

In focus

Shifting US Treasury market signals move into uncharted waters

October 2020

It has been an extraordinary year in the financial markets. Even the US Treasury market, the largest and most liquid market in the world, experienced unprecedented turbulence in March. While most asset prices have recovered swiftly, the costs of mitigating the economic impact of the pandemic are still stacking up. With the US government deficit at a peace time high, the spending must be financed by new government bond issuance.



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As fixed income investors look ahead, there are two key questions on their minds: who will purchase the heavy supply of US Treasuries issuance associated with the historically large US budget deficit. And if the supply and demand imbalances could result in higher bond yields and renewed volatility.

Before analysing the supply and demand in the Treasury market, we should first look at the savings and investments balance of the US. Structural forces driving savings and investment can help to explain, among other things, what happened in March when the Federal Reserve (Fed) had to purchase \$1.5 trillion of bonds to stabilize the Treasury market.

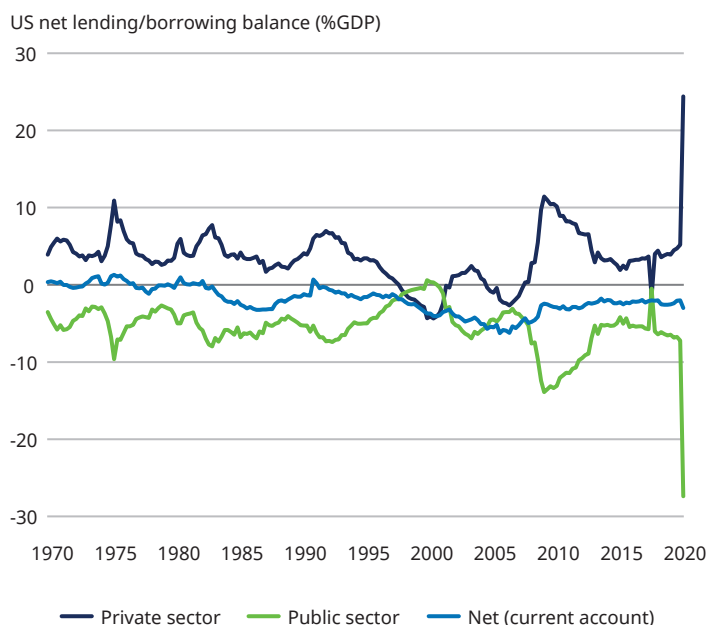
US savings and investments balance

At a high level, an open economy can be split into the public, private and external sectors. When the savings and investments balance of a sector is negative, this means that the sector's savings are not sufficient to finance investments and it has to borrow to fill the gap. Figure 1 shows the historical sectoral balances of the US economy.

Starting with the public sector, apart from a few years around the turn of the century, the US public sector has been a net borrower for a long time because of persistent budget deficit. Between 1997 and 2001 and again between 2004 and 2008, the US private sector was also a net borrower. The second period coincided with rapid growth in mortgage debt, culminating with the financial crisis.

To finance the budget deficit, the US government can either borrow from the private sector, or when the domestic savings are not sufficient, from abroad. Since domestic investments have usually exceeded domestic savings, the US has been running a persistent current account deficit, which peaked at 6% of GDP in 2007.

Figure 1: Persistent US public sector deficit has been financed by private sector and foreigners



Source: Refinitiv Datastream. Data as at Q2 2020.

The shock of the financial crisis led to a spike in US private sector savings. Both households and corporations increased precautionary savings and reduced investments. To prevent a depression because of lost demand, the public sector had to sharply increase spending. Still, the increase in private savings was large enough to reduce the current account deficit to 2% of GDP.

The financial crisis also heralded the era of quantitative easing (QE) and central bank intervention. Despite the initial fears of a spike in inflation, the three QE programmes mainly helped to reduce long-term bond yields and did not have significant unintended consequences. In its nature, the QE was an asset swap where US banks swapped Treasuries to newly-created reserves at the Fed.

Between 2013 and 2017, the US budget and current account deficits were relatively stable at around 3% and 2% of GDP respectively. But in this period of stability, some important changes were taking place.

The end of foreign official institutions' bid for Treasuries

The US current account deficit in the years leading to the financial crisis was financed mostly by large current account surpluses (or large domestic savings) in China and a number of oil exporting countries. The US received goods and the countries received US dollar assets, a symbiosis reflected in the build up of foreign exchange (FX) reserves. Between 2002 and 2008, the global US dollar FX reserves increased from \$1 trillion to more than \$4 trillion.

While the financial crisis had a heavy toll on the US, foreign official institutions, mainly emerging market (EM) central banks, continued to build FX reserves and purchase US assets, although often switching from Agencies to Treasuries.

