 2021–latest (period covering the rally in natural gas prices).

¹ Coefficient obtained from a panel regression of changes in expected policy rate 12-months ahead (OIS) on inflation surprises. Inflation surprises are computed as the difference between reported inflation and Bloomberg's average of survey forecasts. The regression includes GDP and unemployment rates as controls, as well as country fixed effects. Coefficients are estimated on six-month rolling windows, with a one-month jump between windows. ² Based on data from January 2017 to January 2020. ³ Based on vector autoregressions including the two- or 10-year break-evens and natural gas prices (in logs). The lines depict the respective semi-elasticities of break-evens with respect to natural gas prices. Coefficients are estimated on windows of 120 trading days, with a 20-day jump between windows. ⁴ Median coefficient of a sample of four AEs (AU, DE, IT and US) for two-year break-evens, and eight AEs (AU, CA, DE, GB, IT, JP, NZ, and US) for 10-year break-evens. ⁵ The forward inflation rates are based on zero coupon inflation swaps: for the two-year horizon, this corresponds to the one-year/one-year forward rate, while for the 10-year horizon this corresponds to the nine-year/one-year forward rate. Central banks' projections are obtained from the FOMC Summary of Economic Projections (22 September 2021) for US, the ECB Economic Bulletin issue 6 (23 September 2021) for DE and the BoE Monetary Policy Report (5 August 2021) for GB.

Sources: Bank of England; Board of Governors of the Federal Reserve System; ECB; Federal Reserve Bank of St Louis, FRED; Bloomberg; national data; authors' calculations.

The shifts in advanced economies' (AEs) fixed income markets did not appear to be driven by any questioning of central bank guidance. If investors doubted the guidance, inflationary surprises – ie differences between realised inflation and the market consensus expectations – would have raised market-implied measures of expected policy rates. In fact, the sensitivity of such a measure (12 months ahead) to inflation surprises has been close to zero throughout this year (Graph B, left-hand panel, solid line). Indeed, this sensitivity was much lower than before the pandemic, when most central banks were on a path to normalising monetary conditions (dashed line). Taken at face value, these findings suggest that investors seemed convinced that, by and large, central banks were sticking to their guidance by “looking through” short-term inflation realisations.

By contrast, the outlook for inflation seems to loom large in bond market pricing. Inflation compensation (or break-evens) across AEs was particularly sensitive to changes in energy prices in recent months, notably in the wake of the extraordinary rally in the price of natural gas. The sensitivity of AE inflation break-evens to gas prices – which can drive inflationary pressures through wholesale electricity costs – has become much larger in recent months than in the pre-Covid period (Graph B, centre panel, solid vs dashed lines). Remarkably, both short- and long-term break-evens have shown a large sensitivity to the price of this energy source, in turn suggesting that investors were concerned not only about the immediate impact of gas prices but also about the lingering effects.^④

