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Taper and the "Mix-Capacity-Target" Trinity

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As we've discussed in our previous issue, collateral supply will soon test the Fed's current operating framework. Changes will soon be necessary to the framework to ensure that o/n rates continue to print within the target band. Were o/n rates to drift outside the band and stay there for a period, the OIS curve would become volatile and steepen, jamming monetary transmission.

This is a risk the Fed will strongly prefer to avoid, in our view.

Taper is a source of collateral supply. Three factors determine the room to taper: the Fed's preferred mix between reserves and bonds in bank's HQLA portfolios; the financial system's capacity for repo intermediation, given the mix above; and where o/n rates will trade relative to the target, given the capacity above.

What will the Fed's preferred mix be? Reserves? Bonds? *Laissez-faire*?

Governor Quarles has yet to put his "brand" on global banks' liquidity portfolios, but even without any additional guidance from the Fed, o/n markets are telling us that reserves are now scarce and that collateral is becoming excess…

Reserves did not become scarce because of $200 billion of taper to date, but because of the pace of effective taper to date, which is now over $500 billion. The pace of effective taper is determined by taper plus sterilization, which are large-scale, liability swaps that add to collateral supply indirectly, over and above the amount that enters the system through taper and Treasury issuance directly.

Some o/n rates are already printing outside the Fed's target band.

The Fed has a waterfall of options to ensure that o/n rates remain within target: reverse twist; cut the rate on the foreign RRP facility; lower the IOR rate down to the o/n RRP rate; end taper; launch a fixed-price, full-allotment o/n RP facility. In our view, under the current version of Basel III, launching an o/n RP facility is inevitable – the ultimate solution to what is a problem of excess collateral.

Balance sheets are quantities. Quantities determine prices.

If collateral supply exceeds the system's capacity to create private "repo" money, prices have to adjust to attract more capital for balance sheet. Whether those prices – o/n interest rates – will be consistent with the Fed's target for the funds rate is the trillion dollar question. We think they won't be – we'll need the Fed's balance sheet for that. It's either that or control over o/n interest rates.

The Fed has consistently stressed two points about balance sheet taper:

(1) They don't really know what is the end-point of taper.

(2) They'll look for market signs to know when to stop taper.

Signs from what market? Overnight markets…

Operationally, central banks have two main jobs: to backstop the financial system in a crisis, and to ensure that overnight (o/n) interest rates print within the target band. Lose your ability to control o/n interest rates, and you lose control over monetary conditions. Lose control over monetary conditions, and the OIS curve becomes volatile and steeper.

In a post-Basel III financial order, there are enough problems with monetary transmission. Large and recurring increases in Libor-OIS and Libor-Libor cross-currency bases are jamming the Fed's monetary signals considerably. Consider, for example, the fact that those in need of U.S. dollar funding in London, Frankfurt, Zurich or Tokyo are at times paying three extra rate hikes' worth of premia when they borrow in the FX swap market.

Dollar "singularity" – parity between the price of term dollars onshore and offshore – is already gone (see here). Volatility around OIS is the last thing we need to add to that. If volatility in Libor-OIS and cross-currency bases is here to stay – and we think that it is – ensuring that to o/n rates stay within the band should take on heightened importance.

We need to understand how the evolution of the Fed's balance sheet taper impacts o/n rates because the Fed never had a hiking cycle like the one we are trading today.

The Fed is engaged in a game of monetary juggle – doing three things at the same time:

(1) It's hiking, i.e. it is raising the floor under o/n rates.

(2) It's sterilizing reserves via large-scale liability swaps (see here).[1]

(3) It's retiring reserves via tapering the balance sheet.

Hikes are flattening the OIS curve. Sterilization widens money market spreads to OIS. Taper widens spreads to OIS too, and it also pressures the Treasury term premium higher.

To make things even more complicated, the U.S. Treasury is also murking the picture. The regime of safe asset shortages is over. We are now in a safe asset glut regime, where the excess supply of bills keeps the effective floor under o/n interest rates higher than the floor targeted by the Fed with the rate administered through the o/n RRP facility.

How to think about o/n markets and taper? We've organized our analysis into four parts.

