



US Federal Reserve: Quantitative tightening and its implications



F E D E R A L R E S E R V E



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Published

January 2022

Summary

- The US Federal Reserve (Fed) balance sheet is approaching USD9 trillion in size, equivalent to 36% of US GDP. The FOMC, the Fed's monetary policy committee, has signalled that it will soon embark on 'balance sheet normalisation', starting with the end of large-scale asset purchases (quantitative easing or 'QE') in March and then reducing the size of the balance sheet.
- This note explores the uncertainties around the path for shrinking the balance sheet – quantitative tightening or 'QT' – and the implications in terms of monetary conditions.
- A path for Fed balance sheet reduction starting in July 2022 (announced in March or May), based on a monthly cap on Treasury and MBS redemptions of USD60bn and USD30bn respectively, is modelled. The balance sheet would decline by USD775bn (including maturing T-bills) in 2022, USD1 trillion in 2023 and USD840bn in 2024 to about 22% of GDP, compared to its pre-pandemic size of 17%.
- The implied size of balance sheet reduction in 2022 of USD775bn (including T-bills) would be equivalent to a c.20bps increase in the Fed funds rate (c.10bps if T-bills excluded) in 2022 and a cumulative 80bps Fed funds increase over the period to end-2024. In September 2017, the Fed paused its quarterly hiking cycle when it announced the start of QT.

- In the short-term, a key source of uncertainty is what the Fed will do with its portfolio of USD326bn of Treasury bills (90% with a maturity of six months or less) – it could start to run them off sooner than QT to kickstart balance sheet reduction, or set separate caps for their run-off.
- In the first 12 months of the previous episode of QT, the yield curve bear flattened as the Fed hiked rates, though in 2019 the curve bull flattened as investors became concerned about the economic outlook and a potential ‘policy mistake’ by the Fed.
- Inasmuch as record Fed purchases of Treasury inflation-protected securities (TIPS) has contributed

to deeply negative real yields, a run-off in Fed TIPS holdings could result in a sharper rise in real yields that is typically associated with a stronger US dollar and challenge the valuation of riskier and long duration growth assets.

- The Fed is unlikely to formally specify a terminal or ‘normalised’ size of the balance sheet – it will depend on the level of bank reserves with the Fed consistent with effective monetary operation (when bank reserves fell below USD1.5 trillion in 2019, there was a spike in money market rates, prompting Fed purchases of Treasury bills).

Background and timing of quantitative tightening

In 2017 when the Fed previously initiated balance sheet normalisation (QT), it published an ‘addendum’ setting out how it would do so following the June 2017 FOMC meeting and subsequently announced the start of QT in October.

The Fed did not set a specific target for the size of the balance sheet but said the ‘normal’ level would reflect the banking system’s demand for reserve balances.

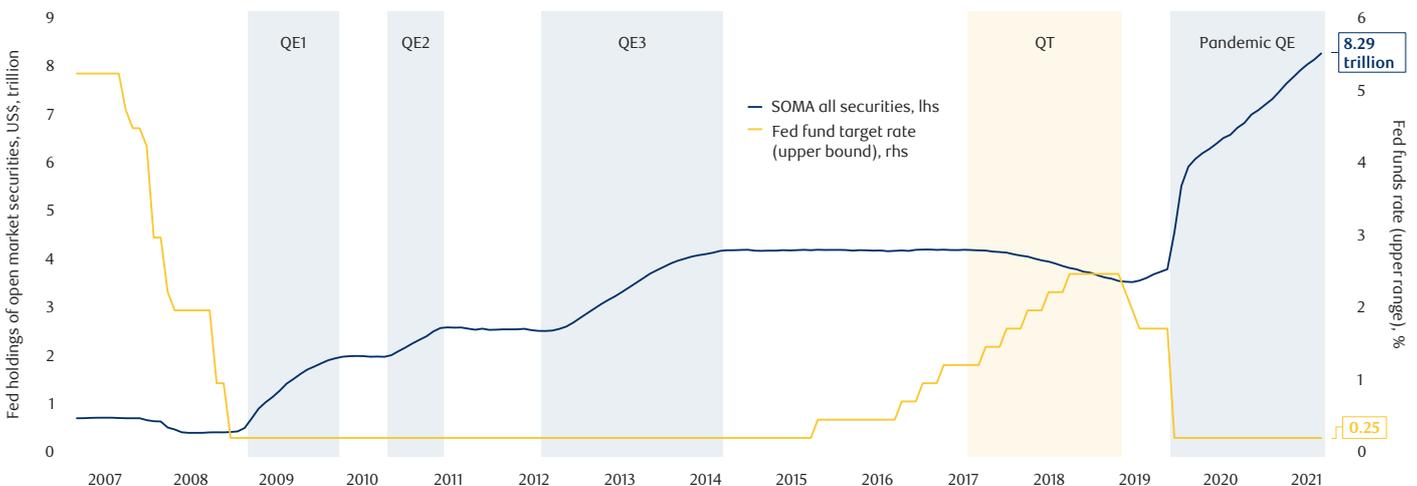
If the same approach is adopted, the Fed may well publish the details of how it plans to reduce its balance sheet at