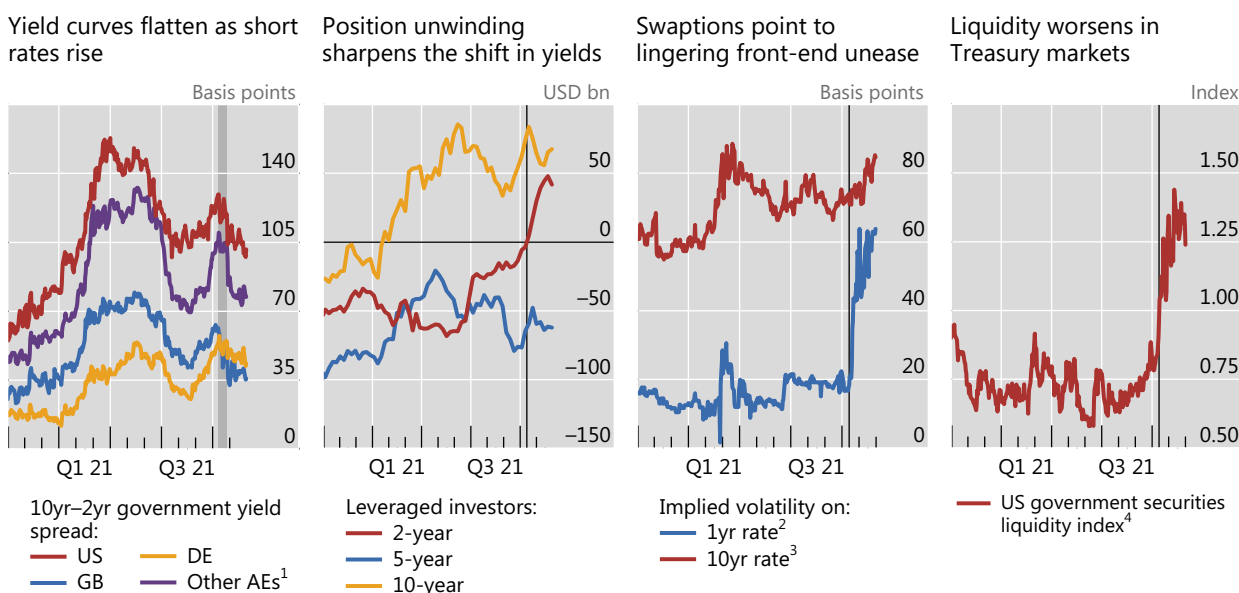
The material increase in the gap between inflation compensations – as captured by break-even rates – and central bank inflation projections during October can be seen as a further indication of disagreement on the outlook. The relatively large widening of the gap in October (Graph B, right-hand panel) points to a significant change in the attitude or perceptions of investors with regard to the inflationary outlook. That change seems to have transpired irrespective of the magnitude of the inflation surprises observed in October. The variations in an already complex inflationary outlook reduced investors' incentives to hold nominal bonds that were providing deeply negative yields in real terms (ie after inflation).

^① The views expressed are those of the authors and do not necessarily reflect the views of the BIS. ^② The authors thank Claudio Borio, Stijn Claessens, Andreas Schrimpf, Hyun Song Shin and Nikola Tarashev for helpful comments and discussions. ^③ Granted, price shifts due to investor repositioning, or other technical issues reflected in impaired arbitrage, may have exacerbated the disconnect. ^④ Other bottlenecks may be playing a role in the surge of inflation compensation as well, especially the shortage of semiconductors constraining several areas of manufacturing, and logistical bottlenecks that brake international trade and clog global value chains. See D Rees and P Rungcharoenkitkul, “Bottlenecks: causes and macroeconomic implications”, *BIS Bulletin*, no 48, November 2021.

Yield curves whipsawed as action shifted between the two ends of the term structures. In a matter of a few days following the CPI news in October, term structures that had been steepening over several weeks suddenly flattened, compressing term spreads to the levels prevailing in mid-year (Graph 4, first panel). The additional swings caused by the news of the Omicron virus strain affected all yields similarly, resulting in a parallel downward shift in term structures that had little impact on term spreads.

Investor positioning and leverage exacerbated the violent movement in yields. Market intelligence suggests that the initial jump in front-end yields caught leveraged investors wrong-footed, forcing them to unwind their positions. Indeed, in line with this interpretation, futures positions across several Treasuries contracts suddenly reversed in early October, following the US CPI release (Graph 4, second panel).

The sharp bout of volatility in Treasuries left scars in several closely related market segments. The implied volatility in short-rate swaptions remained very elevated (Graph 4, third panel). Moreover, a broad measure of liquidity conditions in Treasury markets, based on yield curve fitting errors, also worsened significantly in the wake of the dislocations (fourth panel). Similar developments took place in the bond markets of other AEs. This is a tell-tale sign of arbitrage capital's inability or unwillingness to lean against mispricing.



The shaded area in the first panel indicates 11–26 October 2021 (release of September CPI data). The vertical line in the second, third and fourth panels indicates 13 October 2021 (release of US September 2021 CPI data).