Part one reminds that the Fed's preference for reserves over bonds in global banks' HQLA portfolios remains unknown and is a wildcard in the market's big taper debate. It also explains why reserves are special in a regime where balance sheet for repo isn't limitless and why o/n rates will drift outside the target band as collateral supply increases.

Part two discusses taper to date. Having established in part one that reserves are special, part two explains that it's not just taper that matters for o/n rates but any balance sheet operation that swaps reserves for collateral and such operations also include sterilization. The effective pace of taper – collateral injection by the Fed to date – is over $500 billion.

Part three lists the options the Fed can choose from to defend the top of its target band as increased collateral supply pressures o/n rates higher. Finally, part four concludes.

[1] Large-scale asset swaps (LSLS) refer to the swapping of reserves for other liabilities on the Fed's balance sheet. We have referred to large-scale asset swaps as "sterilization" before (see here). Large-scale asset swaps are one way to neutralize reserves that have been injected to the system through large-scale asset purchases (LSAP).

Part I – Taper and First Principles

There are three factors that determine the room to taper:

(1) What should be the mix between reserves versus bonds in HQLA portfolios?

(2) What is the system's capacity for repo intermediation, given the mix above.

(3) Where do o/n rates print relative to the Fed's target, given the capacity above.

The mix question ultimately comes down to this: whether banks' dominant liquid asset is reserves or bonds determines how banks fund their outflows. If they have reserves, they just run down their balances at the Fed. One bank's reserves decline, another's go up. Money markets don't feel a thing for these flows all settle on the Fed's balance sheet.

If banks have bonds – Treasuries – the picture is completely different. Banks can't use bonds to settle. They have to turn bonds into reserves to settle. There are two ways, and only two ways to do that – sell bonds or repo them. Both drain liquidity from other banks and drains show up in o/n markets. The greater the drain, the greater the stress and the greater the stress, the greater the pressure on the Fed to step in and lend in o/n markets.

Thus, the reserves-to-bonds mix in HQLA portfolios is a matter of fundamental import. It determines how long before banks call the Fed for liquidity during an episode of stress, and, as we will discuss in more detail below, it also determines how much flexibility banks have in their HQLA portfolios to keep o/n repo rates within the Fed's target band.

The Fed's preference for the mix is a wildcard. If the Fed prefers reserves, taper ends soon. If bonds, taper has more room to go, subject to collateral supply and dealer's repo capacity.

The capacity question comes down to how much balance sheet the financial system has for repo intermediation. Consider that for the past decade – since the financial crisis – banks have been net lenders in the repo market. They haven't been borrowing at all in the repo market because they were flush with reserves and didn't need the extra liquidity.

But if you un-do QE, and take reserves away from banks and give them bonds instead – and, in essence, that's what taper is – you're making bank portfolios less liquid and you're forcing banks to go into the repo market to raise reserves to settle on the margin.

Banks going from repo lenders to repo borrowers, will have a major market impact…

Over the past five years, all the concerns about the lack of repo balance sheet have been coming from hedge funds and asset managers. If banks become net borrowers in the repo market, we will feel that. It took four years to add $200 billion in tri-party repo capacity, and that was with a significant $800 billion help from prime money fund reform.

Adding the next $200 billion won't be that easy. But even if it will be, $200 billion won't be enough – the quarterly pace of taper is almost as much, not to mention coupon issuance. If the repo market chokes on the reserves-for-bonds swap that the Fed's taper represents, o/n GC repo and tri-party repo rates will drift outside the Fed's target band, in our view.

And that brings us to the target question: would it be acceptable to the Fed if repo rates – including the secured o/n funding rate (SOFR) – printed outside the target band?

Probably not.

While it's true that the Fed doesn't target repo rates – SOFR is a reference rate, not a target rate – repo rates do influence where the fed funds rate, the official target, trades. And if repo rates are headed outside the band, the o/n fed funds rate is headed outside the band too, and the Fed will have to adjust its operating framework to prevent that.

Mix-capacity-target – the "trinity" that ultimately determines the Fed's room to taper…

Part II – Taper and Shadow Taper

Now that we've established why reserves are special and how increased collateral supply in a regime where balance sheet for repo is no longer limitless can come into conflict with the Fed's target range for the fed funds rate and the o/n rates complex more broadly, we next turn to another fundamental question: how much have we tapered to date?

