

The Fed's Balance(ing) Act

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Highlights

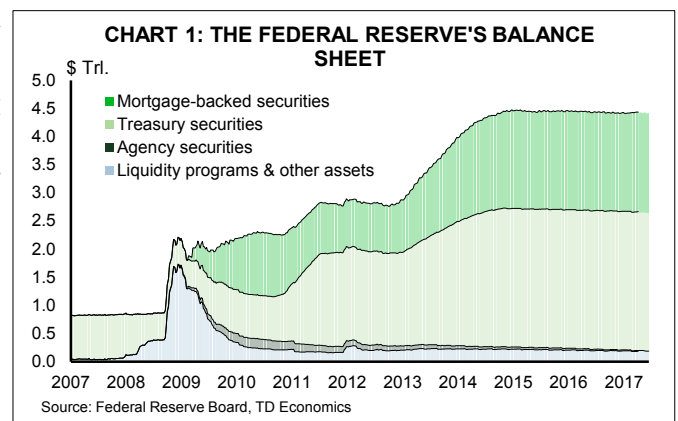
- The Federal Reserve is expected to initiate the normalization of its \$4.4 trillion balance sheet in the coming months. While the normalization process is theoretically straightforward and designed to run passively in the background, the reality is more nuanced with potential upward pressure on Treasury and MBS yields, alongside spillover effects on other asset classes.
- For U.S. commercial banks, the three rounds of quantitative easing boosted deposits by nearly \$3 trillion. Although the Fed has long stopped adding to its asset holdings, continued reinvestment of MBS principal payments and rolling-over of maturing Treasuries have kept deposits in the banking system elevated.
- The reduction in the Fed's balance sheet will destroy commercial bank deposits dollar-for-dollar, in the absence of the banking industry filling the Fed's shoes. However, the economic relationship does not mean that deposit destruction will impinge on loan growth.

In late-2008, after cutting rates to zero, the Federal Reserve ventured into uncharted waters by announcing the first of three rounds of quantitative easing (QE). Nine years later, the extraordinary support to the economy and outsized Fed balance sheet is no longer needed. The U.S. economy has largely healed from the financial crisis, with unemployment near its natural rate and inflation gradually moving towards target.

Recent communication from the Federal Open Market Committee (FOMC) indicated that balance sheet normalization will start later this year. In order to prepare investors, the Fed released alongside its June statement an addendum to the 2014 Policy Normalization Principles and Plans, outlining the framework for reducing asset holdings. The process appears straightforward and the FOMC has been busy downplaying its effects, suggesting balance sheet normalization will be as uneventful as "watching paint dry" and inconspicuously running "in the background." Investors have so far taken the approaching normalization in stride. But, the impact on the economy and financial markets of the unwinding are far more nuanced, with significant implications for most asset classes as liquidity begins to dry up.

With QE, size matters

At \$4.43 trillion (Chart 1), the Fed's balance sheet is equal to 24% of America's annual nominal GDP – four times the pre-crisis share. U.S. Treasuries (UST) amount to the



majority of the Fed’s assets. At \$2.46 trillion, the Fed owns more UST than domestic pension funds, banks, and insurance companies combined. The Fed also owns \$1.77 trillion residential mortgage-backed securities (MBS), accounting for over one-fifth of the entire market. As such, despite the current unresponsiveness of the market to the Fed’s asset unwind intention, the evolution of the Fed’s holdings will eventually have an outsized influence on these markets.

Our analysis suggests that QE pushed down the long-term yield on U.S. Treasuries by approximately 30 bps and the average MBS yield spread was lowered by an additional 40 bps, injecting much-needed liquidity into the MBS market. At this point, while the Fed has stopped increasing the size of its balance sheet, it has continued to support the Treasury and mortgage markets by the reinvestment of principal MBS payments and the rolling-over of maturing Treasuries at auction. Over the past year, the Fed has bought an average of \$32 billion per month in MBS and rolled-over an average of \$15 billion Treasuries per month.

This support is about to end. The addendum published following the Fed’s June meeting indicated an intention to shrink the balance sheet by \$10 billion per month later this year, with run-off incrementally increasing to \$50 billion per month roughly five quarters later – with a 60/40 split between UST and MBS. Such a plan would see the Fed’s balance sheet reach what we estimate to be its desired size of \$2.0 to \$2.5 trillion between 2022 and 2024.