¹ Simple average across AU, CA, DK, NZ and SE. ² Based on USD swaptions with three-month maturity that give the right to enter a one-year overnight indexed swap. ³ Based on USD swaptions with three-month maturity that give the right to enter a 10-year overnight indexed swap. ⁴ Average yield-curve fitting error across the universe of US Treasury notes and bonds with remaining maturity of one year or longer, based on the intra-day Bloomberg relative value curve fitter.

Sources: Bloomberg; CFTC; BIS calculations.

Investors' concern about the inflation outlook in AEs was an important factor behind these yield adjustments. Indeed, market measures of inflation compensation increased markedly during the period under review, following a long pause in some cases (Australia, Canada, New Zealand, Sweden and the United States) and continuing an earlier trend in others, such as the United Kingdom and the euro area (Graph 5, first panel). The surge was especially stark in the euro area, where the outsize increase in natural gas prices passed through to wholesale electricity prices.

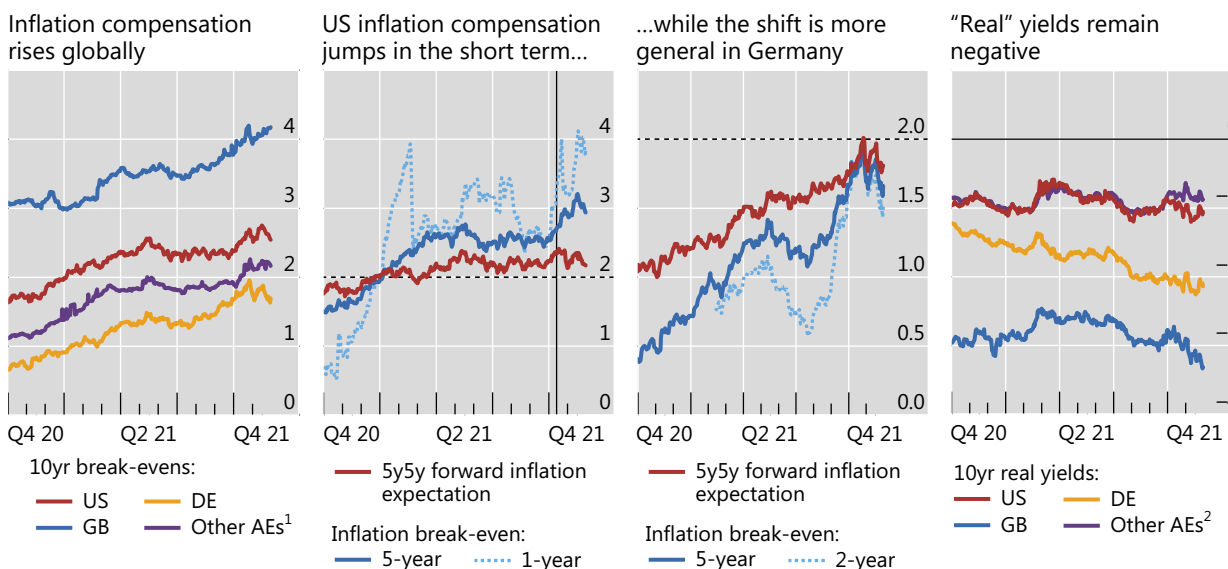
The repricing of the inflation outlook was concentrated mainly on the short and medium term. This was most visible in the United States, where compensation for inflation over the one- and five-year horizons moved sharply above the Federal Reserve's 2% inflation target in October and November, after having been broadly in line with it (Graph 5, second panel, solid and dashed blue lines). In contrast, inflation compensation beyond five years continued fluctuating very close to the target (red line). In Germany, all measures of inflation compensation have been gradually approaching the ECB's target throughout the year, with shorter-term measures in particular surging during the review period (third panel).

Yields on inflation-linked government securities ("real yields") remained deeply negative. Despite the increase in nominal yields, not least during the review period, real yields fell further across all AEs (Graph 5, fourth panel). The 10-year US real yield has remained negative for about 22 months in a row, a record since the US Treasury began issuing inflation-protected securities in 1997. Some observers have interpreted this fact as an enduringly sober outlook for long-term economic growth. Market commentary also points to persistent supply-demand imbalances in this market segment against the backdrop of strong investor appetite for inflation hedges.