$200 billion? You're wrong. The effective pace of taper is running at over $500 billion.

There is a big difference between $200 billion and $500 billion and the reason for that difference is sterilization. Sterilization is a fundamental concept that we first discussed in Sterilization and the Fracking of Reserves. It refers to large-scale liability swaps, whereby the Fed lets institutional client flows drive the swapping of reserves into other liabilities like the Treasury General Account (TGA) or the o/n RRP facility with foreign central banks.

Everyone knows that at the system level, taper is just a swap of reserves for bonds (i.e., collateral). So is sterilization…

When the Treasury issues $400 billion in bills to ramp up its TGA balance at the Fed, in the money market, reserves get swapped for collateral – in this case, Treasury bills.

When foreign central banks move $250 billion from banks to the foreign RRP facility, in the money market, reserves get swapped for collateral – in this case, Treasury notes, which foreign central banks "reverse in" from the Fed and then lend on to the market.

When reserves are swapped for collateral, reserves get drained – liquidity gets sterilized. EM central banks know exactly what that means – for them, sterilization is a daily exercise. But for the Fed and for most STIR strategists, sterilization is just a sideshow, it seems.

Far from being just some pimple on the Fed's balance sheet, the TGA account and the foreign RRP facility are crucial determinants of how much room there is to taper, and it's $300 billion less than you believe. Sterilization is far more important than taper.

What's the difference between J.P. Morgan Chase Bank, N.A. keeping $400 billion in a reserve account at the Fed and Treasury keeping $400 billion in the TGA at the Fed? J.P. Morgan has traders that will lend those reserves into dislocations in money markets, but Treasury does not. J.P. Morgan's reserves are active – ready to be deployed at the right price. Treasury's are passive – they've been shackled; they've been sterilized…

As reserves get sterilized, markets clear differently.

The difference in the flows generated by a central bank – like the RBA (see here) – that lends its FX reserves in the FX swap market directly, and one that keeps its FX reserves "under the mattress" in the foreign RRP facility, is this: the former's FX swap trades settle by banks shifting reserves between their accounts at the Fed and the settlement of these FX swap trades have zero impact on o/n markets; the latter's trades sterilize reserves and if the central bank then lends on to the market the Treasuries it reversed in from the Fed, the market will repo those Treasuries to get the cash to lend in the FX swap market. Unlike the first example, the second example has a measurable impact on o/n markets.

You use reserves to settle. You repo bonds to get reserves to settle. Repo rates react…

Figure 1 shows the current run-rates of taper and shadow taper. Sterilization matters!

Taper swaps reserves for collateral directly. Sterilization swaps reserves for other liabilities which adds to collateral supply indirectly. But collateral is collateral whichever way it enters the financial system. Reserves are now scarce. Collateral is becoming excess…

In the next section, we present a list of operational measures that we expect the Fed to take as reserves scarcity becomes more pressing and the top of the target band is tested.

Part III – Operation Waterfall

Overnight markets have been telling us that reserves are becoming increasingly scarce. We haven't seen in years o/n GC rates printing meaningfully above the IOR rate on days when bills and coupons settle. Spikes in the o/n GC rate were limited to quarter-ends, and the fact that settlement days can push o/n GC rates above IOR is the clearest proof of our mantra that reserves are now scarce and collateral is becoming increasingly excess.

Overnight markets will continue to tighten for the remainder of this year, and as they do, the Fed's current operating framework will be tested. The Fed has a waterfall of options:

(1) reverse twist;

(2) cut the foreign RRP rate, or cap the foreign RRP facility;

(3) cut the IOR rate until it converges with the o/n RRP rate;

(4) end balance sheet taper prematurely; and

(5) unveil a fixed-price, full-allotment o/n RP facility.

We present the Fed's strategic options in this specific order as we believe these options go from least to most drastic and least to most complex to communicate and implement.

Each one of these options works its way through the financial system differently, and understanding what each does is essential to trade their announcement successfully.

Option one, reverse twist. Twisting is the simplest way to lower the pressure on o/n rates. A reverse twist is just an asset swap, whereby the Fed sells longer-term Treasuries from the SOMA portfolio and buys say one month bills on the open market. The curve would steepen but that's a price worth paying to enhance your ability to control overnight rates. A reverse twist is balance sheet neutral and would leave the Fed's liability mix unchanged.