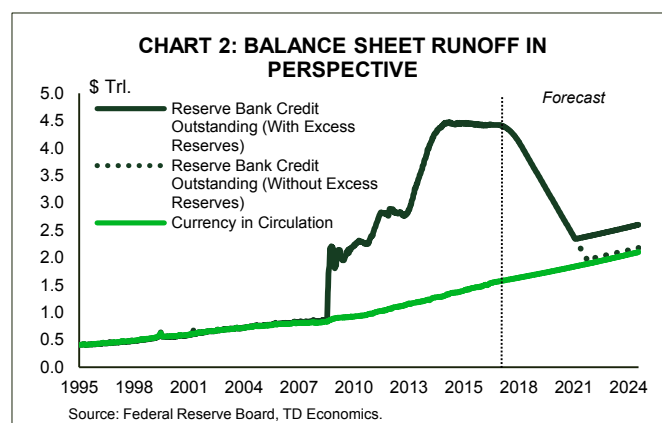
We’ll know when we get there

The wide two-year window and the ultimate desired level of balance sheet holdings remain estimations on our part for two reasons. First, it remains unclear how the Fed will allocate reinvestments from securities that exceed the monthly cap going forward. Purchasing Treasuries so as to balance its monthly maturity schedule would lead to a faster run-off, enabling the Fed to achieve its terminal point for the balance sheet sooner. However, this approach would reduce duration and could be challenging

to implement given existing supply and restrictions on holdings. On the other hand, rolling-over UST in line with the Treasury’s issuance composition at auction would maintain the status-quo and should be less impactful to financial markets, but necessarily lead to a more protracted normalization period.

Second, the Fed still has yet to provide a clear indication as to its desired size of the balance sheet going forward. This will depend on the mechanism chosen to implement monetary policy. Going back to the pre-recession framework of reserve scarcity would require the extinguishing of all excess reserves and would result in a smaller balance sheet going forward, all else being equal. This would constitute the return to the status-quo and would allow the Fed to once again adjust the supply of reserves to control the effective fed funds rate target. On the other hand, continuing with the current floor system would necessitate a larger balance sheet via the presence of excess reserves. While Chair Yellen indicated the desire to return to the pre-crisis framework, which is our baseline assumption, the floor system offers significant financial stability benefits (see Textbox) and may yet find support among the FOMC.

Still, the most important factor driving the ultimate size of the balance sheet will be demand for U.S. currency notes – something that’s largely out of the Fed’s hands. The amount of currency in circulation – which puts an effective lower bound on the size of the balance sheet – is already nearing \$1.6 trillion and will likely exceed \$2.0 trillion by 2022 (Chart 2),

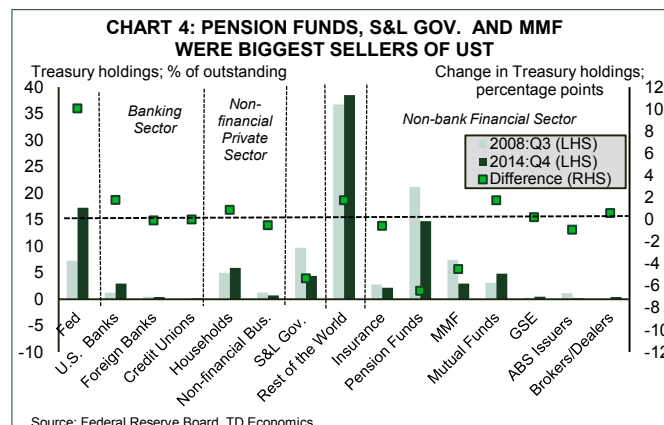
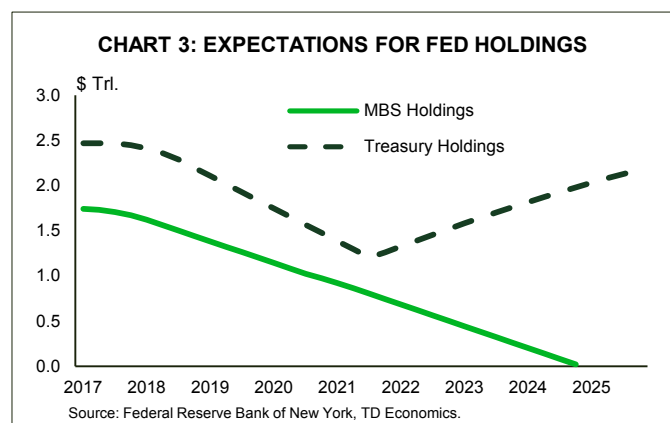