either the March 15-16 or May 3-4 FOMC meetings and confirm the start of QT in July 2022 at the June 14-15 FOMC.

The Fed interrupted its quarterly hiking path at the September 2017 FOMC when it announced the start of quantitative tightening. It raised the Fed funds rate by 25bps at each subsequent quarterly FOMC meeting, with the last rate hike to 2.25–2.5% in December 2018. In March 2019, the Fed announced it would slow the pace of QT and in July 2019 ended QT and cut rates.

Over the period October 2017 to July 2019, the Fed’s open market securities (SOMA) holdings declined by USD640 billion – a 16% reduction in the size of the Fed’s open market securities portfolio to USD3.6 trillion.

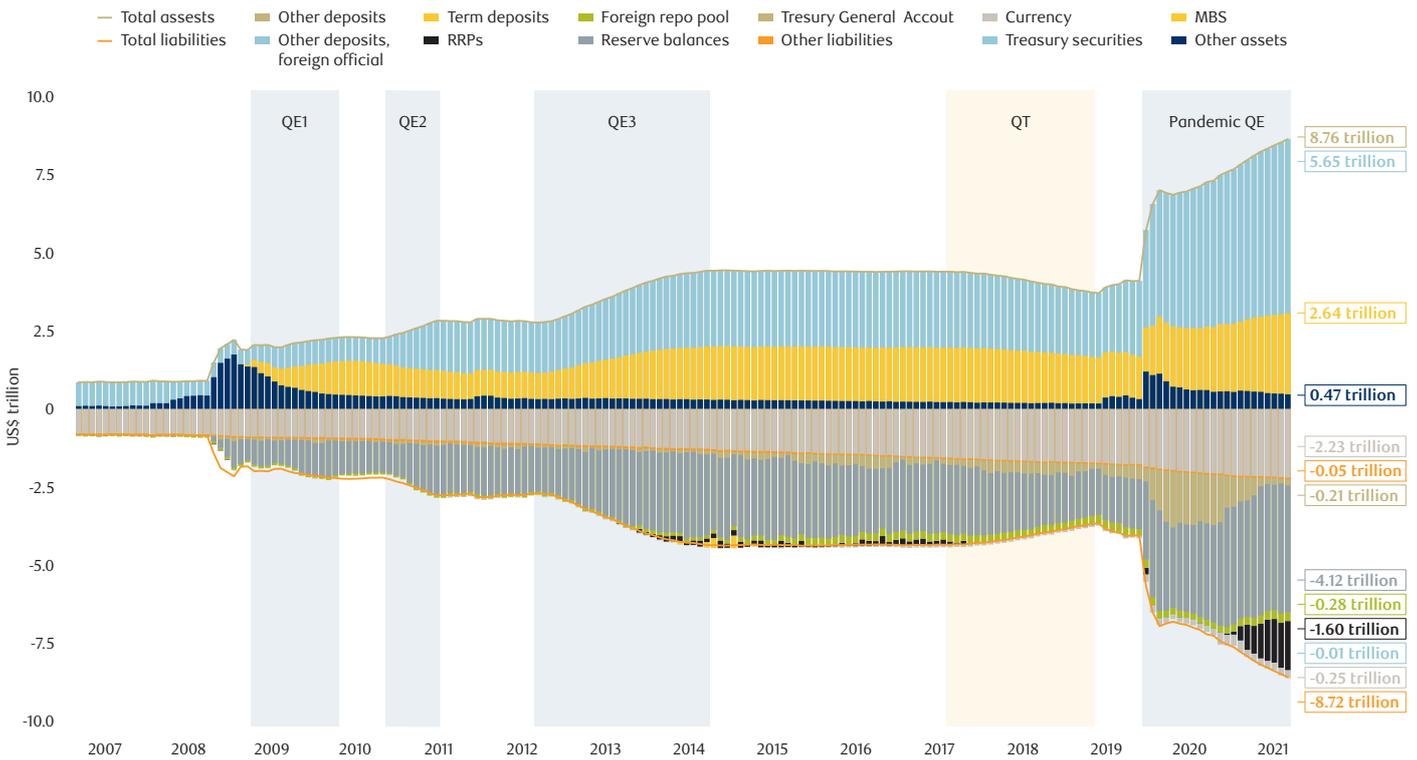
Fig. 1: Fed securities holdings and Fed funds rate



