Global Financial Trends | In Charts

EURODOLLAR LIQUIDITY RISKS -A DASHBOARD

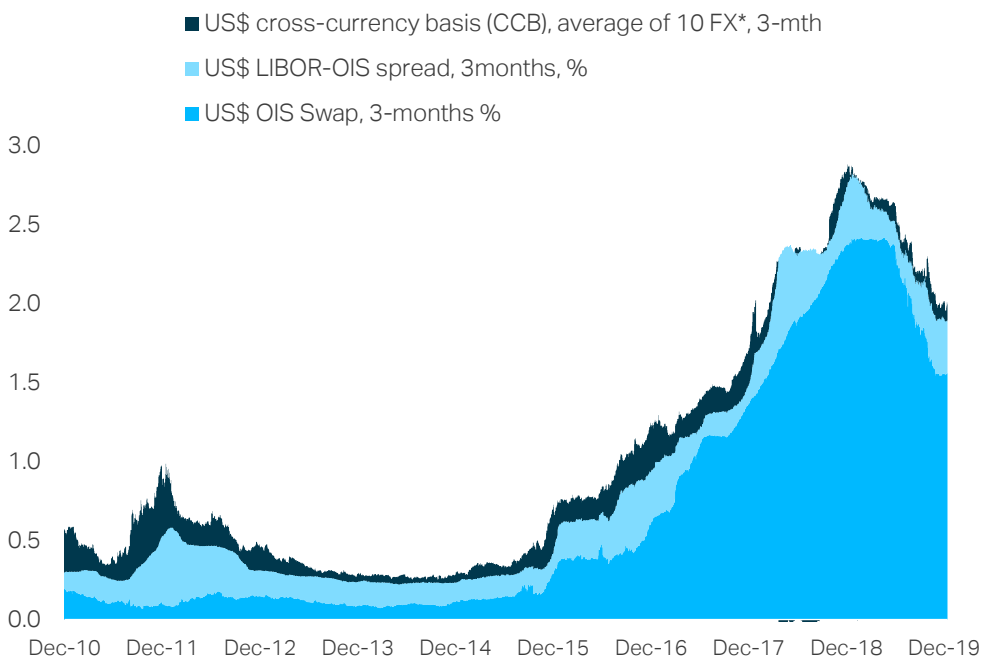
Shweta Singh

- Global financial conditions and Eurodollar costs continue to ease. Why?
- Still, investors are anxious about a return of the year-end liquidity squeeze
- We create a dashboard to monitor offshore dollar liquidity

Summary	key points
Fed policy	• Fed funds target rate • The size of the Fed's balance sheet • Bank reserves at the Fed • Foreign reverse repos at the Fed
Money market strains	• Unsecured money market: a gap between the top of the fed funds target range and the interest on excess reserves • Secured money market: a gap between the top of the fed funds target range and the overnight secured funding rate
Hedging costs	• Dollar cross-currency basis: for three months and five years • Dollar LIBOR-OIS spread • Slope of the US yield curve • Slope of the US funding curve
Foreign players	• FX reserves at EM central banks • Hedging costs (see above) • Relative hedged returns on dollar-denominated assets • Risk sentiment
Dollar	• The level and direction of the dollar

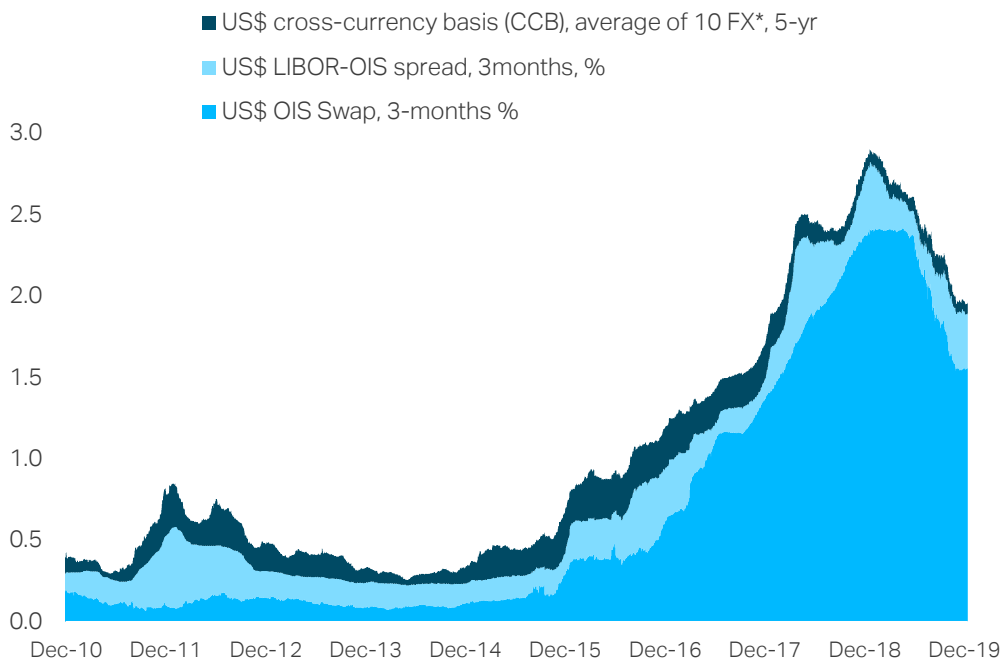
Eurodollar costs

US$ funding costs (using 3-month CCB)



**AUD, CAD, CHF, DKK, EUR, JPY, GBP, NOK, NZD, and SEK; signs reversed*

US$ funding costs (using 5-year CCB)



**AUD, CAD, CHF, DKK, EUR, JPY, GBP, NOK, NZD, and SEK; signs reversed*

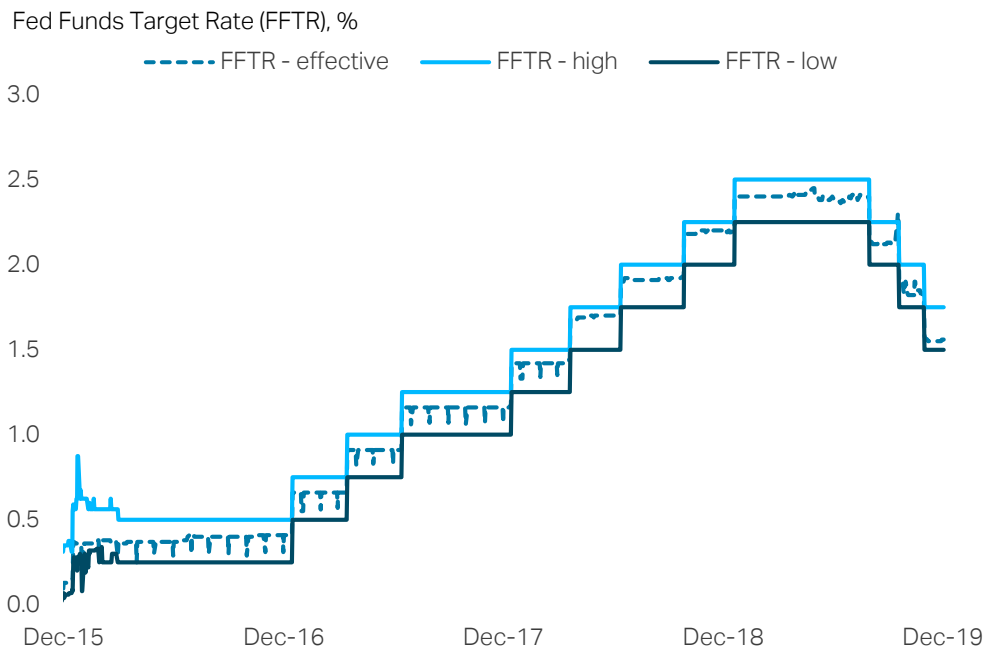
One of the better ways of measuring the cost of borrowing dollars outside the US (Eurodollar) is through the charts above, which include hedging costs. The price of borrowing dollars peaked towards the end of last year and is back at early 2018 levels.