growing by nearly \$100 billion per year thereafter. This highlights what is often referred to as having the economy grow into the balance sheet. As the necessary size of the Fed's balance sheet grows over time, the Fed will have to once again begin to buy securities outright to the tune of \$100 billion to keep up with currency demand – something we expect to take place around 2023. We expect the Fed will return to its more typical balance sheet composition, buying Treasury bills and short-term notes to grow the balance sheet while reducing its MBS holdings (Chart 3) through passive run-off (principal payments) or active sales of MBS.

QE created commercial bank deposits

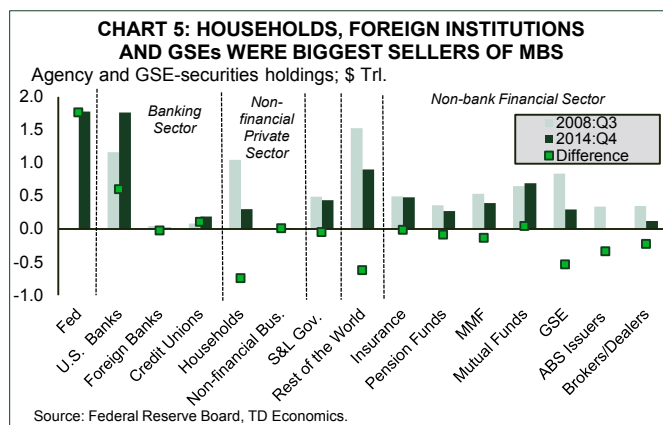
The purpose of quantitative easing was to lower long-term yields thereby pushing investors into riskier assets. As a by-product, QE also resulted in increased commercial bank reserves/deposits.

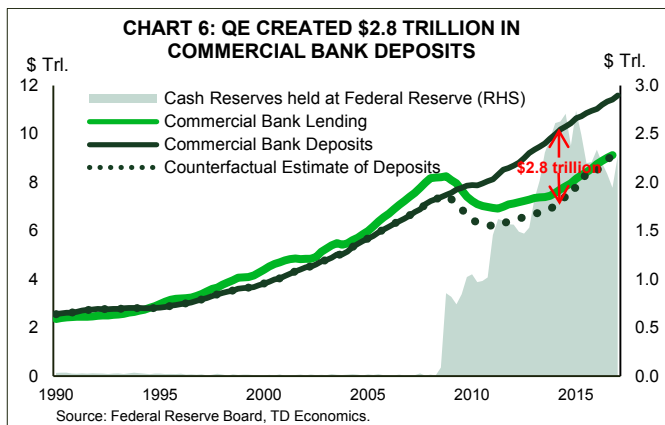
The Fed's asset purchases were paid for by crediting commercial bank accounts at the Fed, increasing reserves. From the commercial banks perspective, the increase in reserve holdings (assets) were met by an increase in deposits (liabilities). This is because the role of banks in QE was mainly as passive intermediary, facilitating a transaction between the sellers of securities (mostly non-bank financial institutions) and the Fed. The Fed paid for the securities purchased from non-bank sellers by crediting the account of their commercial bank (leading to an increase in reserve holdings). In turn, the commercial bank credited their client's deposit account by the same amount (leading to an increase in deposits).



The notion of banks acting as an intermediary and not as an active participant in the sale of assets is fundamental to the process of deposit creation during QE. Had this not been the case, QE would have simply resulted in the conversion of banks' existing security holdings (UST, MBS) to reserves at the Fed, having no impact on the money supply.

Counterfactual estimates done by TD Economics show that the Fed's asset purchases created approximately \$2.8 trillion in U.S. commercial bank deposits with the remainder of deposits from asset purchases converted to currency. The natural question to ask is: who are the holders of those deposits? Unfortunately, there is not a straight forward answer to this question. Charts 4 & 5 show that the biggest sellers of securities to the Fed included pension funds, money market mutual funds (MMFs), foreign institutions, Government Sponsored Enterprises (GSEs) and the household sector. However, the buck did not stop there. Cash (or deposits) are low yielding and those institutions who sold the se-





curities viewed the additional money holdings as an imperfect substitute. In order to rebalance the portfolio back to a more desirable composition, investors used the cash proceeds to purchase other (higher yielding) securities. This kicked started a chain reaction of portfolio rebalancing, which was the precise intention of the QE program to increase risk appetite. The wide diffusion of this effect within assets and even geography means it is challenging to anticipate which financial channels will manifest the deposit destruction from the Fed’s portfolio rebalancing.