Note: grey shaded columns denote balance sheet expansion due to quantitative easing (QE) and the yellow denotes column balance sheet reduction or quantitative tightening between October 2017 and July 2019.

Source: US Federal Reserve and US Treasury Department; latest data at 13 January 2022.

Fig. 2: Fed balance sheet



Note: grey shaded columns denote balance sheet expansion due to quantitative easing (QE) and the yellow denotes column balance sheet reduction or quantitative tightening between October 2017 and July 2019.
Source: US Federal Reserve; latest data at 13 January 2022.

Pace of balance sheet reduction

In contrast to 2017 when the Fed did not have a Treasury bill portfolio, some USD326bn of Treasury bills now sit on the Fed's balance sheet.

The Fed built-up its T-bill holdings in late 2019 to increase bank reserves in response to a spike higher in money market rates. Since the start of pandemic QE, the Fed has simply rolled over its Treasury bill holdings. There is no operational reason why the Fed should maintain a long-term portfolio of T-bills. But if the Fed simply allows these to roll-off as part of QT, it will imply a rapid reduction in the size of the Fed's balance sheet in the first months of QT (90% of the Fed's holdings of T-bills mature over the next six months) and could prompt volatility in money market rates.

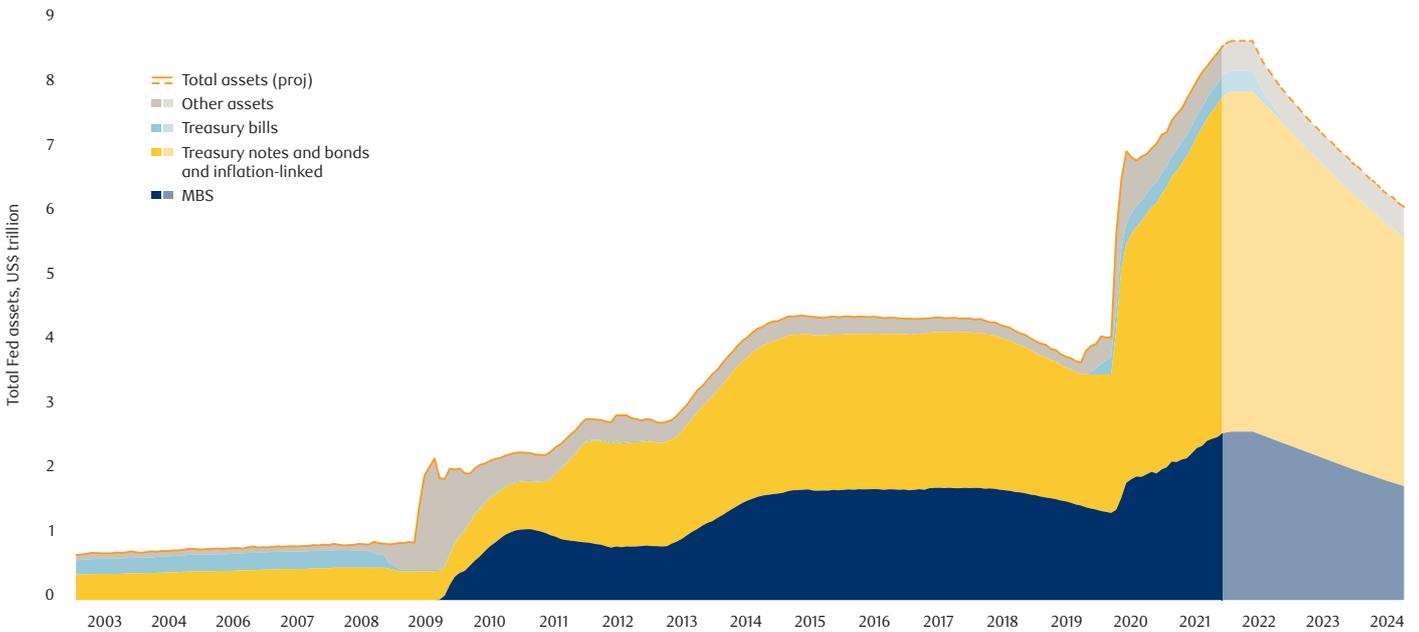
The Fed may choose to set a separate cap on T-bills or even continue to roll them over. Conversely, it could choose to allow its T-bill portfolio to start to run-off before it starts broader QT. In the short term, how the Fed decides to rundown its T-bill portfolio will have a meaningful impact on the size of its balance sheet. In the analysis below, it is assumed they simply run-off as they mature, beginning in July as part of the Fed's broader QT programme.

The Fed will likely use monthly caps on redemptions to allow a predictable path of balance sheet reduction and reinvest maturing principal in excess of the caps. In 2017, the Fed started with caps of just USD6bn per month for Treasury securities and USD4bn per month for MBS/agency debt, rising every three months in same size increments to a peak of USD30bn and USD20bn per month.