The inflation outlook looms large in bond markets

In per cent

Graph 5



The vertical line in the second panel indicates 13 October 2021 (release of US September 2021 CPI data). The horizontal dashed line in the second and third panels indicates the respective inflation target.

¹ Simple average of AU, CA, NZ and SE. ² Simple average of AU, CA and SE.

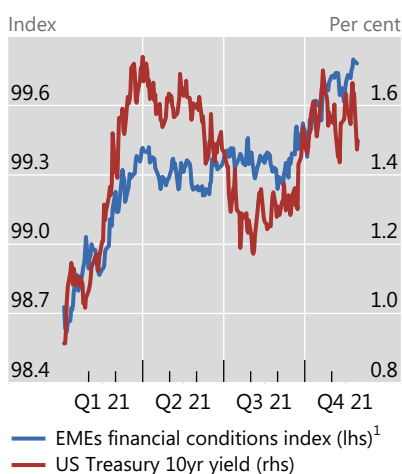
Sources: Federal Reserve Bank of St Louis, FRED; Bloomberg; BIS calculations.

Clouds on the horizon for EMEs

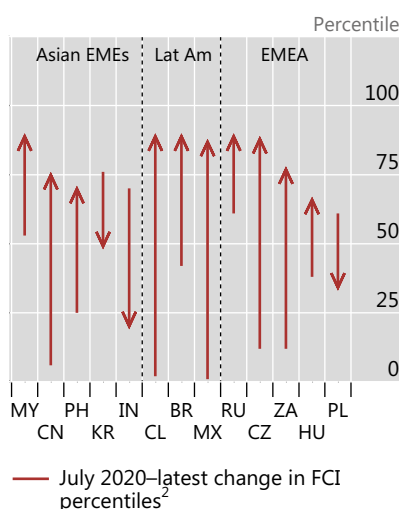
Several EMEs were battered by a combination of rising global rates and stubbornly high domestic inflation. Rising AE long-term rates early in the review period intensified funding strains, putting additional pressure on exchange rates. This compounded concerns about reduced fiscal space and persistent inflation in most countries, especially in Latin America. Home-grown challenges characterised the plight of other EMEs, notably China, which faced continued stress in its large property sector and a softening growth outlook. Several countries confronted worsening policy trade-offs, with inflation calling for tighter policy while recoveries lagged. The pandemic news at the end of the period only exacerbated these developments: broad financial conditions continued tightening, as sovereign yields rose further and exchange rates extended their depreciation.

Financial conditions tightened for most EMEs. A commonly used gauge – combining information from riskless rates, credit spreads, exchange rates, and stock prices – pointed to a tightening just as AE long-term rates inched up early in the review period (Graph 6, left-hand panel). This mimicked developments during the first quarter, when the reflation trade had been in full swing. However, unlike then, financial conditions did not ease much when AE long yields reversed course. This probably reflected exchange rate weakness and rising local currency yields, as central banks fought persistent inflationary pressures (see below). Over the past 18 months, the financial headwinds have been particularly strong in Latin America, followed by China and Europe, the Middle East and Africa (centre panel). For many EMEs, the most recent conditions are close to the tightest they have been over the past year and a half.

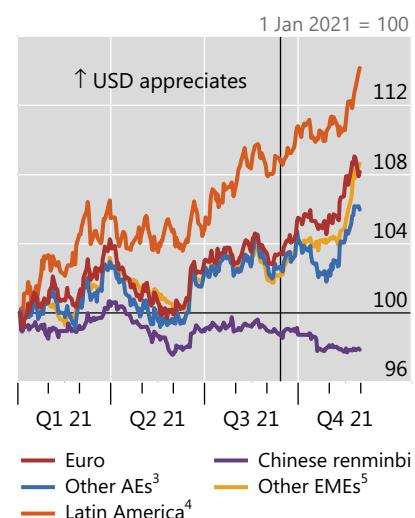
EME financial conditions tightened with rising AE yields



Tightening was broad-based



The dollar appreciated against most currencies, notably those from Latin America



The vertical line in the right-hand panel indicates 13 September 2021 (the start of the period under review).