Quantifying the sectoral flows is difficult

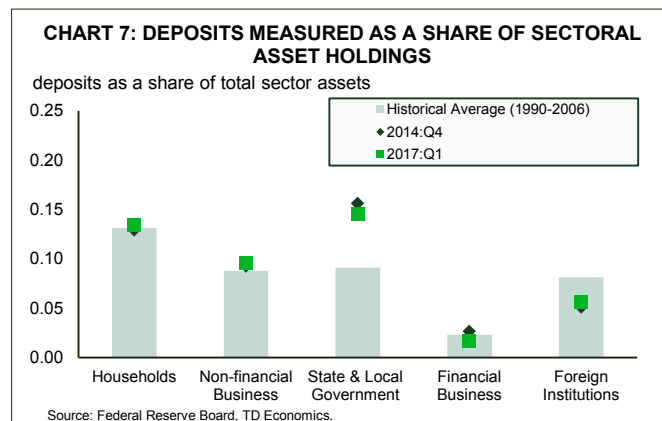
To get a sense of where the largest concentration of deposits may have gone, we used the Flow of Funds data on the level of aggregate deposit holdings today relative to pre-QE. The data shows that households and non-financial businesses experienced the largest increases in deposits, while deposit growth for foreign institutions and state & local government was much smaller. Interestingly, non-bank financial businesses experienced only a modest increase in deposits between 2008:Q3 and 2014:Q4 and have more recently fallen below their 2008 levels. Much of this is due to MMFs, which have undergone a number of regulatory changes in recent years, leading to sizeable deposit outflows. Excluding MMFs from the non-bank financial sector measure shows that overall deposit holdings are relatively unchanged compared to 2008 levels.

So while the analysis does give an idea of the potential sectors where the QE flows eventually landed, it

still doesn’t answer the question of by how much? The net increase in deposits of the household sector (\$3.8 trillion), coupled with the rise in deposits across foreign institutions and non-financial corporations (\$1.8 trillion), far exceeds the estimated \$2.8 trillion in deposits created from the Fed’s asset purchases. The discrepancy is related to loan creation and asset purchases of banks, which took place over the same time. Disentangling this impact from that of the QE flows is no simple task.

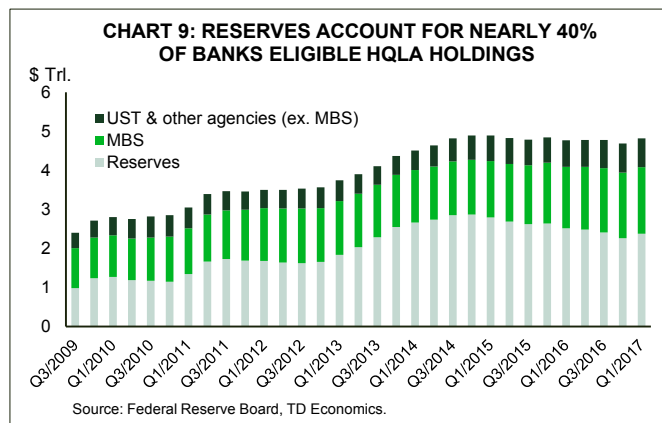
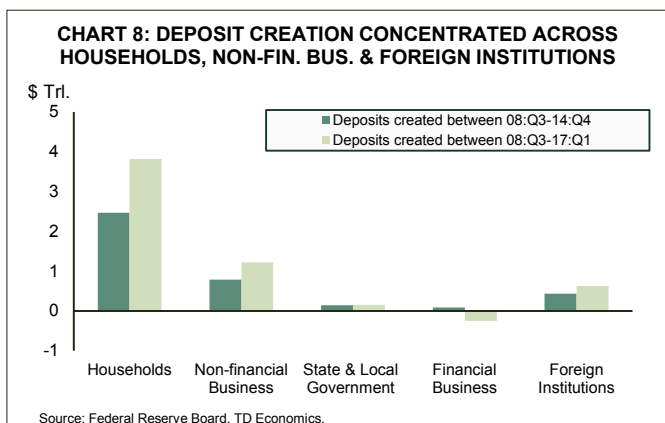
However, to get a partial gauge, we can compare sectoral deposit holdings relative to past periods to shed some light on who is likely most at risk once the Fed begins to normalize its balance sheet. Just as deposits were created in the system when the Fed purchased its asset holdings, the opposite will apply once balance sheet normalization begins. Deposits will be drained from the commercial bank system dollar-for-dollar alongside the reduction in the Fed’s balance sheet. However, a forecast of robust loan growth, of near 5% (annualized), will absorb some of the initial deposit headwinds from normalization, particularly through this year and next – a period during which only a fraction of the maturing assets will be allowed to runoff. By 2019, the Fed will likely be fully running-off its assets as suggested by its maturity schedule. This will create a more sizeable headwind for aggregate deposit growth.