It is evident that the Fed wants to go much faster this time and it is assumed (partly for simplicity) that starting in July, the monthly cap for Treasury securities (ex-T-bills) and MBS/agency debt is USD60bn and USD30bn per month respectively but does not increase over time, ie the balance sheet shrinks at a maximum monthly pace of USD90bn per month, starting in July. The Fed could however choose to start with lower caps and gradually increase them over time as it previously did when implementing balance sheet reduction.

A key uncertainty in terms of the actual pace of balance sheet reduction is MBS redemptions that depend on refinancing demand, which in turn depends on movements in mortgage rates (and hence the Treasury curve). Using a profile modelled by Bloomberg, the monthly refinancing of MBS (without caps) will range between USD30bn and USD40 per month through to end-2023 and drop below USD30bn per month in 2024.

Fig. 3: Projected QT reduction in Fed assets



Note: grey shaded columns denote balance sheet expansion due to quantitative easing (QE) and the yellow denotes column balance sheet reduction or quantitative tightening between October 2017 and July 2019. Blue Bay projections from December 2021 to December 2024.
 Source: US Federal Reserve and BlueBay projections; latest actual data for December 2021.

Balance sheet ‘normalisation’

The QT profile outlined above implies a balance sheet would shrink by USD775bn between July and December 2022 (and by USD500bn excluding T-bills). If the aggregate monthly cap of USD90bn per month for Treasuries (ex bills) and MBS is maintained, the balance sheet would shrink by a further USD1 trillion in 2023 and USD840bn in

2024. The overall size of the Fed balance sheet would fall from a peak of over USD8.8 trillion (36% of GDP) to around USD6.2 trillion at the end of 2024. This would leave the size of the Fed’s balance sheet equivalent to around 22% of (projected) US GDP compared to around 18% prior to the pandemic and a post-global financial crisis peak of 25%. The Fed may allow its balance sheet to further run-off beyond 2024 until it reaches its pre-pandemic level.