Option two, cut the foreign RRP rate, or cap the facility by introducing counterparty caps. Like a reverse twist, this option is balance sheet neutral too, but unlike a reverse twist, this option works on the liability side of the Fed's balance sheet. By adjusting the terms of the facility, the Fed could incentivize foreign central banks to go back in the bill market. Bills would get massively bid and as foreign central banks settle their bill purchases, reserves would increase in the banking system – sterilization in reverse, pure and simple…

Figure 2 shows that foreign central banks keep $250 billion in the foreign RRP facility.

Figure 3 shows that during the second quarter of 2018, it paid 2 bps more than IOR!

$250 billion flooding back into the bill market would have a meaningful market impact: bill yields would fall, o/n rates would trade more within the target band, and the FOMC would have $250 billion more room to taper and more time to think about the future. In our view, cutting the rate on the foreign RRP facility or capping the facility would be the most effective way to address the pressure on o/n rates. But the Fed hasn't done it (yet).

Why?

We can only speculate, but one reason could be that the Fed was very hush-hush about uncapping the facility – we have yet to see a release or speech about when it happened – and so it's probably tricky to re-cap the facility. But the Fed can still do it, and, if it does, it'll probably be very hush-hush about it again. Just as we have first learned about the growth of the usage of the foreign RRP facility from the weekly H.4.1 release, we'll probably learn about changes to its terms from a massive decline in its usage through continued vigilance in tracking the H.4.1 release. Fed watching is a respectable job again.

Option three, cut the IOR rate further – the Fed's preferred method of dealing with the pressure on o/n rates. Cutting the IOR rate works through two channels.

First, cutting IOR lowers the spread reserves pay relative to bills, and so incentivizes banks to trade reserves for bills on the margin. Has this happened since the Fed has cut IOR?

No, it has not.

According to the Fed's weekly H.8 release, since the IOR cut in June, banks have bought only $10 billion in Treasuries. Looking at it on a seasonally adjusted or unadjusted basis does not help; neither does looking at large versus small or foreign versus U.S. banks.

Second, cutting IOR increases the spread o/n GC repos pay relative to reserves, and so incentivizes banks to trade reserves for o/n GC repos, i.e. to lend more in the repo market. Have banks been lending more in the o/n GC repo market since the Fed has cut IOR?

Some, but not a lot.

According to the Fed's H.8 release, since the IOR cut in June, banks increased their lending in the GC repo market by $35 billion. That's not nothing, like the bills they bought, but it's some. But the o/n GC market is big – $400 billion, so $35 billion didn't do much.

Thus, cutting IOR works either by pulling bill yields lower, or pushing o/n GC rates lower. Both are perfectly fine approaches to tackle pressures on the o/n fed funds target rate.

But 5 bps didn't do the trick. More cuts will be necessary…

As the Fed cuts IOR further, what will banks prefer, bills or GC repos? Repos. Why? Because repos yield better and return cash earlier than bills. Bills are a step-down relative to reserves and o/n GC repos are a step up relative to reserves. It's really a no-brainer…

Importantly, whether IOR cuts work through the bill market or the o/n GC repo market, what they effectively do is flatten the distribution of reserves across the banking system – when a bank buys a bill or does repos, it expends reserves and another bank gains them. In this sense, option three is different from option two: option two adds reserves through reverse-sterilization, but option three doesn't; it attempts to re-distribute existing reserves.

What is the potential scale of re-distribution that can be achieved by cutting IOR further? On that front, there is one important detail to consider.

According to FICC's GSD member directory (see here), there are only 25 banks in the financial system that have a pipe into the o/n GC repo market, and the reserve hoards of these banks determines the maximum scale of re-distribution that can be achieved.[2] Figure 4 shows that the combined reserve holdings of these banks is about $900 billion.

Only a fraction of these reserves will move.

J.P. Morgan Chase Bank, N.A. is the patrician of the o/n GC universe, and as we've noted in our previous issue, we have serious doubts that this bank will take part in the re-distribution experiment. Citibank, N.A., is another example – the reserves share of its HQLA portfolio is relatively low, so we wouldn't expect it to reverse in more collateral.