Most dollar funding is shorter term, but structural shifts in international dollar flows are more clearly evident over a slightly longer time horizon. As a result, we take into account the dollar cross-currency basis over three months *and* five years. In both cases, Eurodollar costs have eased.

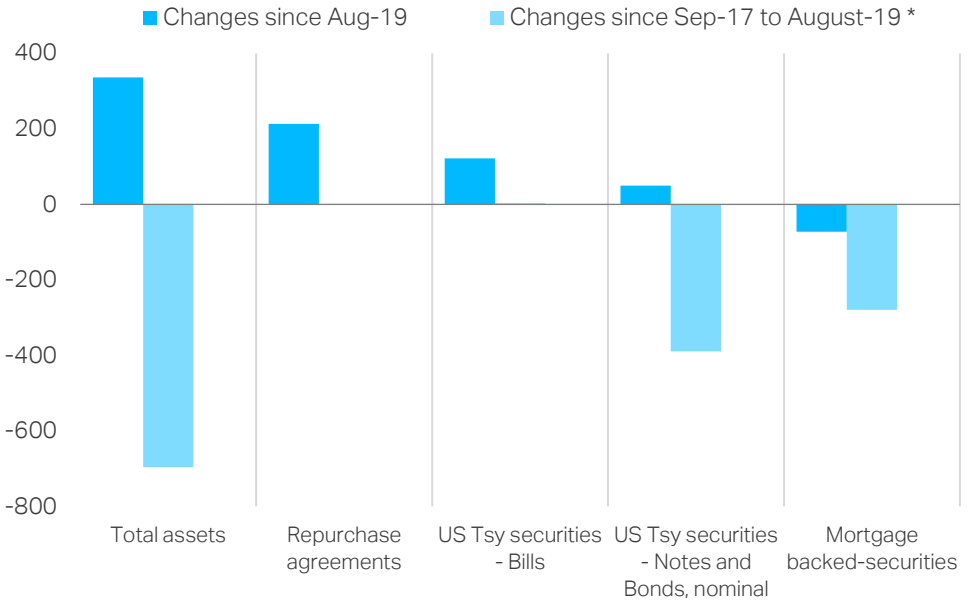
What is pushing the cost down? More importantly, what could derail the trend?

Fed policy

Fed rate cuts



The Fed's balance sheet - the asset side



*FOMC balance sheet normalisation programme took place between Oct-17 and Aug-19

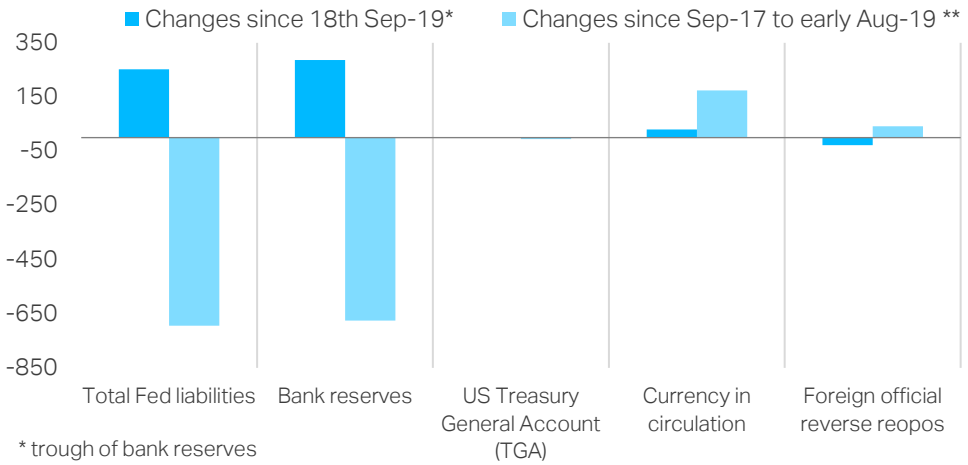
A key driver of lower Eurodollar costs has been the rapid shift in Fed policy. Following 225bps of hikes during 2016-18, the US central bank cut the fed funds rate by 75bps between July and October to 1.5%-1.75% (see chart above).

What's more, the Fed is expanding its balance sheet again. A shortage of bank reserves, especially against the backdrop of a jump in Treasury issuance, which pumped up the supply of collateral, led to severe money market frictions in September. To ease these strains, the Fed has conducted $213bn in overnight and term repos (see chart above). More recently, the Fed announced additional operations 'to ensure that the supply of reserves remains ample and to mitigate the risk of money market pressures around year end that could adversely affect policy implementation'.

Bank reserves and foreign reverse repos

The Fed's balance sheet - the liability side

Fed's liabilities, $ bn



* trough of bank reserves

** FOMC balance sheet normalisation programme took place between Oct-17 and Aug-19

Foreign reverse repos

Fed liabilities, reverse repo of foreign official and international accounts, weekly, $ bn

The Fed also resumed buying assets in mid-October. Our chief US economist, Steve Blitz, estimates that the central bank will buy $480bn of TBills over the eight months beginning on October 15. This is on top of $20bn of new Treasury debt that it is purchasing each month with the cash rolling off from its mortgage portfolio. If all these purchases occur, it would come to 95% of net new Treasury issuance in this period assuming a $1trillion run-rate for the deficit.