Fig.4: Actual and projected Fed assets, % GDP



Note: grey shaded columns denote balance sheet expansion due to quantitative easing (QE) and the yellow denotes column balance sheet reduction or quantitative tightening between October 2017 and July 2019. Blue Bay projections from December 2021 to December 2024.
 Source: US Federal Reserve and BlueBay projections; latest actual data for December 2021.

The Fed is unlikely to set a specific target for a ‘normalised’ balance sheet. This depends on the amount of bank reserves “necessary to efficiently and effectively implement monetary policy” – a level that can change through time and circumstances. When bank reserves with the Fed fell to around USD1.5 trillion in late 2019, it was associated with disruption in money markets and a spike in rates, suggesting bank reserves were too low.

Fed asset purchases and sales effectively determine the size of bank reserve balances with the Fed that currently stand at USD4.1 trillion compared to USD1.6 trillion prior to the pandemic. The projected run-off in Fed securities holdings would imply that bank reserves would fall to around USD1.5 trillion by the end of 2024, but it is likely that banks would reduce its use of the Fed’s overnight reverse repo facility, which exploded in 2021 from just USD1 billion to more than USD1.6 trillion (see Fig. 2), and the reduction in banks’ reserve balances would be less.

QT versus rate hikes and yield curve

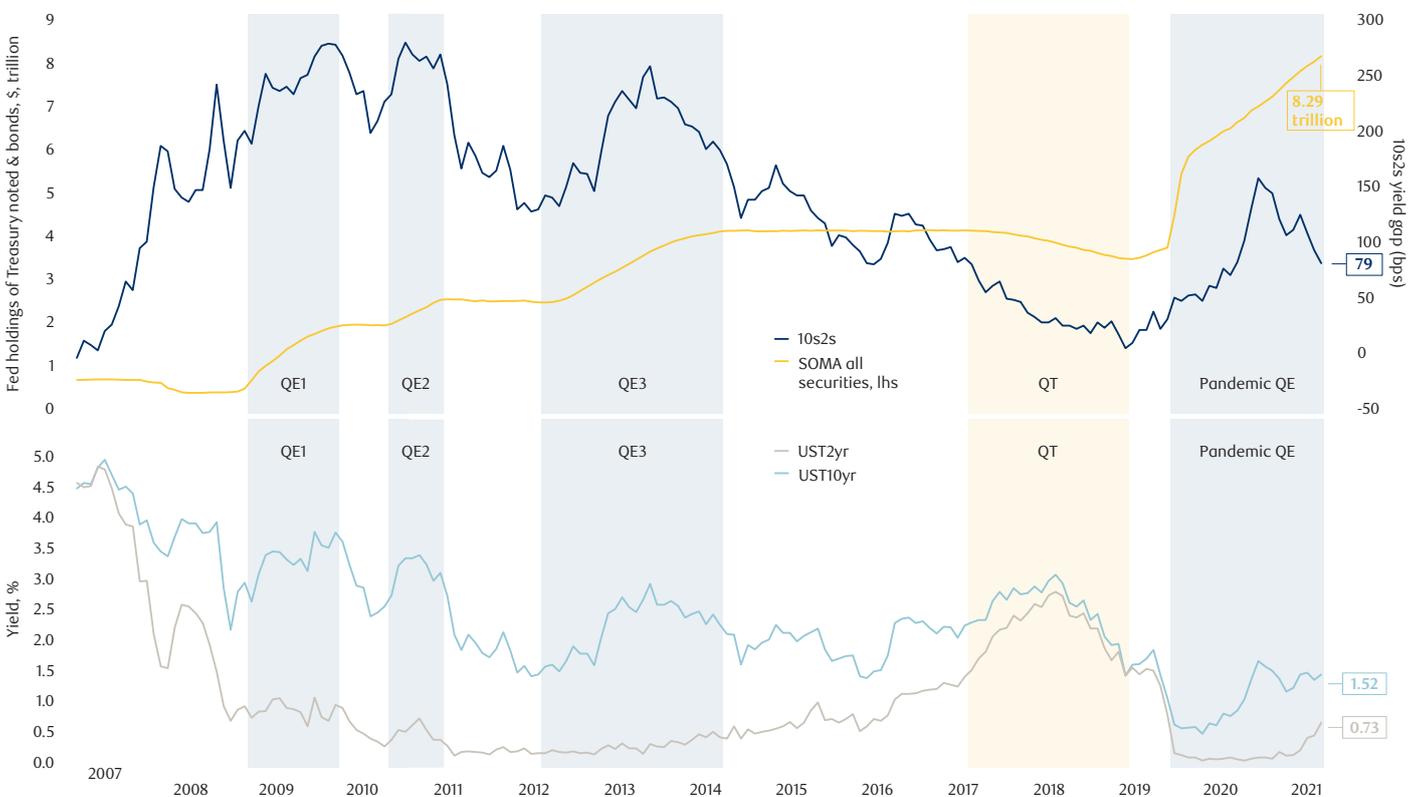
The impact of large-scale asset purchases (QE) on growth and inflation is complex and uncertain. If QE provides monetary accommodation by decreasing long-term interest rates and easing broader financial conditions,