That leaves just under $600 billion of reserves in the hands of banks that can lend in the o/n GC repo market – at most. How much of this $600 billion will be lent is up to each of these banks' unique social circumstance. We doubt that more than $100 billion will move, and in the context of bill supply, coupon issuance and taper, $100 billion does not seem sufficient to offset the dynamics that will pressures o/n repo rates in the coming months.

[2] What you are looking for are names with the word "bank" or "branch" in their name with access to the GCF market.

If further IOR cuts won't do the trick, what happens next?

The Fed can go back two steps and re-consider "tsiwting" (reverse twisting) or capping the foreign RRP facility. If it doesn't, limits to the effectiveness of the IOR strategy will reveal a lot about globally active banks' demand for reserves. If banks don't want to take part in redistribution at any price, we'll know that banks' demand curve for reserves is very steep.

Steep means scarce. Scarce means expensive. Expensive means above target…

Even if the Fed goes all in and cuts the IOR rate all the way down to the o/n RRP rate – i.e., it converges the floor rate to the basement rate – the fundamental question of how the Fed intends to police the top of the target range for the o/n fed funds rate remains.

Ultimately, converging IOR with the RRP rate will necessitate the launch of a fixed-price, full-allotment o/n RP facility to police the top of the target range, but as we've argued in our previous issue, the political, educational and operational cost of introducing a new facility is such that the Fed likely won't launch until all alternatives have been exhausted.

Option four is the last alternative before the launch of a fixed-price, full-allotment o/n RP facility, which is to say that if the redistribution strategy doesn't work, the Fed will try preservation – "pickling" reserves for the "collateral winter" by prematurely ending taper…

Option five, launching a fixed-price, full allotment o/n repo (RP) facility is inevitable.

This is the facility that will be necessary to police the top of the Fed's o/n target range if the Fed chooses to converge the IOR rate with the o/n RRP rate, as discussed above.

The o/n RP facility is also the ultimate solution to the problem of excess collateral…

Unlike any of the previous options, the launch of an o/n RP facility would increase the size and also the volatility of the Fed's balance sheet and add new reserves to the system.

Option one was a simple asset swap – a reserves-neutral swap of coupons for bills – that would steepen the curve but on the flipside help the Fed re-gain control over o/n rates.

Option two was a liability swap that added reserves but didn't increase the balance sheet. It would steepen the curve but extra reserves would tighten money market spreads to OIS.

Option three was an attempt to re-distribute and learn about banks' demand for reserves. It would tighten GC repo spreads to OIS and would only impact the curve on the margin.

Option four is a state of "stop, pickle and reconsider" – a massive curve flattener.

Option five is the inevitable – less than four years after the end of taper, the Fed would be increasing its balance sheet once again through the monetization of excess collateral via a fixed-price, full allotment o/n RP facility so that o/n rates stay within the target band.

Basel III increased the safety of the system, but it reduced its balance sheet flexibility.

Balance sheets are quantities.

Quantities determine prices.

If collateral supply exceeds the system's capacity to create private money, prices have to adjust to attract more capital for balance sheet for repos. Whether those prices – o/n interest rates – are consistent with the Fed's target range is the trillion dollar question.

If private balance sheets can't monetize collateral at rates consistent with the Fed's target band for o/n interest rates, the Fed's public balance sheet will have to do that.

If it doesn't, the market loses confidence in the Fed's ability to control monetary conditions – the OIS curve becomes volatile and steeper, making monetary transmission noisier…

Conclusions

In a growing economy, a banking system that's subject to the current version of Basel III has to hold more and more HQLA over time. More lending, more outflows, more HQLA. Paraphrasing Chairman Bernanke, over time, the economy's and households' currency needs will "grow into" the Fed's balance sheet, reducing the need for shrinkage.

Households' currency needs are not the only force driving the ecosystem to grow into the Fed's balance sheet. Banks' reserve needs for HQLA purposes represent a similar need.

Currency is money for people. Reserves are money for banks. Under Basel III, bank's demand for reserves, and the Fed's balance sheet are rising. The bigger the economy, the bigger the banking system. The bigger the banking system, the bigger its outflows. The bigger its outflows, the bigger its HQLA needs. The bigger its HQLA needs, the bigger its reserve needs. The bigger its reserve needs, the bigger the Fed's balance sheet.