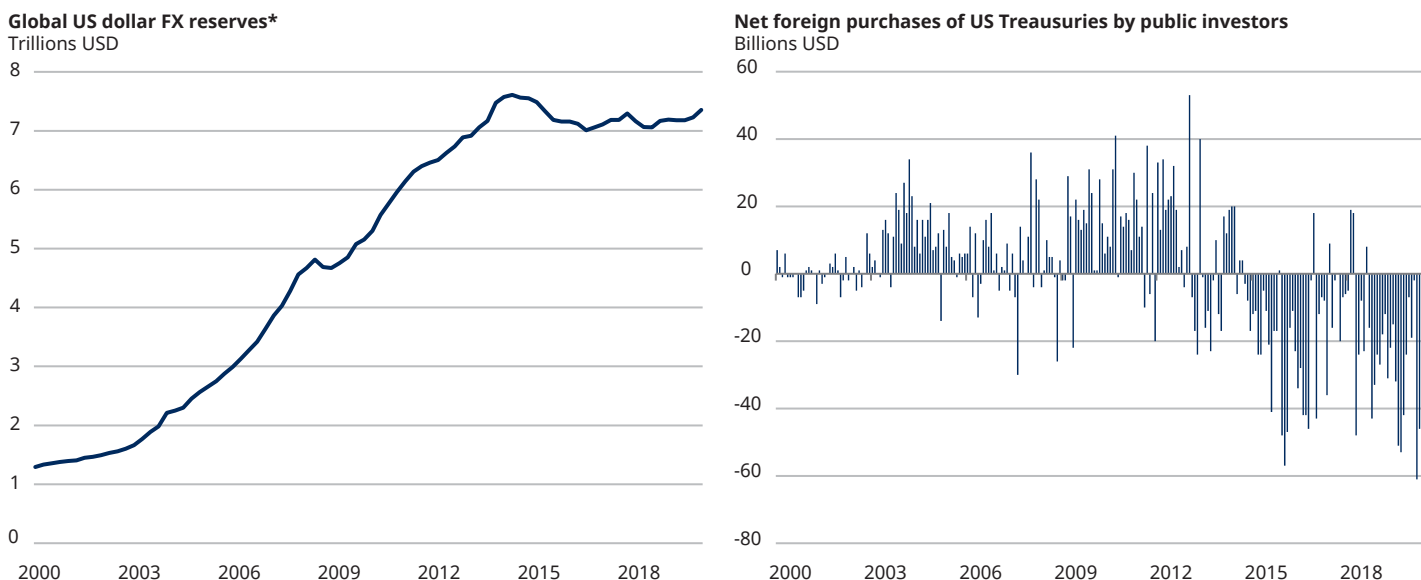
However, a fundamental shift occurred in 2015. After years of accumulating foreign assets, China had to start shedding these assets, as the renminbi (RMB) came under pressure because of a falling current account surplus and domestic capital outflow. Between 2014 and 2016, China's currency reserves dropped from \$4 trillion to \$3 trillion. Specifically, the holdings of long-term Treasuries dropped from \$1.3 trillion to just over \$1 trillion.

In addition, the sharp fall in commodity prices in 2015 had a detrimental effect on the current account surpluses of a number of commodity exporting countries. For example, Russia, Saudi Arabia, Brazil and Peru had to use FX reserves to defend their currencies and finance ballooning budget deficits.

As a result, the global US dollar FX reserves peaked at \$7.5 trillion in 2014, fell to just above \$7 trillion in 2017 and have not surpassed that peak since (Figure 2). The sales of long-term US Treasuries by foreign official institutions is also visible in the high frequency Treasury International Capital (TIC) data.

While private foreign investors have continued to purchase Treasuries, this has not been enough to offset the sales of official institutions. Consequently, after hitting a record high of 43% in 2015, the share of the rest of world in the Treasury market has fallen to 29%, the lowest since 2004.

Figure 2: Global reserve managers have reduced their holdings of long-term Treasuries



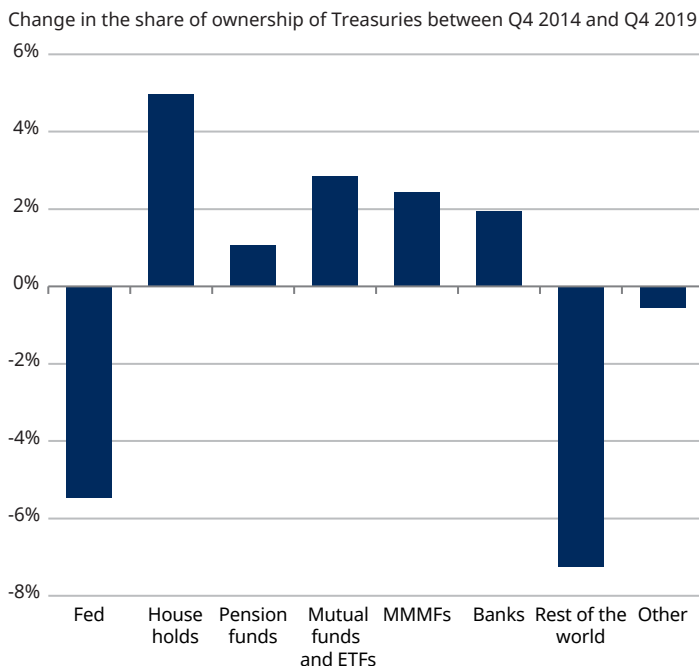
Source: Schroders, Refinitiv Datastream, the IMF. Left-hand figure data as at Q2 2020, right-hand figure data as at July 2020.

* The sum of global allocated US dollar reserves and global unallocated reserves times US dollar's share in allocated reserves.