¹ Goldman Sachs financial conditions index (FCI), which is a weighted average of country-specific riskless interest rates, exchange rate, 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 For each country, the arrow's starting point indicates the percentile of the FCI on 1 July 2020, calculated using the country-specific FCI distribution from 1 July 2020 to 29 November 2021. The endpoint of the arrow indicates the percentile of the FCI on 29 November 2021, calculated using the same FCI distribution. The arrows thus express the size and direction of the change in FCI percentiles over the period. An upward (downward) arrow indicates tightening (loosening). ³ AU, CA, CH, DK, GB, JP, NO, NZ and SE. ⁴ AR, BR, CL, CO, MX and PE. ⁵ CZ, HK, HU, ID, IL, IN, KR, MY, PH, PL, RU, SA, SG, TH, TR, TW and ZA.

Sources: Bloomberg; Goldman Sachs, Marquee; BIS calculations.

Exchange rates were a key factor in most countries. While the dollar appreciated broadly during the period under review, especially towards the end, gains were particularly large vis-à-vis EME currencies, most notably in Latin America (Graph 6, right-hand panel). Together with rising energy prices, renewed currency weakness exacerbated the inflationary pressures that had been building earlier in the year. The Turkish lira was hard hit, plunging by as much as 15% on a single day, in the wake of a third consecutive rate cut despite high inflation. The Chinese renminbi, in contrast, was the most notable exception.

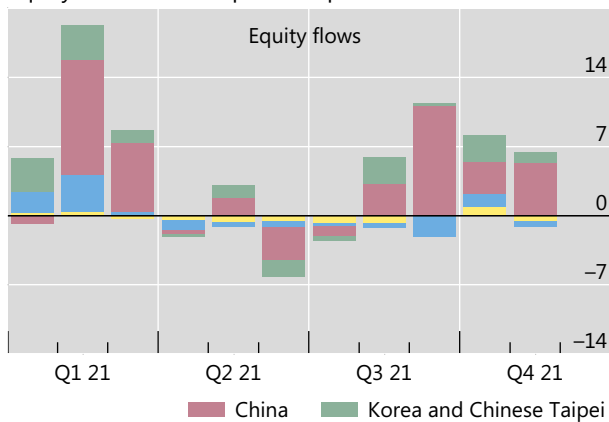
Flows into equity and bond funds painted a mixed picture, with the swings affecting Asian EMEs almost exclusively. Despite China's challenges, flows to equity funds in this country picked up after a few months of net outflows (Graph 7, left-hand panel). The rebound came after closer scrutiny on listings outside China made it difficult to get exposure to Chinese assets offshore. Equity flows to Korea and Chinese Taipei remained strong, as had been the case for these two global semiconductor hubs almost continuously since the outbreak of Covid-19. Other EMEs, in contrast, saw no equity flows on net over the period under review. Flows to bond mutual funds displayed varying country patterns. Positive inflows towards Chinese funds contrasted with large outflows from Asian EMEs other than China, Korea and Chinese Taipei (right-hand panel).

Portfolio inflows remained tilted towards Asian EMEs

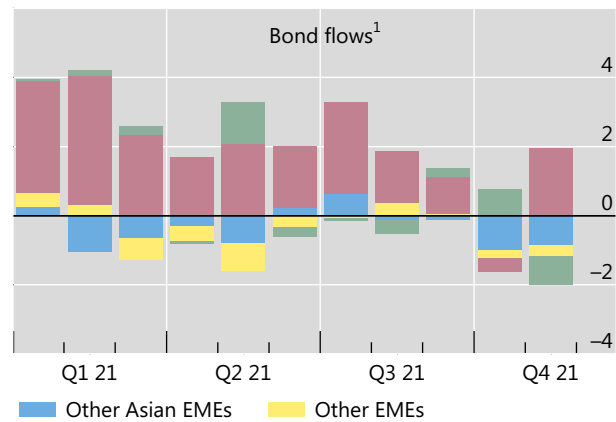
In billions of US dollars

Graph 7

Equity flows inched up after a period of net outflows...