As we've said before, over time, central banks under Basel III are "pre-ordained" to add lots of reserves periodically through permanent open market operations (POMOs). If they wouldn't add reserves for a decade, reserves would shrink as a share of global banks' HQLA portfolios, which would get bond-heavy relative to outflows, even without taper.

To have an informed debate about the end-point of taper, we need clarity on the Fed's preferred mix of reserves versus bonds in large, globally-active banks' HQLA portfolios.

Here is what our analysis implies for the mix, and hence, the room to taper.

Collateral is not money.

It used to be, in a financial system built around just-in-time liquidity, but the essential pre-requisite of just-in-time liquidity provision are limitless balance sheets in o/n markets.

If collateral isn't money, then bond-heavy HQLA portfolios cannot be palatable from the perspective of the liquidity and soundness of a dollar-based, global banking system.

Collateral does go up in value in a crisis, and collateral-rich banks can sell their holdings, but unless the Fed is the buyer of collateral, sales will drain liquidity from another bank.

Collateral velocity is picking up, yes, but increased velocity is tightening, not easing, financial conditions! Financial conditions are measured by o/n rates, the price of money, not velocity, and increased collateral supply and velocity are why markets are tightening.

A system of just-in-time liquidity provision, where balance sheet for repo is limitless and collateral is money once again is not in sight unless Treasuries are exempt from the eSLR or centrally cleared repo becomes a reality. None of these are likely in the near term.

If that remains the case, option five is inevitable.

Deficits, sterilization, and taper are all additions of collateral and the removal of reserves that bring forward the day of reckoning: the coming of the Fed… as an o/n repo lender.

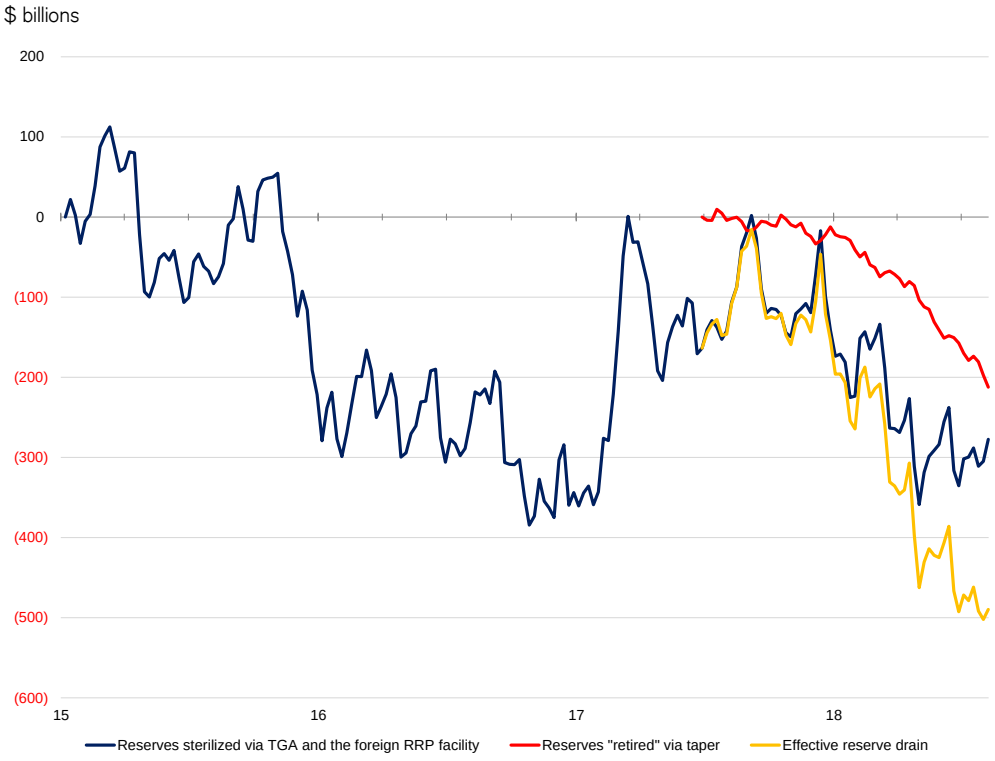
We now know the motto of the American West:

"*…trust everyone, but brand your cattle*".