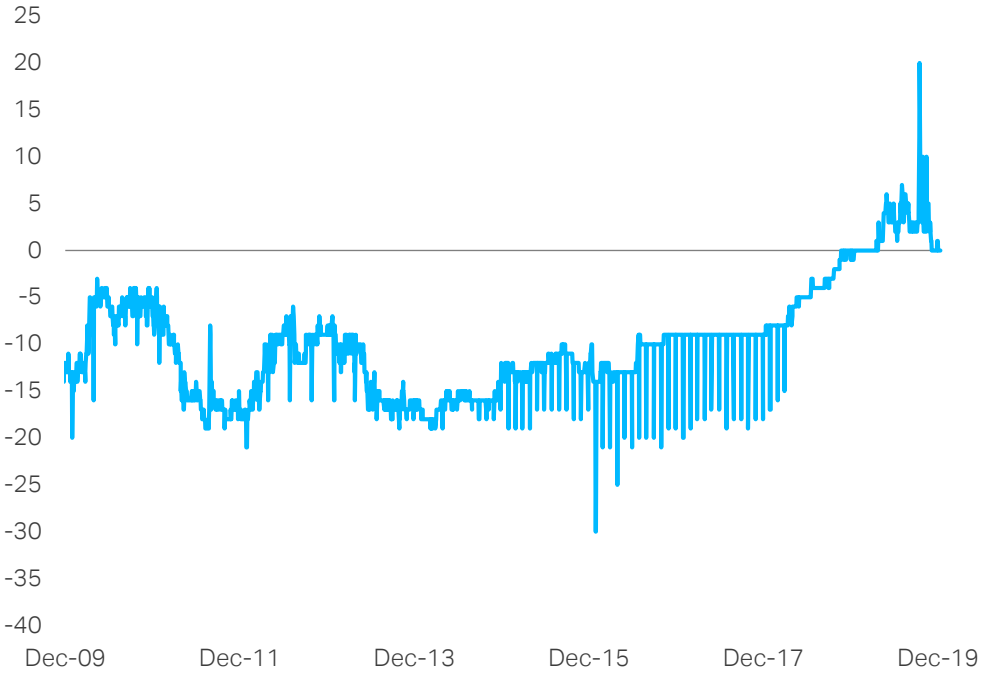
The size of the planned purchases is open to interpretation but, judging by statements from the Fed and the NY Fed, the objective is to get reserves to a size where the funds rate will trade within the targeted range without the need for the Fed to engage in daily repo operations.

Combined with 75bps of cuts in the fed funds rate since July, the Fed's balance sheet expansion has added some steepness to the yield curve.

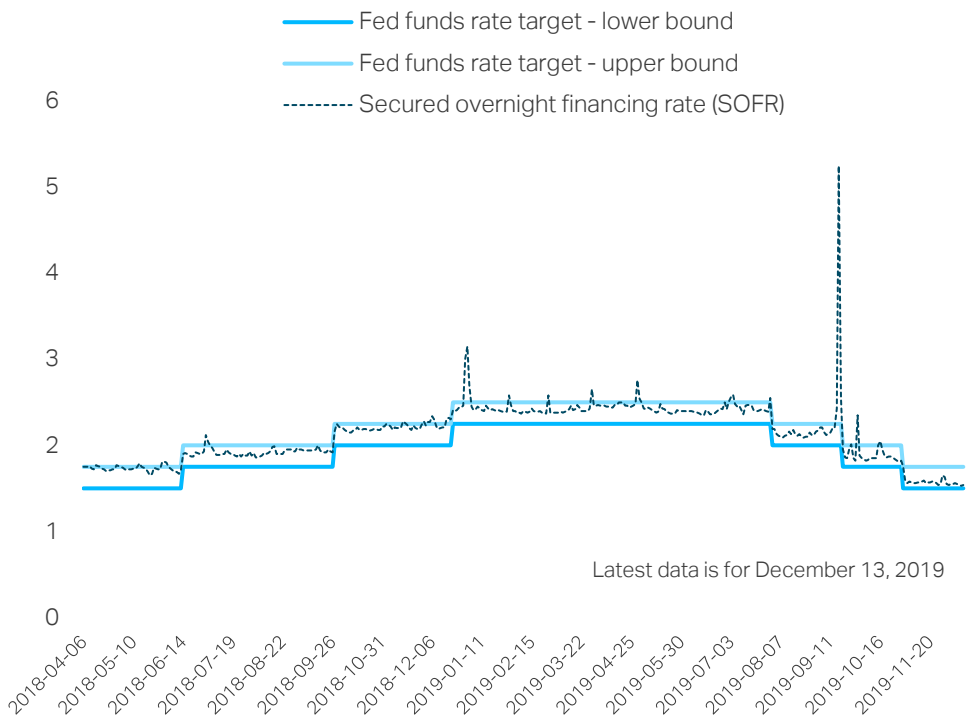
Partly as a result of this, the volume of foreign central banks' reverse repos with the Fed – which squeeze bank reserves, other things being constant – has fallen (see chart above). Specifically, lower returns on dollar assets (especially on a hedged basis due to a flat or an inverted curve) encouraged foreign banks to increase their reverse repos at the Fed – it gave them decent returns while minimising liquidity risks. Separately, easing trade war concerns have also helped bring down reverse repos. It has reduced worries about an FX war, thereby easing the pressure on Asian EMs in particular to pursue weaker exchange rates. A growing intervention by EM central banks resulted may have boosted their dollar holdings which were then parked as reverse repos at the Fed.

US money market stress

Effective fed funds rate less IOER, bps



Effective fed funds rate less IOER, bps

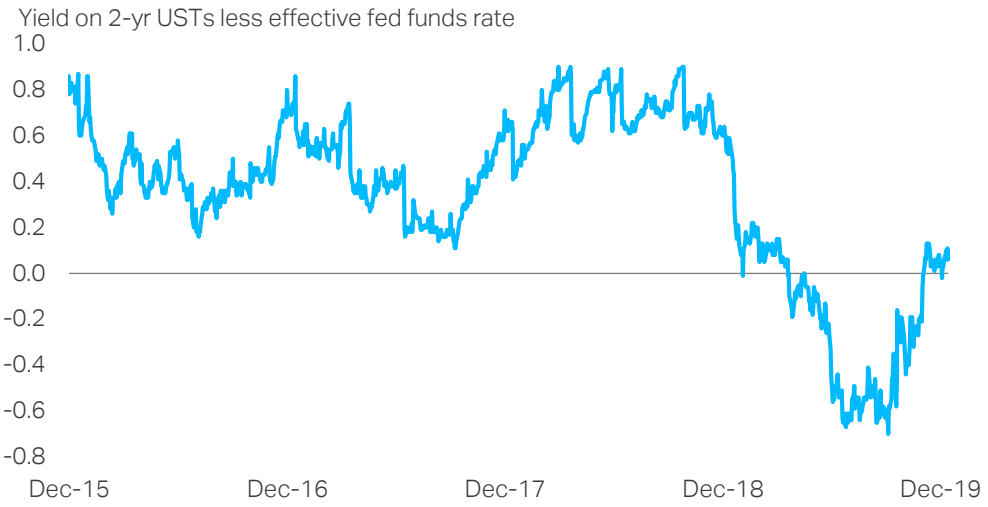


Consequently, the strains in secured and unsecured money markets have eased rapidly since September. For instance, the effective funds rate is no longer above the interest rate on overnight excess reserves (IOER, see chart above) – a sign that concern about a scarcity of reserves has receded. Banks appear able and willing to tap their excess reserves and lend them into the (unsecured) overnight market when the fed funds rate exceeds the IOER, thus benefiting from the arbitrage.