The process of deposit destruction will come in two-forms: MBS and UST runoff. In the case of MBS, households whose mortgages are packaged into MBS and held by the Fed will reduce their de-



posits as they pay down their mortgages and the Fed no longer reinvests the payments into a new security. In contrast, following the bouncing ball on the mechanics of deposit destruction from maturing UST is more nuanced. Up until this point, maturing Treasuries have been rolled over at auction. However, once the process of reinvestment ends, the Fed will instead debit the U.S. Treasury's account by an amount equivalent to the face value of the security. The Treasury will then need to replenish those funds with either new issuance or higher contributions of tax revenue, both of which extinguish deposits from the system. The impact of raising tax revenues would depend on the policies used. In the case of new issuance, since the Fed is no longer purchasing Treasuries, others will need to step-in and fill the gap, with the immediate deposit drain determined by participation from each sector. The same holds true for MBS, with each sectors' demand for the security dictating where the initial deposit drain will be concentrated. Over the longer term, the impacts will be spread more broadly to other sectors as economic agents continually rebalance their portfolios.

To a large degree, this process of portfolio rebalancing will be driven by a reversal in the search for yield trade, which has been the dominant theme through much of the economic recovery. By construction, the rotation back towards more traditional purchasers/holders of UST and MBS implies that investors will need to reduce their holdings of risky assets. The extent to which these risky holdings are unwound, will ultimately dictate the degree of adjustment experienced across these asset prices.



Moreover, removing the liquidity of the Fed may also imply a return to more normal levels of volatility across asset classes (i.e. corporate and municipal debt, equities), leading to an increase in most assets risk premia.

LCR regulation offers some offset

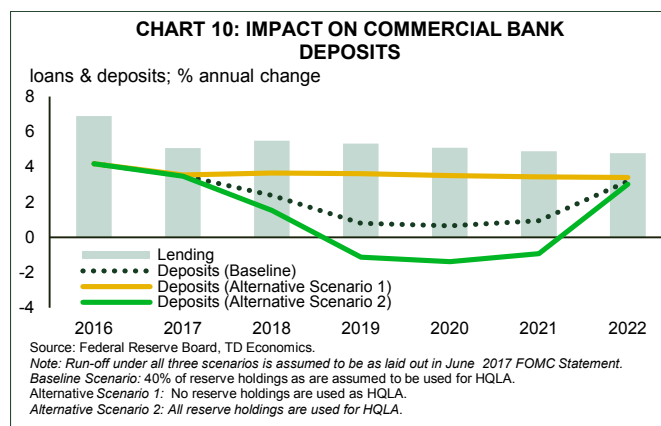
The impact of balance sheet runoff on deposits is further complicated by new regulations intended to strengthen the liquidity positions of large financial institutions, offering some potential upside to the deposit forecast. The Liquidity Coverage Proposal, which fully came into effect in January of this year, enforces minimum liquidity requirements for "large and intentionally active banking organizations". Under the new regulations, these institutions are required to hold prescribed minimum amounts of high quality liquid assets (HQLA) such as central bank reserves as well as government, MBS, and corporate debt. The new standards were first announced back in 2013 and have been slowly phased in over the last three years, leading to a steady increase in bank holdings of UST and MBS over this time period. Banks have also used some of their reserve holdings as HQLA in order to reach its required liquidity coverage ratio. However, once the Fed begins to normalize its balance sheet and drain reserves/deposits from the system, banks will be forced to replenish the HQLA reserve holdings with other types of liquid assets. To the extent that reserves are currently used for HQLA purposes will ultimately dictate the amount of additional securities that banks will need to purchase. From a

deposit perspective, each new security that is purchased from the non-bank sector will create a new deposit in the commercial bank system, providing some offset to the normalization headwind.