What is the Fed's philosophy about global banks liquidity portfolios? Reserves? Bonds? *Laissez-faire*? We still don't know, and clarity on that question is essential, in our view. And if we don't know, we cannot have strong views about the end-point of taper either.

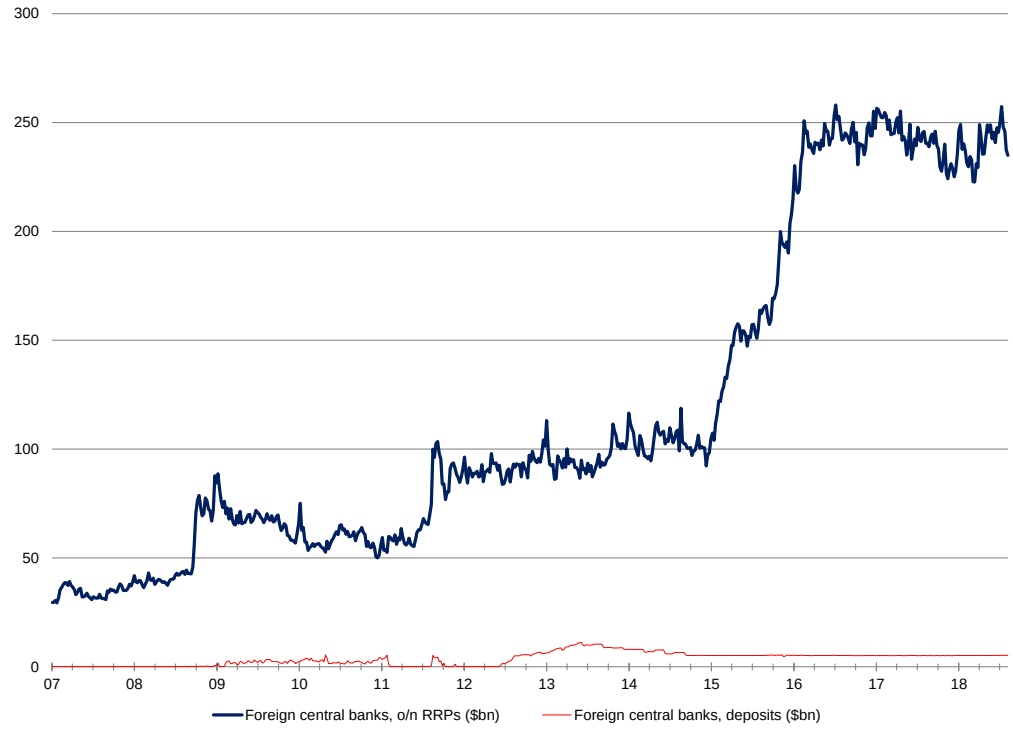
The Fed's "brand" of liquidity will be a key factor determining the path of repo rates and the end-point of taper. Even if the Fed doesn't require banks to shift liquidity from bonds to reserves, capacity constraints in repo markets will force an earlier end to taper than the market expects. If the Fed prefers more HQLA in reserves, taper ends even sooner…