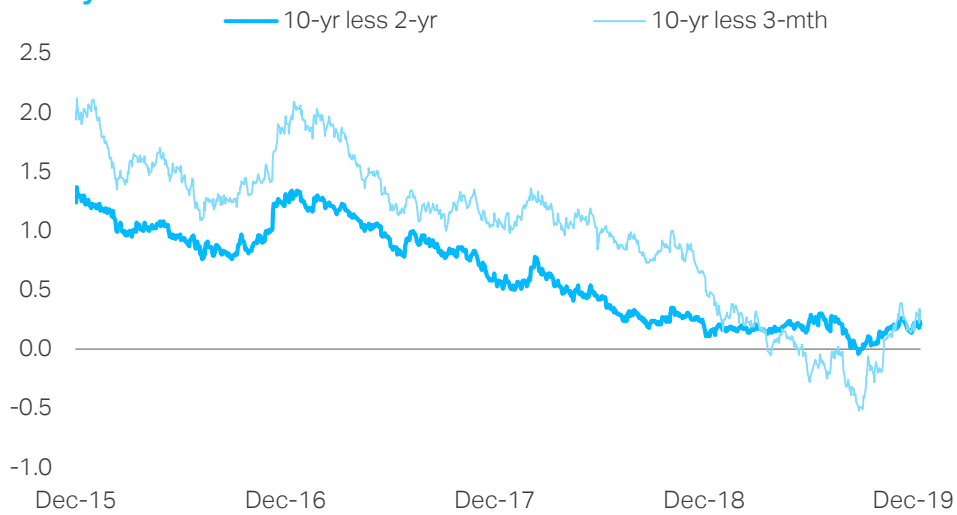
Accordingly, as frictions in the secured lending markets have eased, the overnight repo rate has fallen below the upper bound of the fed funds target range (see chart above).

The funding and yield curves

The US funding curve



The yield curve



As we briefly mentioned on page 5, the interest rate cuts have added some steepness to the funding curve (chart above). The inverted funding curve made it less profitable for banks to lend. As a result, henceforth we should expect to see some improvement in credit supply, with ripple effects likely to be felt outside the US as well.

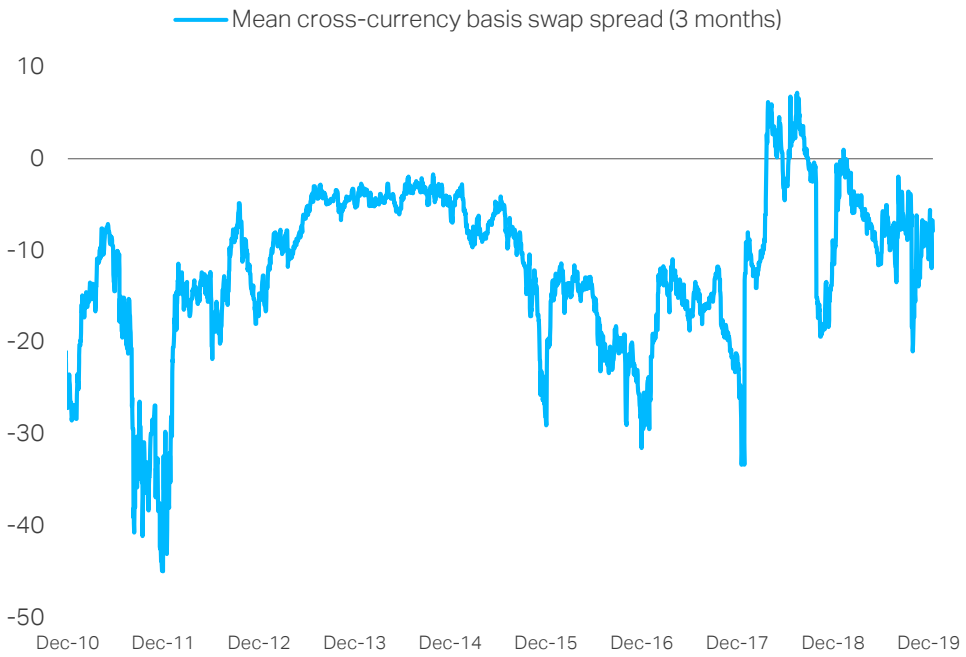
Meanwhile, the Fed's purchase of short-duration assets has kept the front end well bid. Coinciding with growing expectations of a truce in the US-China trade war, this has pushed long-end yields higher and thus steepened the yield curve (chart above).The slope of the curve has huge implications for offshore dollar liquidity.

(1) **A steeper curve makes US assets more attractive to foreign investors**. As a result, it lessens the pressure on primary dealers, who are obligated to clear the supply of USTs at auctions. A drop in foreign demand exacerbated the offshore dollar funding crunch at the end of 2018 and worsened US money market strains this September.

(2) **A steeper curve reduces foreign central banks' reverse repos**. Consequently, there is less crowding out of bank reserves, easing pressure on money market rates (also see slide 5).

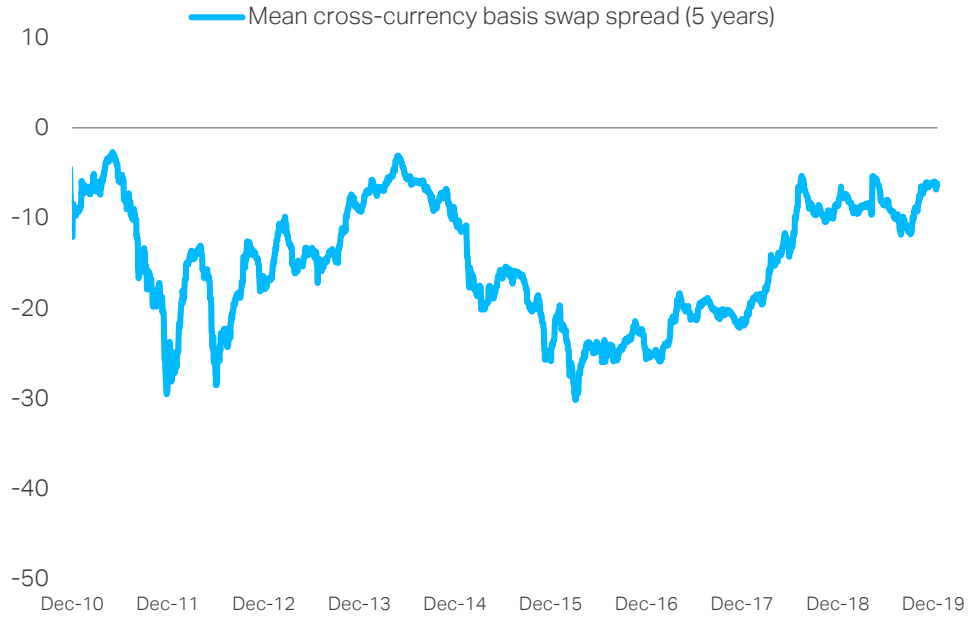
Dollar cross-currency basis (CCB)

USD funding costs: $ basis , 3 months



*AUD, CAD, CHF, DKK, EUR, JPY, GBP, NOK, NZD, and SEK . A $-cross-currency basis is defined here as the difference between the implied $ interest rate from the swap market when swapping foreign currency into dollars and $ interest rate in the cash market.