Surprising source of rising domestic Treasury ownership

Who were the domestic buyers that filled the void left by foreigners? Figure 3 shows the change in the ownership of Treasuries between 2014 and 2020. The greatest increase was in the category of households. Even though the name would imply that it includes purchases of Treasuries by individuals, it is actually a residual category, as it encompasses all the market participants not covered in other categories. The increase in household ownership, as it turns out, mainly reflects the activity of leveraged investors, such as hedge funds.

Figure 3: Changing Treasury ownership: foreigners moved out and hedge funds moved in



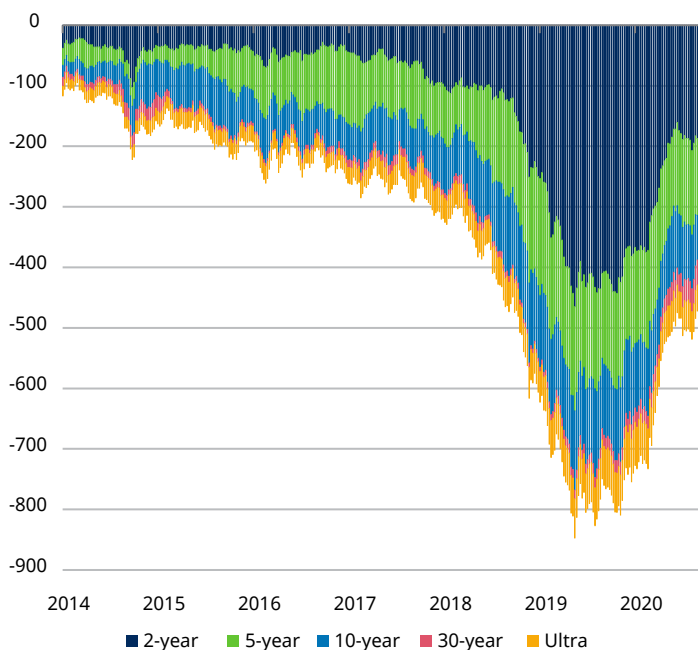
Source: Schroders, Refinitiv Datastream, the Federal Reserve. Data as at Q4 2019.

In recent years, a relative value strategy where leveraged investors purchase Treasury bonds and simultaneously sell Treasury futures to pocket a small difference in price has gained popularity. The Treasury basis trade, as it is known, exists because of the liquidity premium associated with financing the purchase of bonds and holding them to the maturity of the futures contract. In addition, the stricter post-financial crisis regulatory environment means that banks have limited capacity to engage in such trades. Hedge funds, on the other hand, are not bound by any regulatory limitations.

Importantly, leveraged investors usually finance the purchases of Treasury bonds in the repo market¹, enabling them to carry more bonds, all other things equal and turn small differences in price into potentially large gains. The leverage can be as high as 50-to-1 with Treasury securities.

¹ In a repo, one party sells an asset (usually fixed-income securities) to another party at one price and commits to repurchase the same asset from the second party at a different price at a future date or on demand. The cost of such a transaction is called the repo rate.

Figure 4: CBOT aggregate leveraged funds short Treasury futures positions (billions USD)



Source: Refinitiv Datastream. Data as at 23 September 2020.

While the exact size of funds committed to this strategy is unknown, at the peak, investors' exposure could have been in the hundreds of billions of dollars. The increase in popularity can be seen in the CFTC Treasury futures positioning data (Figure 4). Between 2018 and 2020, the aggregate leveraged funds' short Treasury futures position increased by \$500 billion, although not all these funds are committed to this specific strategy.

Unforeseen consequences of rising budget deficit

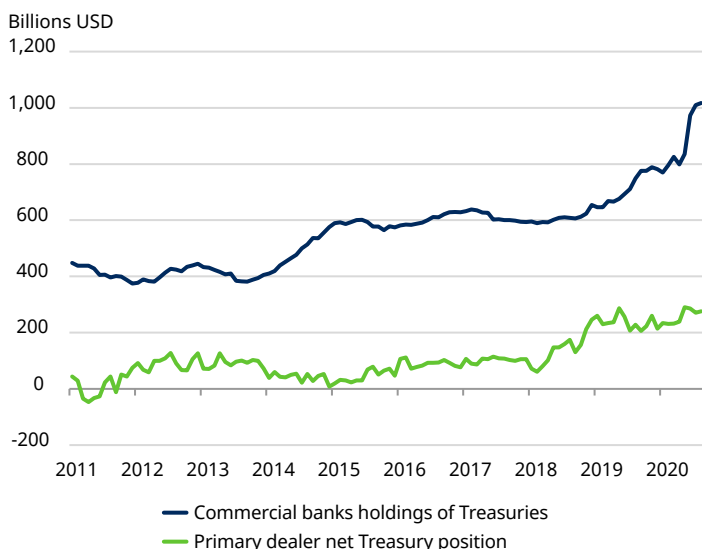
In late 2017, the US Congress passed a tax reform law which included tax cuts for corporations and individuals. This meant lower tax revenue, increasing the US budget deficit by hundreds of billions of dollars. To finance the deficit, US Treasury had to ramp up the issuance. At the same time, the Fed started to shrink its balance sheet by not fully reinvesting the proceeds of maturing Treasury and Agency securities, a process known as quantitative tightening (QT).