Figure 1: Taper and Shadow Taper



Source: Federal Reserve, Credit Suisse

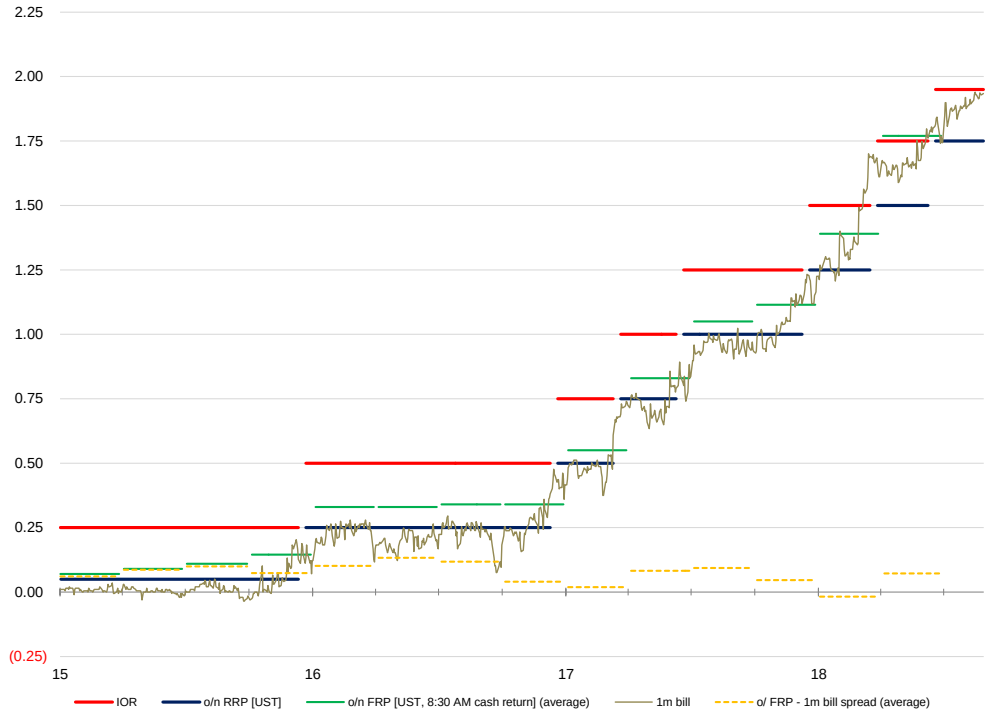
Figure 2: The Usage of the o/n RRP Facility of Foreign Central Banks at the Fed



Source: Federal Reserve, Credit Suisse

Figure 3: The RRP Facility of Foreign Central Banks is an Expensive Liability

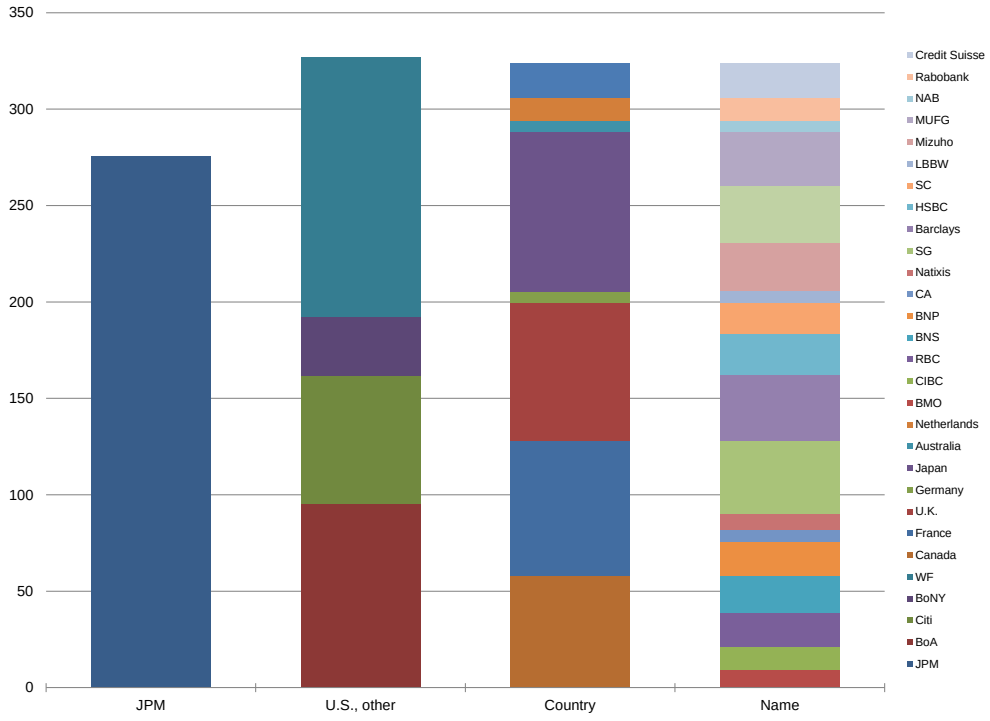
percent



Source: Federal Reserve, Credit Suisse

Figure 4: Reserve Balances of Banks That Can Lend in the o/n GC Repo Market

$ billions, as of 2018Q2



Source: Call reports, Credit Suisse

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