USD funding costs: $ basis, 5 years



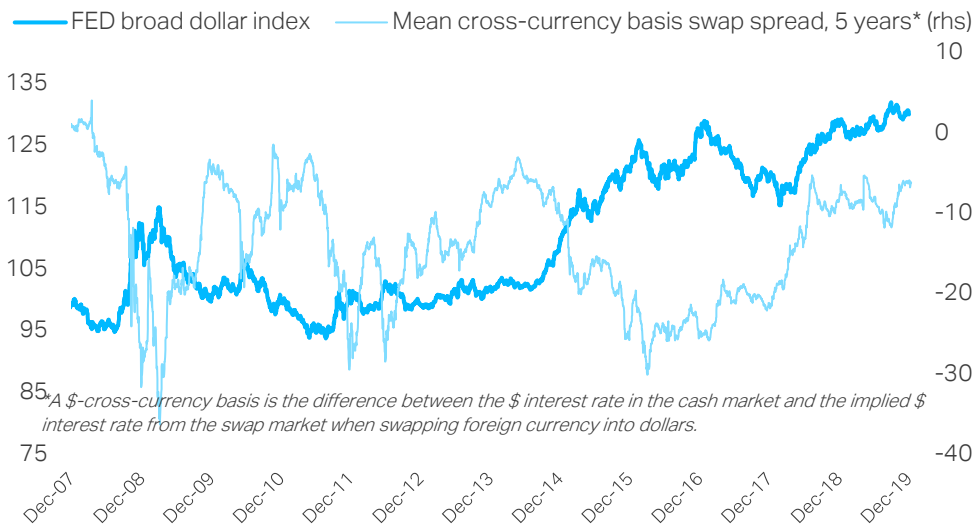
*AUD, CAD, CHF, DKK, EUR, JPY, GBP, NOK, NZD, and SEK . A $-cross-currency basis is defined here as the difference between the implied $ interest rate from the swap market when swapping foreign currency into dollars and $ interest rate in the cash market.

The cost of hedging dollar positions, as measured by the dollar cross-currency basis, has fallen over the past three months after surging during the September squeeze (see chart above).

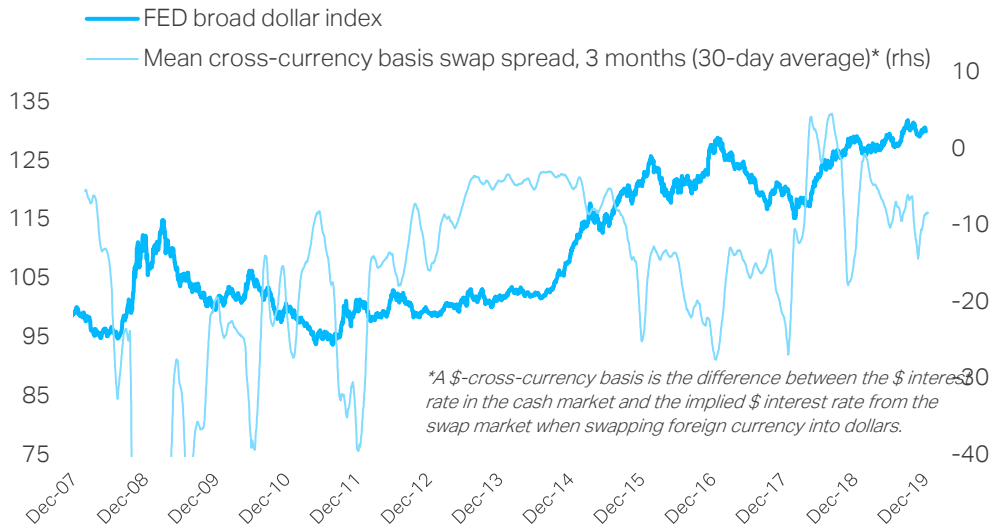
The five-year dollar CCB also widened in the run-up to the September crunch, although by much less than the three-month basis. The gap has narrowed since then. Should we expect a blow-up in the basis as the year-end approaches? That depends on why the basis has narrowed.

Dollar cross-currency basis and the dollar

$-cross currency basis and the $



$-cross currency basis and the $



A stronger dollar has generally coincided with a wider dollar basis. The supply of currency swaps has become increasingly tied to movements in the greenback in the wake of post-GFC money market mutual fund (MMMF) reforms and banking sector regulations.

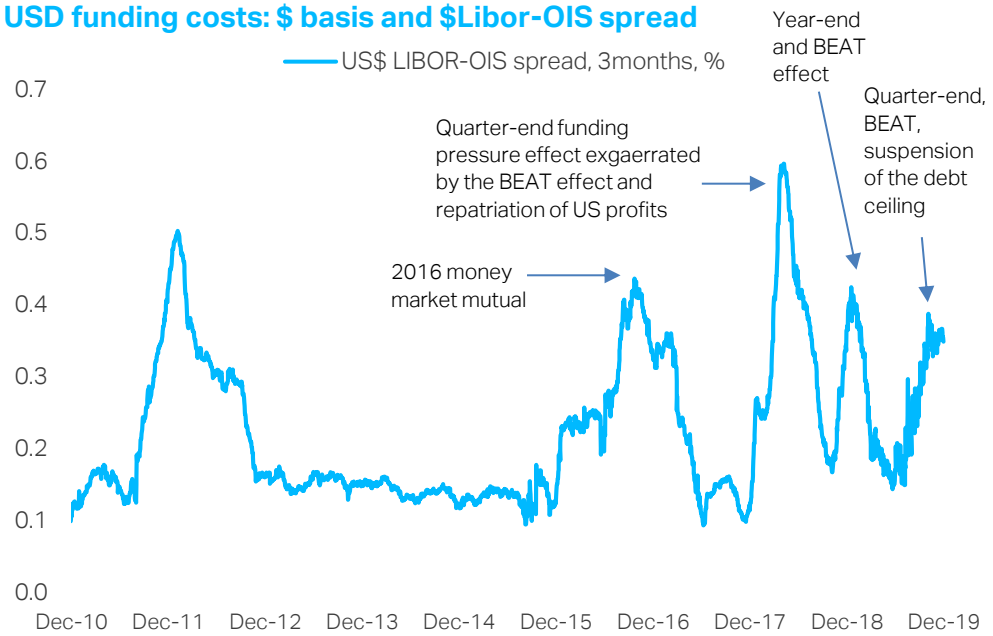
Non-US banks, the main providers of offshore dollar credit, rely on relatively volatile short-term dollar funding. MMMFs used to be a major supplier of this unsecured funding, including in the commercial paper market. But MMMF reforms in 2016 slashed the size of prime mutual funds, pushing non-US banks towards FX swaps to fund their dollar assets. US banks are among the largest providers of these swaps. But their readiness to extend swaps diminishes as the dollar appreciates. That's because the balance sheets of dollar borrowers, which usually don't have matching dollar assets, weakens when the dollar strengthens.

From the standpoint of banks, this deterioration increases tail risk in the credit portfolio and reduces spare capacity for additional balance sheet expansion, including the supply of currency swaps. Balance sheet constraints have become more severe as a result of stricter international banking regulations (such as the leverage ratio) introduced since the GFC. Thus, as a strong dollar deters banks from writing currency swaps, hedging – and the overall cost of offshore dollar funding – becomes more expensive. **These pressures are more intense during quarter and year-ends when banks report their regulatory ratios.**

A dip in the dollar since the September squeeze has helped narrow the basis. More fundamentally, though, the relationship between the greenback and the dollar CCB has weakened since Trump's late 2017 tax reforms, which we discuss overleaf. As a result, we need to put more emphasis on other metrics to gauge offshore dollar liquidity.