shrinking the size of the balance sheet (QT) should have an opposite effect though not necessarily of the same magnitude. The minutes of the December 2021 FOMC meeting stated that some participants believe that QT can reduce the reliance on rate increases in removing policy accommodation and help limit yield curve flattening. But, as the minutes also disclosed, other participants said it is difficult to judge how the policy mix (between rates and balance sheet normalisation) will affect the shape of the yield curve.

Episodes of QE were associated with bear steepening in the Treasury curve as investors anticipate stronger growth and higher inflation in the future due to Fed asset purchases and the signal of lower for longer short-term policy rates. In the first year of QT starting in July 2017, the Treasury curve bear flattened as the Fed continued to hike rates. However, through 2019 the curve bull flattened as the global and US economic outlook became more uncertain and investors feared a policy mistake by the Fed.

A Fed staff research paper published in July 2019 (Substitutability of Monetary Policy Instruments) estimated that a 2% of GDP reduction in the Fed’s balance sheet was equivalent to about 20bps increase in the Fed funds rate in terms of the impact on growth and inflation.

Fig.5: Fed securities holdings and 10s2s yield gap



Note: grey shaded columns denote balance sheet expansion due to quantitative easing (QE) and the yellow green denotes column balance sheet reduction or quantitative tightening between October 2017 and July 2019. SOMA is US Federal Reserve System Open Market Securities. Source: US Federal Reserve; latest monthly data for December 2021.