Due to limitations in data reporting, it is not known how much of the reserve holdings are currently being used for HQLA purposes. However, using Federal Reserve H.8 data, we are able to get a breakdown of aggregate commercial bank asset holdings, which shows reserves are equivalent to nearly 40% of eligible HQLA. In the extreme case, where all current reserves are being used for HQLA (Alternative Scenario 1), the drain on deposits from normalization would be completely offset by a bank's need to replenish the reserve HQLA with other securities. This "all-in" scenario is unlikely. The majority of reserves are concentrated among a handful of the largest banks, implying that even if all reserves were dedicated to HQLA, a surplus would still exist. A more reasonable assumption applied in our baseline forecast is that roughly 40% of reserve holdings are used for HQLA – the current share of reserve holdings of HQLA eligible assets. Under this assumption, deposit growth slows to 2.3% in 2018 and 0.6% in 2019, which is slower than under the Alternative Scenario 1, but stronger than Alternative Scenario 2, where no reserve holdings are assumed to be used for HQLA.

With aggregate commercial bank lending expected to expand by roughly 5% in 2018 and 2019, deposit growth will average less than half this annual pace over the next several years. This divergence between deposit and loan growth has not been experienced before, but is a natural outcome of the normalization process, and is not necessarily something to worry about.

Indeed, some have used the argument that the drain in deposits will result in a similar pullback in lending activity, as bank 'funding' is drained from the system. This is not the case. Traditional money and banking theory indicates that loans create deposits, not the other way around. As long as supply/demand fundamentals continue to yield a price for loans that adequately compensates banks for



the risk given the economic environment, banks will continue to lend irrespective of their deposit holdings, and create deposits in the process.

The reality is that deposit destruction is likely to be much more passive, having little impact on banks day-to-day operations. With the Fed having communicated its plans of how it plans to begin normalizing its balance sheet, individual banks can begin assessing to what extent the deposit drain will impact their operations. While this may imply a shifting in the underlying composition of banks' balance sheets, it should not have any material impact on underlying economic activity.

Bottom Line

The time has come for the Fed to take another step towards a more normal monetary stance. By ending the reinvestment phase of its QE purchases later this year, the Fed will slowly allow its balance sheet to shrink back to its fundamentally-determined size.

Many uncertainties remain, particularly with respect to how markets will respond to the diminishing role of the Fed's support in the Treasury and MBS market. As a big buyer, the Fed has impacted market pricing by keeping Treasury and MBS yields lower than what they would have otherwise been. It has also created vast liquidity, which spurred risk taking. The gradual removal of this buyer should put some upward pressure on yields and downward pressure on riskier assets.

Operationally, there are still questions about how

the Fed will continue to reinvest maturities that exceed its monthly caps and what target the Fed has in mind for the terminal size of the balance sheet. The balance sheet will shrink towards the size of money in circulation, yet there may be a preference for some cushion to be maintained over-and-above that level.

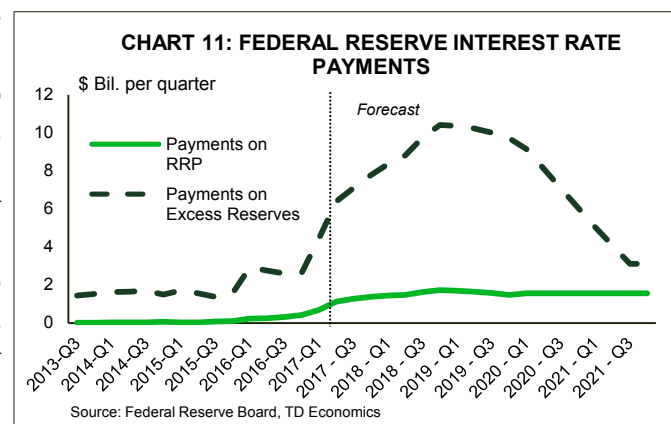
Normalization will also influence the deposits of commercial banks, which increased by more than \$2.8 trillion between 2009-2014. Despite the Fed having ended quantitative easing in late-2014, these deposits have remained in the system as payments from MBS were reinvested and maturing Treasuries rolled-over at auction. With normalization, we expect this process to pose a meaningful headwind

for commercial bank deposit growth over the coming years. But, since many banks have been using excess reserves as a way of complying with new bank regulations banks may offer a counter-force to Treasury demand and deposit drain, as they seek to replenish current reserve HQLA holdings with other assets (UST, MBS).