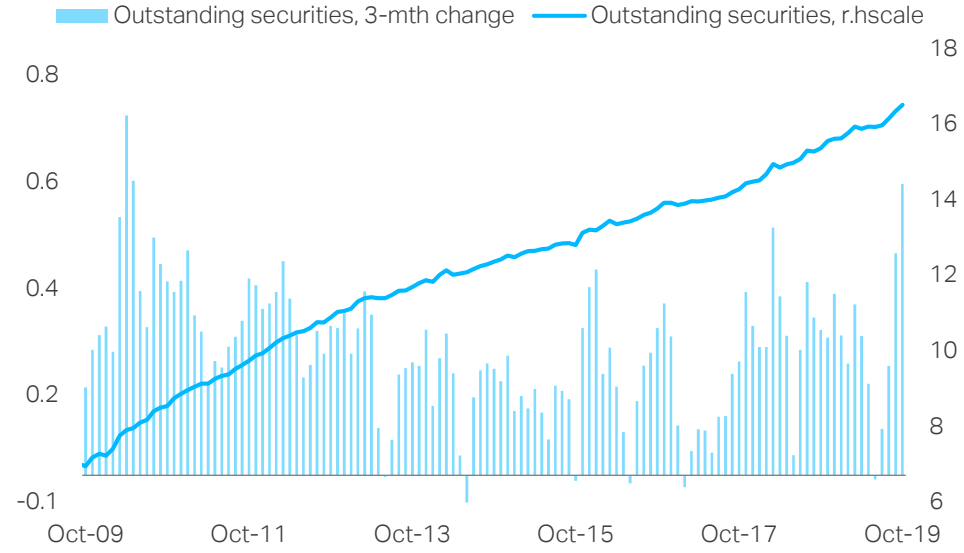
Dollar LIBOR-OIS spread

USD funding costs: $ basis and $Libor-OIS spread



Heavy treasury issuances

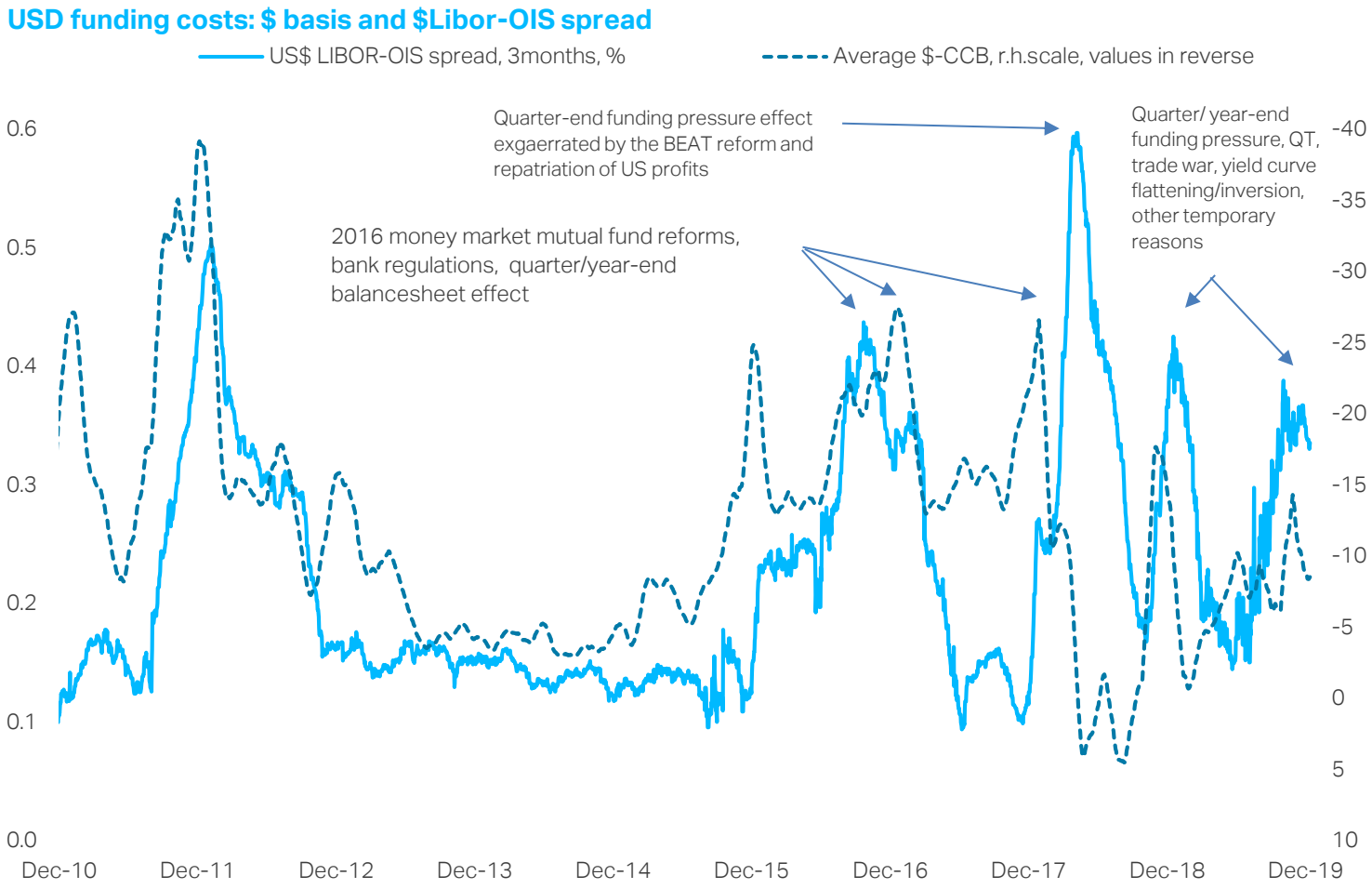
US Tsy securities, marketable, US$ trillion



An important development in the currency swaps market has been the US base erosion and anti-abuse tax (BEAT) introduced as part of the December 2017 tax reforms. The law has shifted the source of offshore dollar funding from swaps to the money market. Before the BEAT tax, it was common for the US branch of, say, a Japanese bank to tap the JPY deposits of its Japanese parent and swap them for dollars to fund its dollar assets. But BEAT has made such cash transfers taxable and thus more expensive. **This has pushed US branches of foreign banks to obtain dollar funding within the US by issuing debt instead, putting upward pressure on the dollar LIBOR-OIS spread.**

Another reason for the higher spread is an increase in Treasury issuance. The US Treasury has been rebuilding its cash reserves, which it had had to run down to keep the government running before Congress finally agreed to lift the federal debt ceiling in July. As a result, the Treasury has been auctioning more debt recently, especially at the short end, and parked some of the funds in its Treasury General Account (TGA) at the Fed.

Dollar CCB and dollar LIBOR-OIS spread: link or no link?



Until 2016, the dollar cross-currency basis and dollar LIBOR-OIS spread moved in the same direction, as one would expect.

But the 2016 MMMF reforms changed that. The dollar CCB remained wide even as the dollar LIBOR-OIS spread narrowed. This reflected the shift in non-US banks' source of dollar funding from unsecured money market instruments, including commercial paper, to FX swaps.