Even though there were still plenty of excess reserves in the banking system, a remnant of the QE, the reserves as a percentage of Fed's assets were in decline and crucially, not equally distributed. Furthermore, commercial banks' and primary dealers'² balance sheets were clogged with Treasuries (Figure 5, overleaf), which the latter are required to hold in order to be allowed to bid at the auctions.

The consequence of this glut of safe assets and relative scarcity of reserves was that the overnight repo rate, the key benchmark for secured short-term lending, increased sharply in September 2019 (Figure 6, overleaf). This meant that for leveraged investors, it became very costly to finance their Treasury positions.

² Primary dealers are trading counter parties of the Federal Reserve in its implementation of monetary policy.

Figure 5: US banks and primary dealers are holding more Treasuries since 2018



Source: Refinitiv Datastream. Data as at 31 August 2020.

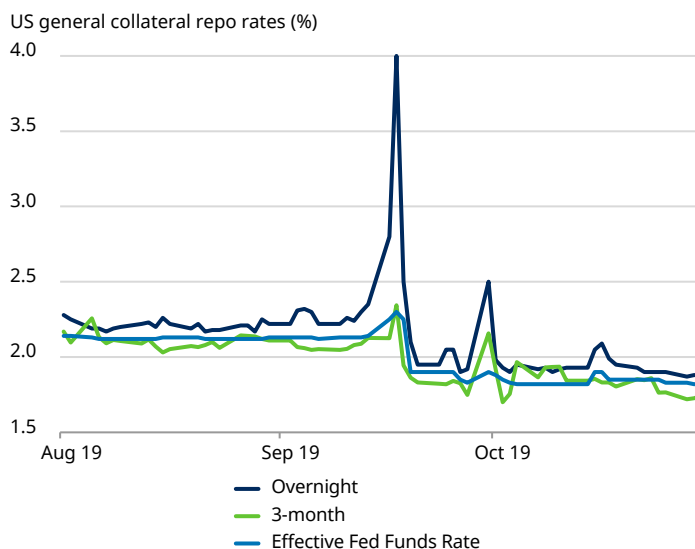
Finally acknowledging the problem, the Fed launched the primary dealer repo facility, which enabled primary dealers to conduct repo operations with the Fed to receive cash against high quality collateral, such as Treasuries. The Fed had already ended the QT a few months before. With greater liquidity in the financial system, the repo facility saw take up to \$250 billion in 2019, the funding squeeze soon eased and the repo rate normalized.

While technical in nature, the issues in the repo market were the first sign that domestic and foreign savings might not be sufficient to finance the growing US budget deficit, especially if the deficit is financed by leveraged investors who are sensitive to the cost of funding of their positions. It also showed that the belief that the Fed can eventually reduce its balance sheet might be illusory.

A sudden stop in the Treasury market

A second and much bigger shock came in March 2020. The rapid spread of Covid-19 initially led to lower Treasury yields, as investors rotated from risky assets to safer ones. However, the yields suddenly started to move higher.

Figure 6: Collateralized short-term borrowing costs spiked in September 2019



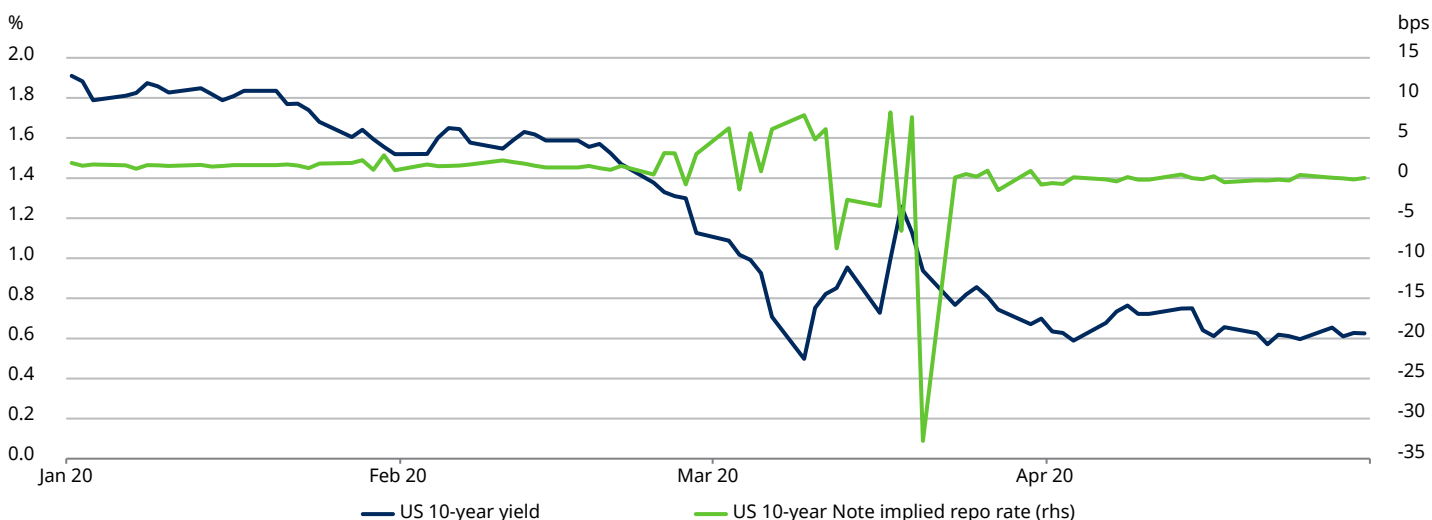
Source: Refinitiv Datastream. Data between 1 August 2019 and 30 October 2019.