...whereas flows into bond funds were subdued



¹ Flows to local currency bond funds.

Sources: EPFR; BIS calculations.

The predicament of several EMEs was visible in sovereign funding markets, especially in local currency. Prompted by persistent inflation, many central banks continued their hiking cycles (eg those of Brazil, Chile, the Czech Republic, Russia) or began tightening (eg Colombia, Poland). Accordingly, local currency sovereign bond yields rose in most EMEs, contributing to the tightening of financial conditions (Graph 8, first panel). By contrast, spreads on US dollar-denominated sovereign bonds pointed to a somewhat more benign picture, suggesting only moderate investor concerns about credit risk (second panel). Exceptions include China, where a temporary rise was probably due to spillovers from sectoral stress, and Latin America, where an ongoing upward path was boosted by the news on the pandemic front.

Turning to corporate markets, stress remained concentrated in China. As regards local currency yields, they inched up only slightly for investment grade Chinese borrowers but spiked sharply for the riskiest companies (Graph 8, third panel), not least in the wake of the recent Covid news. While spreads rose substantially in China, also for dollar-denominated corporate debt, they barely budged in other EMEs (fourth panel). As in AEs, credit spreads recorded an uptick towards the end of the review period.

Local currency yields rose in some EMEs; contagion from China remained limited

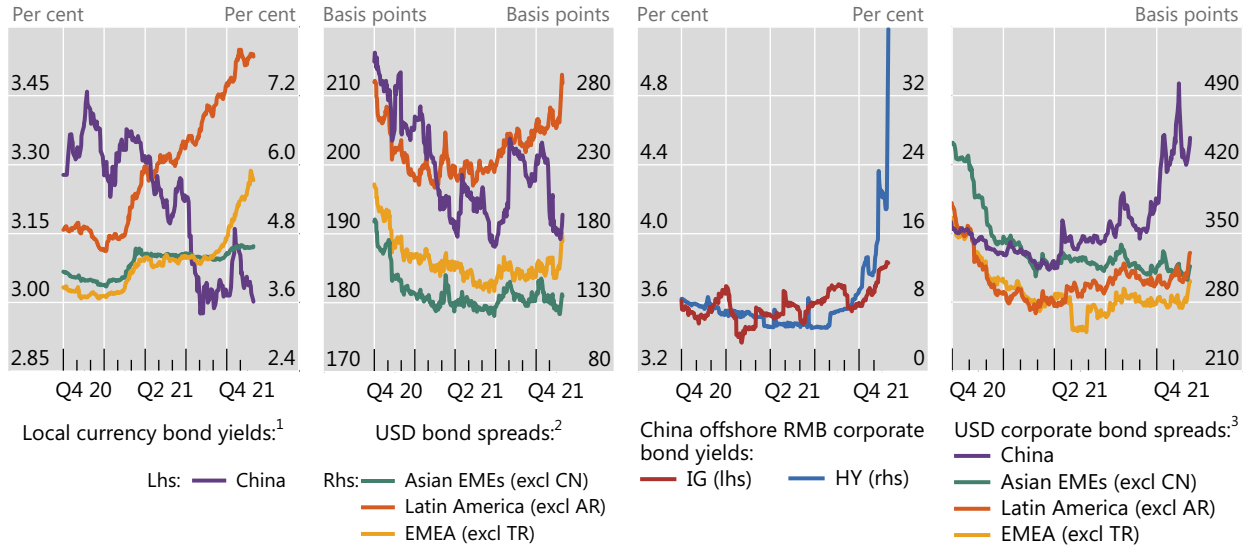
Graph 8

Sovereign yields picked up, especially outside Asia

Latin America also saw rising sovereign USD spreads

Bond yields spiked for riskiest Chinese borrowers

Credit risk rose in China, with no visible contagion



¹ Simple averages of JPMorgan Chase GBI sub-indices, traded yields. ² JPMorgan Chase EMBI Global sub-indices, stripped spreads. ³ JPMorgan Chase CEMBI sub-indices, stripped spreads.

Sources: IHS Markit; JPMorgan Chase; BIS calculations.