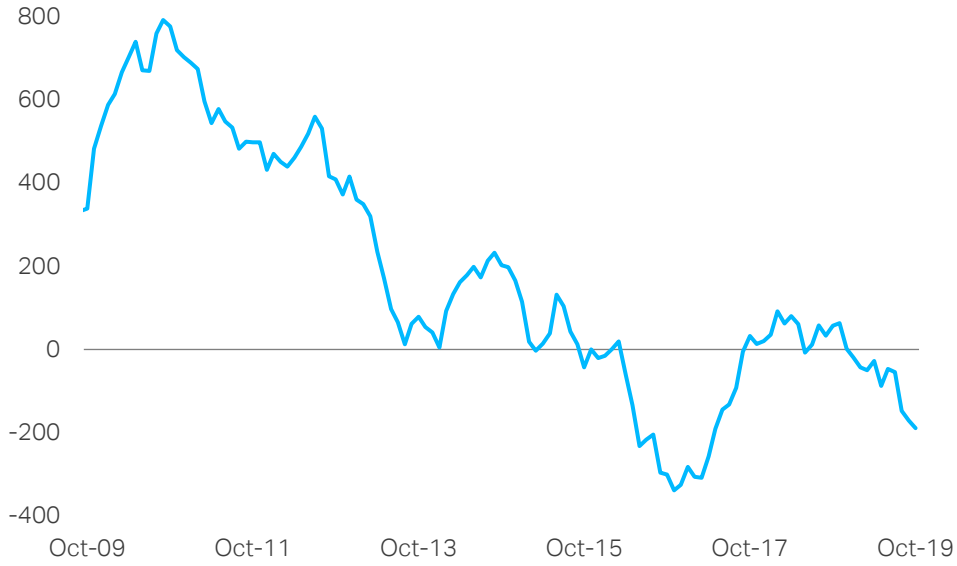
The relationship underwent another change in 2017 with Trump's tax reforms, especially the BEAT, which we discussed on the previous slide. The tax changes also encouraged US firms to repatriate their foreign profits. Some of this money had been invested in non-US bank commercial paper, so bringing it back home pushed up the cost of funding for non-US banks. Consequently, the dollar LIBOR-OIS spread widened sharply from end-2017 to mid-2018, even as the dollar CCB remained narrow.

Since late 2018, the spread and the basis have started to move together. The former is still more volatile and probably accounts for a larger share of offshore dollar funding needs.

Foreign buyers and hedged returns on US assets

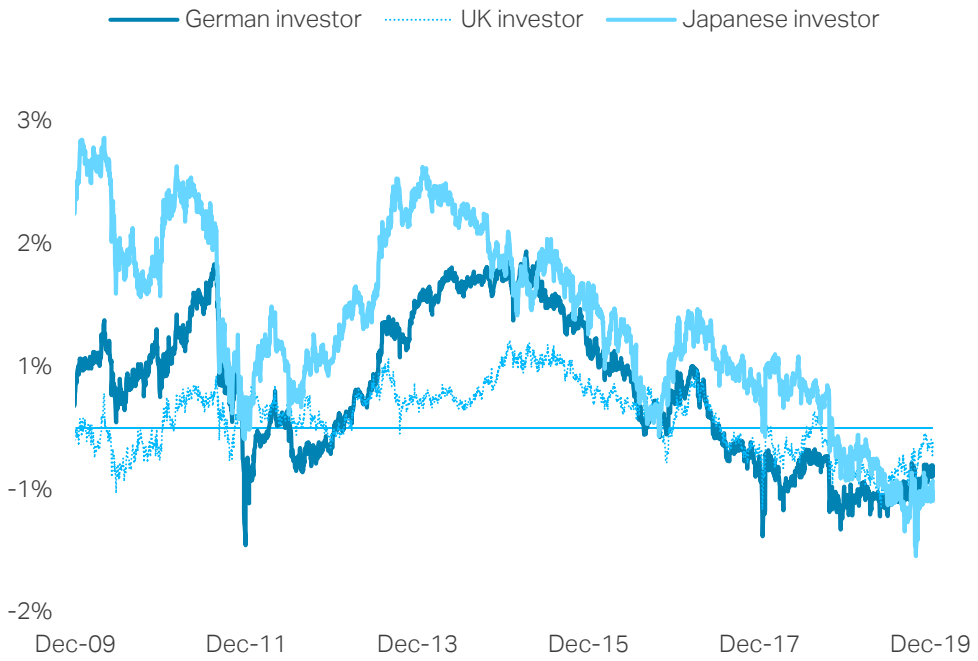
Reduced foreign purchases of treasuries

US foreign net purchases of US Tsy, 12-mth sum, $ bn



Unattractive hedged returns on $ assets

Hedged US yield pick for foreign investors

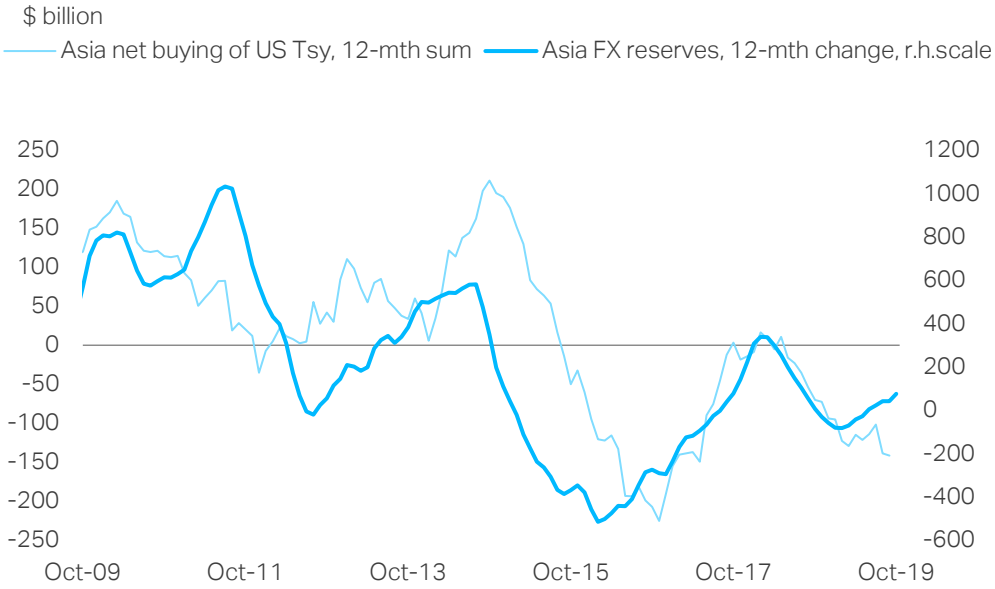


Apart from the dollar swap rate, dollar CCB and dollar LIBOR-OIS spread, there are other indicators that are worth monitoring. For instance, the behaviour of foreign investors has a crucial impact on US money markets, as was amply evident during the periods of money market stress in late 2018 and in September this year. At the same time, higher rates and increased volatility – especially if sustained for a longer period of time – would ripple out from the US markets and felt offshore.

Unattractive hedged returns on dollar-denominated assets tend to force primary dealers to keep more bonds on their books as they scramble to find end buyers. To make room on their balance sheets for the extra Treasuries, dealers need to offload other assets.