Between 9 and 18 March, the 10-year US Treasury yield more than doubled, moving from 0.5% to 1.2% (Figure 7). Moreover, the most liquid market in the world almost seized up, making buying or selling Treasury bonds very difficult and sending shockwaves through the whole financial system.

What was the cause of this shock? Similarly to the 2019 repo crisis, leveraged investors played a key role, as highlighted by the Bank for International Settlements (BIS)³. As liquidity conditions deteriorated, the spreads between cash bonds and Treasury futures started to widen quickly with the former selling off. This was highlighted by the implied repo rate, the rate of return of selling a bond futures contract and buying the same bond at the market price with borrowed funds, becoming deeply negative as yields shot higher.

Consequently, leveraged investors, facing substantial losses, were forced to close their long/short positions, putting further pressure on the bond prices and creating a vicious cycle.

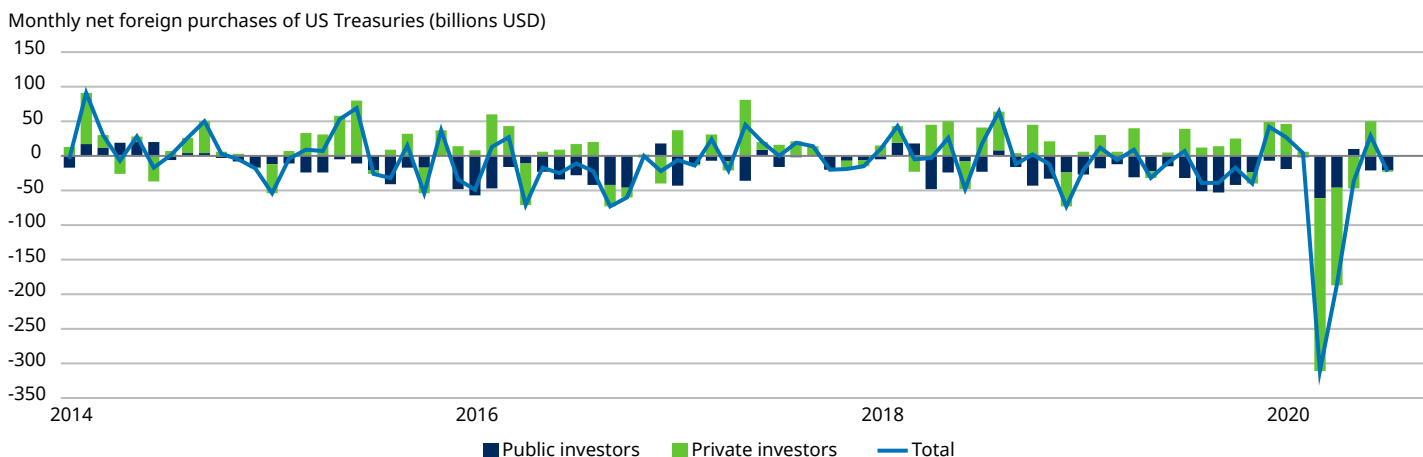
Figure 7: The 10-year US Treasury yield and the implied repo rate



Source: Refinitiv Datastream. Data between 1 January 2020 and 30 April 2020.

³<https://www.bis.org/publ/bisbull02.pdf>

Figure 8: Foreigners sold almost \$500 billion of Treasuries in March and April



Source: Refinitiv Datastream. Data as at 31 July 2020.

In addition, foreigners sold Treasuries in unprecedented volumes. The net foreign sales of long-term Treasuries amounted to a record \$476 billion in March and April (Figure 8). Specifically, the Cayman Islands accounted for \$184 billion of foreign sales in these two months. Since international hedge funds are often incorporated in the Cayman Islands, it likely reflects the unwinding of the same leveraged Treasury positions.

Another large chunk of foreign selling came from emerging market central banks who were trying to defend their currencies in the sell-off. For example, Saudi Arabia's US Treasury holdings dropped by almost \$60 billion in March.

Interestingly, while foreigners sold Treasuries, they bought short-term US dollar assets such as bank deposits. That likely helped the dollar to appreciate in March and April.

The Fed pulls out the "bazooka"

In normal times, primary dealers can absorb the heavy selling by temporarily keeping bonds on their balance sheets. But as highlighted above, dealers' balance sheets were clogged with Treasuries. This, coupled with stricter regulatory requirements meant that normal market makers were not able to absorb the sales, leaving the lender of last resort to bail out the Treasury market.