At the end of the day, the Federal Reserve would like to orchestrate balance sheet normalization in a manner that will be as interesting as watching paint dry. At the same time, the Fed will continue to use the fed funds target rate as its primary policy lever while maintaining flexibility as far as the size of the balance sheet going forward.

The case for normalization

While the economy is no longer in need of extraordinary stimulus, any required monetary policy tightening can easily be accomplished through increases to the federal funds rate target, with the arguments for normalizing the balance sheet primarily non-economic. For one, normalizing the size of the balance sheet would constitute prudent risk-management, by beginning to reverse the incentives to risk-taking behavior that was central to the mechanism of QE. Secondly, reducing its asset holdings would open up balance sheet room should a downturn in the economic outlook require the Fed need to undertake another bond buying program. Lastly, while the Fed is not constrained by its income, the interest payments to both domestic and foreign banks are often portrayed as a subsidy to banks and could become a political issue as the Fed's transfers to the Treasury dwindle in the coming years. Together, the interest paid to financial institutions related to excess reserves (IOER) and as part of the Overnight Reverse Repurchase Program (RRP) exceeded \$4 billion per quarter recently. This number is bound to rise, even with a shrinking balance sheet, as both the IOER and RRP rate move up with the fed funds target. Payments could reach \$12 billion per quarter in 2018, before falling gradually thereafter. The payments would be largely eliminated alongside excess reserves, but would merely decline to \$4 billion per quarter should the Fed opt to keep some cushion of excess reserves in the system (Chart 11).



Scarcity vs. abundance

The Fed's Asset purchases caused a build-up of excess reserves in the banking system to the tune of \$2.3 trillion and necessitated the Fed to conduct monetary policy in a new manner. Prior to the Great Recession the Fed relied on the notion of scarcity of reserves to set monetary policy. The New York Fed, as part of its Open Market Operation (OMO) mandate, would adjust the supply of reserves so their price (the short term interest rate) would be near the target set by the FOMC. Since the crisis, however, the Fed has instead relied on the floor system, made possible by the implementation of the Interest on Reserves and the overnight reverse repurchase agreements (ON RRP). This system instead relies on the abundance of reserves, requiring their marginal cost is the price paid by the Fed for holding them - the IOR for banks and the ON RRP rate for non-bank participants in the fed funds market. While this comes at a price, it also has many benefits including the more efficient transmission of monetary policy to money markets, increasing availability of safe short-term assets to financial markets, and facilitating the provision of liquidity in an event of a crisis. The floor system was viewed by the FOMC "relatively simple and efficient to administer, relatively straightforward to communicate, and effective in enabling interest rate control across a wide range of circumstances" according to the minutes of their November 2016 meeting. Moreover, the floor system is used by most international central banks to conduct monetary policy.

REFERENCES

- Bernanke, B.S. 2009. The Crisis and the Policy Response. Remarks at the Stamp Lecture, London School of Economics (London, England), January 13.
- Bernanke, B.S. 2016. Should the Fed Keep its Balance Sheet Large? Brookings Institute
- Benford, J., S. Berry, K. Nikolov., C. Young. 2009. Quantitative Easing. Bank of England Quarterly Bulletin 2009:Q2
- Board of Governors of the Federal Reserve System. 2014. Policy Normalization Principles and Plans, September 17
- Board of Governors of the Federal Reserve System. 2016. The Federal Reserve's Monetary Policy Toolkit: Past, Present and Future, August 2016.
- Dolega, M. 2014. The Fed's Gra(Dual) Normalization: Navigating Out of Uncharted Waters. TD Economics
- Federal Reserve Bank of St. Louis. 2015. The Road to Normal: New Directions in Monetary Policy. Annual Report 2015.
- Greenwood, R., S. Hanson., J. Stein. 2016. The Federal Reserve's Balance Sheet as a Financial-Stability Tool. Kansas City Federal Reserve's 2016 Economic Policy Symposium in Jackson Hole.
- Keister, T., J. McAndrews. 2008. Why Are Banks Holding So Many Excess Reserves. Federal Reserve Bank of New York: Current Issues in Economics and Finance.
- McLeay, M, A. Radia, R. Thomas. 2014. Money creation in the modern economy. Bank of England Quarterly Bulletin 2014:Q1.

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