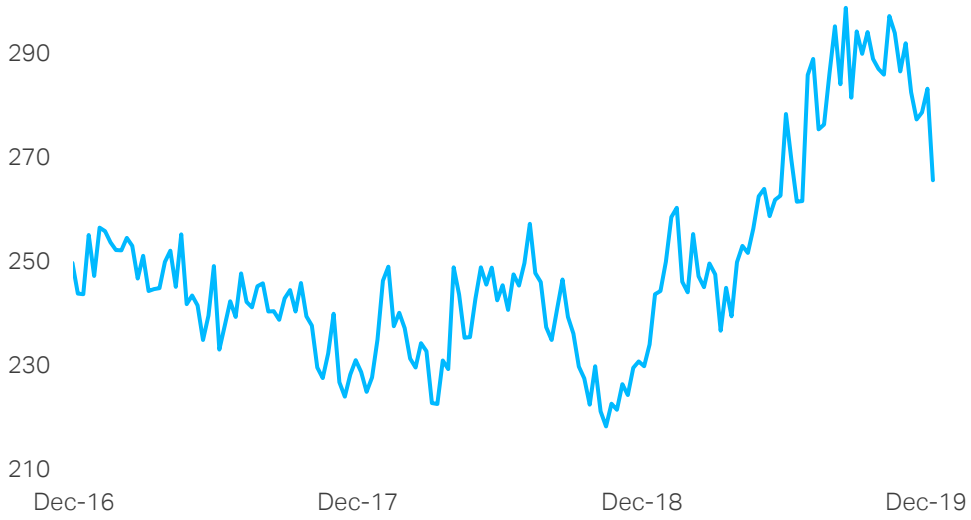
Foreign buyers and bank reserves

Less UST demand from EMs



Foreign reverse repos

Fed liabilities, reverse repo of foreign official and international accounts, weekly, $ bn

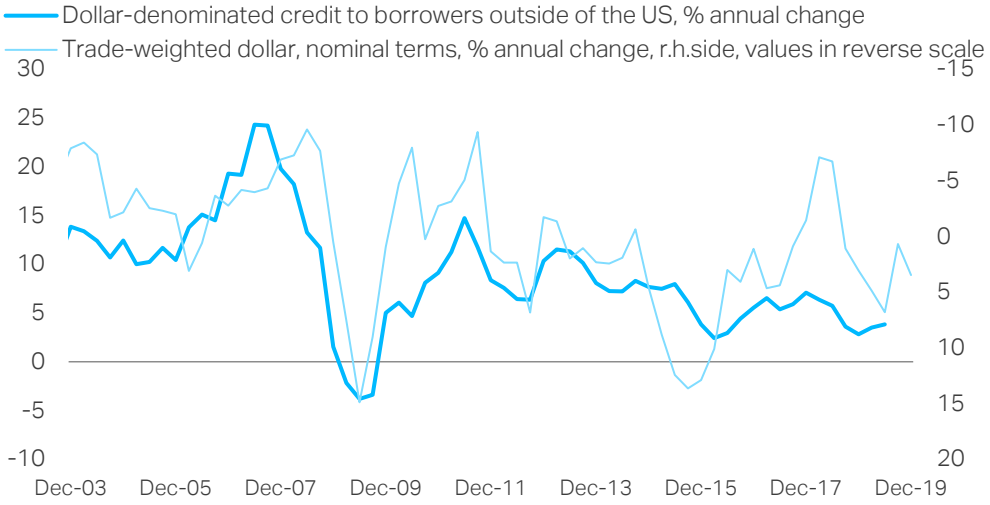


A flatter curve, higher hedging costs and a fall in emerging markets' FX reserves are some of the reasons why foreign demand for dollar assets may recede. All these factors were at play during the recent episode of US money market stress.

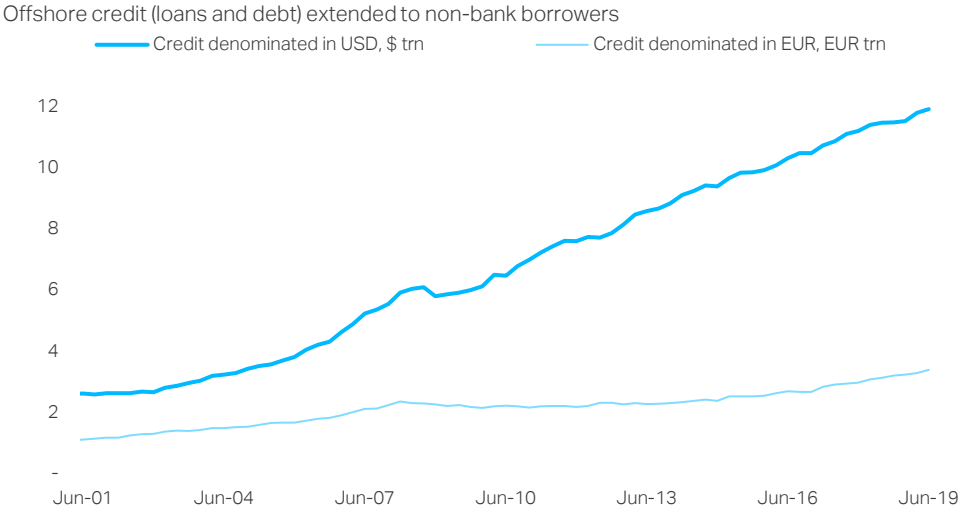
The money market volatility clearly reflected a sharp drop in bank reserves. The Fed's quantitative tightening and tougher regulatory requirements were among the root causes, but there were also some temporary factors (discussed in detail here). For example, foreign investors played a role. A surge in the Fed's reverse repos with foreign central banks (a Fed liability) also crowded out bank reserves (another Fed liability), given that the Fed's *total* assets/liabilities were either decreasing (from October-17 to August-19) or were constant (from August-19 to mid-September-19). A growing sense of risk aversion related to Trump's trade wars and less attractive returns on other dollar assets encouraged EM central banks in particular to park dollars at the Fed, which they could do without incurring liquidity risk.

Dollar dominance

International dollar credit growth continues to struggle



Dollar dominance



The feedback loop from Fed policy and US money market frictions to tighter offshore dollar liquidity is reinforced when it is accompanied by a strong dollar. Lending in dollars slows when the US currency appreciates and accelerates when the dollar weakens (see chart above). The greenback has become a key barometer of global risk appetite owing to its prominence as a funding currency (chart on the right). When dollar debts are not matched by dollar cash flows, as is usually the case, a strong dollar worsens the creditworthiness of borrowers and so makes banks think twice about extending credit or participating in arbitrage transactions, including FX swaps. The result is that the supply of offshore dollar credit deteriorates and Eurodollar costs rise.

Furthermore, with the global volume of dollar-denominated corporate debt reaching new highs, a more expensive dollar has ramped up debt-servicing costs, making this a source of global financial vulnerability. Emerging markets are particularly exposed because they have borrowed heavily in dollars. Meanwhile, just as the pressure on emerging markets from a strong dollar has intensified, the share of EMs in US exports and in the Fed's trade-weighted dollar index has increased. As a result, the Fed will be called upon more frequently than in the past to put backstops in place to arrest worsening global financing conditions. **The Fed is more than ever the global lender of first resort.**

In tomorrow's GFT, we will present a heat map to show why risks for a year-end global liquidity squeeze are muted this time around.

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