Initially, the Fed reacted by cutting interest rates to zero and restarting asset purchases. Since this did not calm the markets,

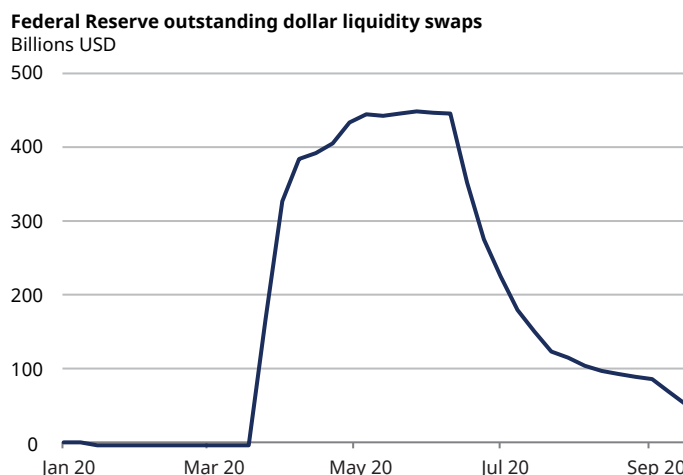
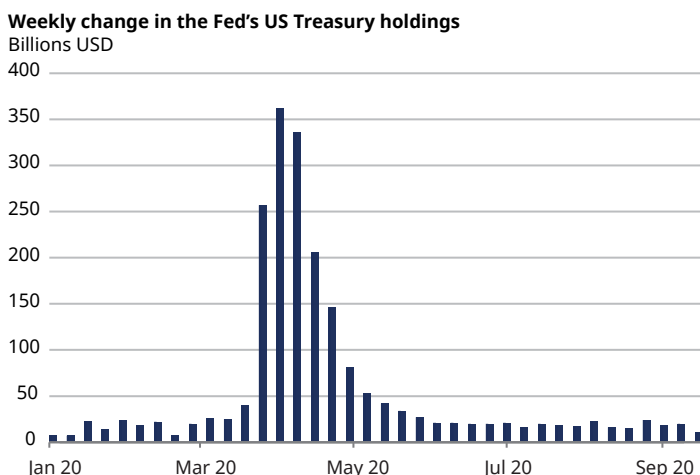
the Fed pulled out all the stops on 23 March by promising to purchase unlimited amount of bonds. This "bazooka" finally did the job. The 10-year yield fell back to 0.6% by early April. When the dust had settled, the Fed had purchased more than \$1.5 trillion of Treasuries to ensure a proper functioning of the market.

In addition, the Fed relaunched another crisis era tool, the dollar liquidity swap lines with other major central banks. These cross currency swaps allow foreigners to access dollar funding by providing their own currency as collateral. The swaps were mainly utilized by central banks in countries that possess sizable US dollar assets, as they allowed participants to raise short-term liquidity instead of selling the assets including Treasuries.

The tremors in the Treasury market further highlighted that domestic and foreign savings could be insufficient to finance the ballooning the US budget deficit. Leveraged investors and EM central banks, were forced, for different reasons, to liquidate their Treasury holdings. This, in turn, drove the Fed to step in strongly.

In the aftermath, the Fed has been criticized for bailing out hedge funds and foreigners. But without the intervention, Treasury yields would have likely rocketed higher, making funding of the budget deficit very costly. In this regard, the Fed also bailed out the US government.

Figure 9: The Fed bails out the Treasury market by providing unlimited liquidity



Source: Refinitiv Datastream. Data as at 21 September 2020.

Record budget deficit and record issuance

The main lesson from the events in March 2020 is that government bond yields are not just sensitive to traditional drivers, such as expectations on interest rates and inflation, but also to supply and demand.

While volatility has subsided and the US economy is gradually healing from the Covid-19 shock, the costs of handling the pandemic are still stacking up. As of end of August 2020, the rolling 12 month budget deficit was close to \$3 trillion after the CARES Act added more than \$2 trillion to the already large deficit (Figure 10). It is possible that the Congress will approve another set of stimulus measures, worth up to additional \$2 trillion. Coupled with lower tax revenue, that would take the US budget deficit close to 20% of GDP, an amount only matched by the deficits seen during the second world war.

In order to finance the deficit, the US Treasury has sharply increased issuance. On a rolling 12-month basis, the net issuance stands at \$4 trillion. In 2020 alone, the issuance has been more than \$3 trillion.

Looking ahead, the Treasury expects further \$1.8 trillion of net issuance in the last three months of 2020, which would take the full year figure to \$5.4 trillion. Granted, this forecast is highly contingent on the passing of another fiscal stimulus programme.

Figure 10: Record budget deficit means record issuance



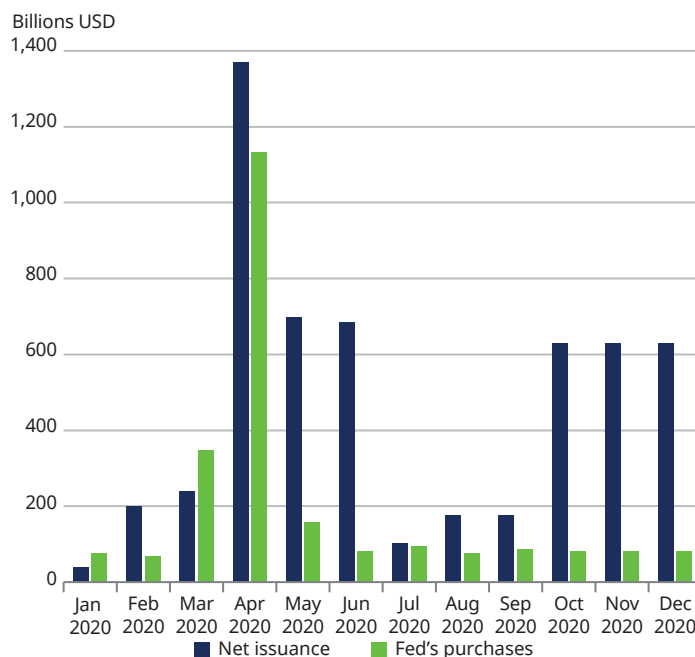
Source: Refinitiv Datastream. Data as at 31 August 2020.