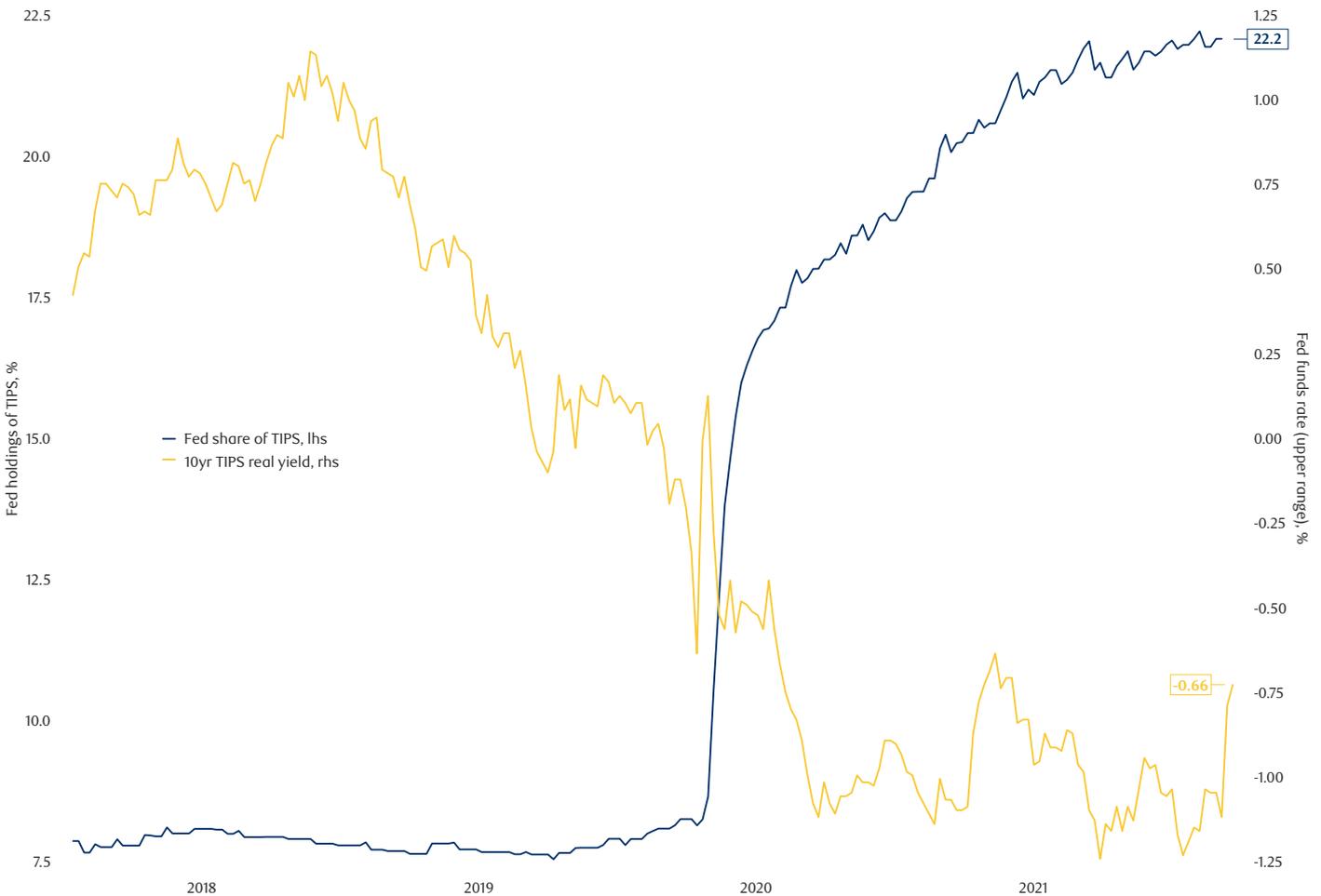
Applying this rule of thumb, the modelled QT path implies that by the end of 2022, the balance sheet would be 2% of GDP smaller than otherwise (based on a constant balance sheet in nominal terms), 'equivalent' to a 20bps increase in the Fed funds rate. However, if the balance sheet reduction from Treasury bill run-off is excluded, in 2022 the Fed fund rate equivalent tightening from QT would be a little over 10bps.

In 2023 the gap between the QT (with T-bills) and constant balance sheet widens to 6% of GDP, implying a cumulative monetary tightening of 60bps in terms of the Fed funds rates and 80bps by the end of 2024.

The Fed holds more than one-fifth of outstanding TIPS, compared to under 10% prior to the pandemic and QE. The TIPS market is much smaller and less liquid than the conventional Treasury market. Fed purchases of TIPS, along with a surge in demand from private investors in response to rising inflation, has helped pushed the real yield on TIPS to historic lows.

As the Fed runs down its holding of TIPS, the real yield could move higher by more than nominal yields, historically associated with a stronger US dollar, and undercut valuations of riskier assets, including long duration growth assets such as technology stocks.

Fig.6: Fed share of TIPS



Source: US Federal Reserve; US Treasury Department; Bloomberg; latest data at 18 January.

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Published date: January 2022



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