The Fed has said that it is committed to continue purchasing Treasuries at around the current pace of \$80 billion per month. Assuming that the actual issuance follows the plan layout in the Treasury Quarterly Refunding Statement, the Fed's purchase would cover only a fraction of the expected issuance in 2020 (Figure 11). Should the additional fiscal measures be delayed to 2021, the mismatch would just appear slightly later.

In addition, the issuance profile is likely to change. So far in 2020, 82% of the new supply has come from Bill issuance and only 18% from Bonds and Notes. This is because at the height of the pandemic in spring, it was easier to sell Bills, given the elevated demand for cash and cash equivalents. As a result, the weighted average maturity of Treasury debt has fallen. The Treasury has announced the plan to increase the weighted average maturity again by increasing the auction sizes of bonds with longer maturities.

The key question then is: who will finance the issuance associated with very large budget deficit, especially if the supply is tilted towards longer maturities. In order to answer this question, we can look for clues in the savings and investments balance.

Figure 11: At current pace Fed's purchases will cover only small part of expected Treasury issuance



Source: The Department of the Treasury, Sifma, Refinitiv Datastream. Actual figures to end of September 2020, forecast from October 2020. Net issuance forecast is based on US Treasury Quarterly Refunding Statement. Fed's purchases are expected to remain at \$80 billion per month.

Figure 12: Covid-19 led to unprecedented increase in US private savings



Source: Refinitiv Datastream. Left-hand figure data as at August 2020, right-hand figure data as at 22 September 2020.

Unprecedented increase in US private savings

The Covid-19 induced collapse in consumption and investment has led to an unprecedented increase in private savings. For example, US personal savings rate increased to 34% in April (Figure 12). US corporations, faced with significant uncertainty, have cut back on investments and earnings pay-outs and started to actively defend their balance sheets.

Furthermore, the assets in US money market funds remain elevated at more than \$4.4 trillion, despite the fast recovery in equity and credit markets. Higher US private savings could then, in theory, finance the budget deficit, as was the case after the financial crisis.

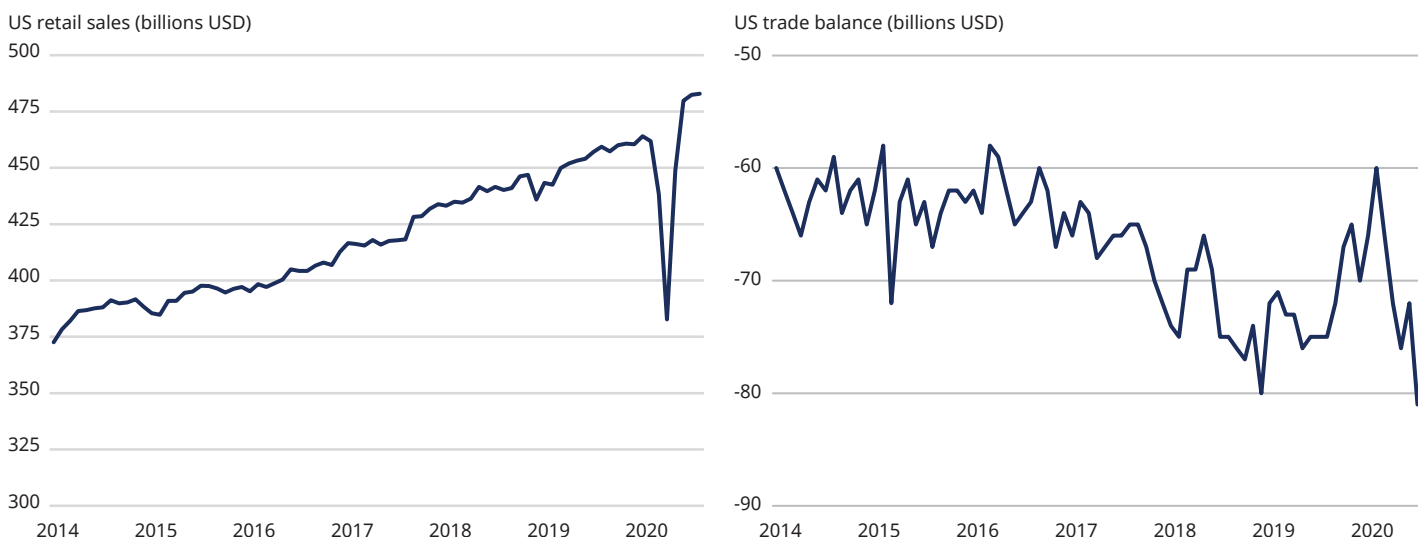
However, a major difference is that the budget deficit is now much more directly supporting consumer spending. In April 2020, most Americans received a \$1200 cheque as part of the CARES Act. In addition, millions of unemployed people received an extra \$600 weekly unemployment benefit until the end of July. Anecdotally, the benefits in some cases exceeded peoples' previous salaries.

From the perspective of Main Street, this is a positive development after years of criticism that Wall Street has benefitted disproportionately from the efforts to support the economy. However, it could also lead to lower private savings, all other things being equal.

US retail sales have now more than recovered the Covid-19 drop (Figure 13) and the household savings rate has fallen to 14%, as of end of August. At the same time, the US unemployment rate remains high at 7.9%. The external balance is also pointing at lower savings. While the US trade balance improved sharply earlier this year, it has now reversed all the improvement, falling to a record deficit in July.

The longer it takes for the economy to return to normality, the greater the pressure on private savings. With the unemployed living off their savings and government hand outs, the demand in the economy could remain relatively robust. The supply, on the other hand, would be constrained in case of elevated unemployment. Lower private savings could then mean less purchases of Treasuries by the private sector.

Figure 13: Swift recovery in consumption putting pressure on private savings:



Source: Refinitiv Datastream. Left-hand figure data as at August 2020, right-hand figure data as at July 2020.

Foreign savings to the rescue?

Between 2008 and 2013, foreigners increased their holdings of US Treasuries by more than \$3 trillion. This is unlikely to be repeated, at least on this scale.

First, global savings were declining even before the Covid-19 shock. China's current account surplus, for example, is only at 1.2% of GDP compared to 4.8% in 2009. With the oil price unlikely to rise significantly, at least in the near term, the large surplus in oil exporting countries is a thing of the past.

Second, global savings are likely to fall further because most countries need to deal with the fallout of Covid-19 crisis. Even Germany, a country that has been accused of running an excessive budget surplus, is forecasted to run a 10% deficit in 2020. In addition, the EU will need to issue €750 billion of bonds over the next few years to finance the European recovery fund.

Nonetheless, the US still has the "exorbitant privilege" of issuing the global reserve currency. And perhaps ironically, further dollar weakness could spur EM central banks to increase their Treasury holdings.

When the local currency strengthens against the dollar, EM central banks often intervene by purchasing dollars to prevent the currency from appreciating too much. This is especially the case in countries with large current account surpluses that are highly dependent on foreign trade, as a strong currency hurts exports.

The likeliest source of reserve purchases are a number of current account surplus countries in Asia, such as Taiwan or Korea. These countries already have sizable FX reserves and are known for intervening in the currency market. The aggregate reserves of selected Asian countries have increased by \$188 billion since March, indicating that the central banks indeed have leaned against the appreciation of currencies (Figure 14).

More broadly however, there is not much evidence of a significant bid for Treasuries by EM central banks. After a short reprieve in May, foreign official institutions continued to sell Treasuries in June and July, with the sales topping \$40 billion in these two months.

The endgame and the Fed

In general, the recent auctions of Treasury securities have seen decent demand for bonds. However, the auction of \$26 billion of 30-year bonds in August was met with rather lacklustre demand, resulting in the bonds selling at higher yield than expected. In addition, the primary dealers had to take on a larger than average share of 28% of the issuance. This indicates that investors' demand for bonds at the very long end of the yield curve might be limited.

Figure 14: FX reserves of select Asian countries



Source: Refinitiv Datastream. Includes the FX reserves of Taiwan, Korea, Thailand, India, Indonesia and Singapore. Data as at 31 August 2020.

Looking ahead, if domestic and foreign savings are indeed insufficient to finance the large budget deficit, the Fed will likely have to step in again. Yield curve control (YCC), a policy where the Fed would target certain points on the yield curve with its asset purchases has been discussed more prominently in recent months. Such a move could help to keep the yields stable, as well as ensure demand for new issuance.

This strategy has already been implemented by the Bank of Japan (BoJ). In 2016, the BoJ fixed the 10-year government bond yield near zero percent. Surprisingly, the BoJ has not had to purchase many bonds to keep the yield at zero. The policy has worked just through the expectation of purchases.

After the \$1.5 trillion intervention in March, it is not clear if the implementation of the YCC in US would be as smooth. In case of significant supply and demand mismatch, the Fed could be forced to increase its balance sheet rapidly to keep the yields stable.

Furthermore, the circumstances of YCC would be different in the US. While Japan has a large positive net international investment position, meaning that it is a net lender for the rest of the world, US has a large negative net international investment position, a result of decades of current account deficit.

Should the Fed's balance sheet growth stoke fears of outright debt monetization, this could lead to selling of US assets by the foreigners and put pressure on the dollar.

Conclusion

The uncertainty of demand from foreign investors and others at a time of sizable issuance means it could be hard for the Fed to avoid increasing its balance sheet. So investors should get used to the idea of a shift in prevailing monetary and economic orthodoxy, especially as the US budget deficit is likely to remain large for some time. In this environment, the long end of the yield curve would be most vulnerable to bouts of volatility. The choices made by the policy makers today will likely have profound consequences for years to come. A move towards outright debt monetisation or even Modern Monetary Theory being put into practice cannot be ruled out. At any rate, we are certainly entering an uncharted territory.

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