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Research Analysts

Zoltan Pozsar
212 538 3779
zoltan.pozsar@credit-suisse.com

Sterilization and the Fracking of Reserves

The defining fixed income market event of this year is shaping up to be the normalization of U.S. Treasury's cash balances. Normalization is set to drain close to $400 billion of reserves from money markets during the fourth quarter, and the impact of that will be felt the world over: repo spreads, spreads to OIS and cross-currency bases are all set to widen, re-tracing most of the narrowing they've been through since January. According to our calculations, 3-month Libor-OIS could widen by at least 20 bps from current levels by year-end[1].

The "other" normalization – that of the Fed's balance sheet – is not a worry for this year. Even if it were to start now, its initial pace of $10 billion a month is small compared to Treasury's removal of $400 billion in reserves. We'll worry about balance sheet taper next summer, once its annual run-rate has accelerated to over $100 billion. But that's still at least nine months away…

This issue of Global Money Notes introduces two new concepts: sterilization and the fracking of reserves. Both concepts are essential to understand how the draining of reserves and the destruction of reserves (through taper) affect the way repo and FX swap markets trade in the post-Basel III financial order.

Sterilization is a concept that's more familiar for investors in emerging markets than for investors that have grown up trading money markets in the G3 space. The same goes for central banks. For EM central banks, sterilization is always a deliberate step to tighten money markets. In contrast, the Fed lets sterilization run its course freely and doesn't link it to money markets conceptually one bit.

That's a mistake, in our opinion.

$1 trillion of reserves have been sterilized through various liability swaps on the Fed's balance sheet between January 1st, 2015 and December 31st, 2016. As sterilization increased, reserves declined, dollar liquidity suffered, and term spreads in money markets widened. To be able to settle, the system started to "frack" U.S. banks' HQLA portfolios for reserves. But like fracking shale formations, that process is costly and messy from a Basel III perspective.

From a funding perspective, destroying reserves through balance sheet taper is the same as sterilizing reserves through the normalization of Treasury's cash balances. And if the fallout from the latter will mean a replay of the spread widening we have seen in dollar funding markets late last year, the Fed may even re-consider the timing, pace and endpoint of its tapering plans…

This issue of Global Money Notes has six parts to it.

Part one discusses how the Fed has been sterilizing reserves through its increased offering of overnight liquidity services to institutions. Part two discusses the concept of fracking HQLA portfolios for reserves. Part three discusses the concept of the quarter-end turn premium. Part four identifies J.P. Morgan's reserves-rich HQLA portfolio as the Bakken Shale of global financial system and the bank as the system's lender of next-to-last resort. Part five discusses what happens when sterilization goes into reverse. Finally, part six concludes with what the normalization of Treasury's cash balances means for Libor-OIS.

[1] For the underlying rationale, please see page 18.

DISCLOSURE APPENDIX AT THE BACK OF THIS REPORT CONTAINS IMPORTANT DISCLOSURES, LEGAL ENTITY DISCLOSURE AND ANALYST CERTIFICATIONS.

Part 1 – Basel III and the Sterilization of Reserves

In the post-Basel III financial order, the Manager of the System Open Market Account (SOMA) became the world's most powerful bank treasurer.

With great power comes great responsibility. That includes broadening the discourse about the Fed's role in money markets beyond the overnight point and asking the question of whether at times the Fed should police term spreads by stepping in for balance sheet constrained banks as a market maker even outside of crisis times. The stakes are no less than the Fed's control over the global monetary transmission process and the maintenance of some semblance of bounded parity between the cost of onshore dollars and Eurodollars.

Part of the discussion about the Fed's balance sheet has revolved around the composition of the SOMA portfolio, the risks that a large amount of reserves could pose to the Fed's ability to control the fed funds rate, and how these risks could be mitigated through the draining of reserves via the overnight RRP facility. More recently, discussion turned to the reduction of the SOMA portfolio through the tapering of Treasury and MBS reinvestments.

The biggest theme, however, got entirely unnoticed. And that theme has to do with the Fed's growing role as a bank for institutions – a direct result of Basel III incentivizing banks to push institutional deposits off their books and onto the balance sheet of the sovereign.

The Fed's increased offering of overnight liquidity services to a growing customer base is driving massive shifts on the liability side of its balance sheet. Gone are the days when currency was the Fed's dominant liability and reserves a fragment of its balance sheet:

(1) U.S. Treasury no longer keeps its excess cash with private banks, but at its account at the Fed. Its balances can run as high as $400 billion (see Figure A1).

(2) Foreign central banks have moved their cash from private banks as well, and keep about $250 billion on deposit at the Fed's foreign repo pool (see Figure A2).[2]

(3) Money funds became habitual users of the o/n RRP facility, placing $150 billion with the Fed on an average day and double that on quarter-ends (see Figure A3).

(4) Central counterparties are the latest addition to the Fed's growing customer base, with ICE and CME keeping a combined $100 billion at the Fed (see Figure A4).

Figure 1 shows the sea change in the Fed's balance sheet since the financial crisis. Currency outstanding doubled; reserves went from a negligible item to a dominant item; and liquidity services provided to institutional cash investors ranging from U.S. Treasury, foreign central banks, money funds and CCPs grew from nothing to $800 billion at the peak.[3]

Figures 2 and 3 show how for every dollar moved from a bank to the Fed directly, reserves fall by a dollar and balances in institutional liquidity accounts increase by a dollar. Far from being an active driver of these flows and associated liability swaps, the Fed has been a passive accommodator of them. As banks pruned their books to get Basel III compliant, customers looked to park their liquidity elsewhere and the Fed welcomed them.

The unifying theme across these flows is that every time the above institutions move their funds from a bank to the Fed, reserves are drained from the banking system and funds move from entities that trade reserves (banks) to an entity that does not (the Fed). In previous issues of Global Money Notes (see here) we have referred to these accounts as "funding black holes" – the institutional equivalents of keeping cash under the mattress.[4]

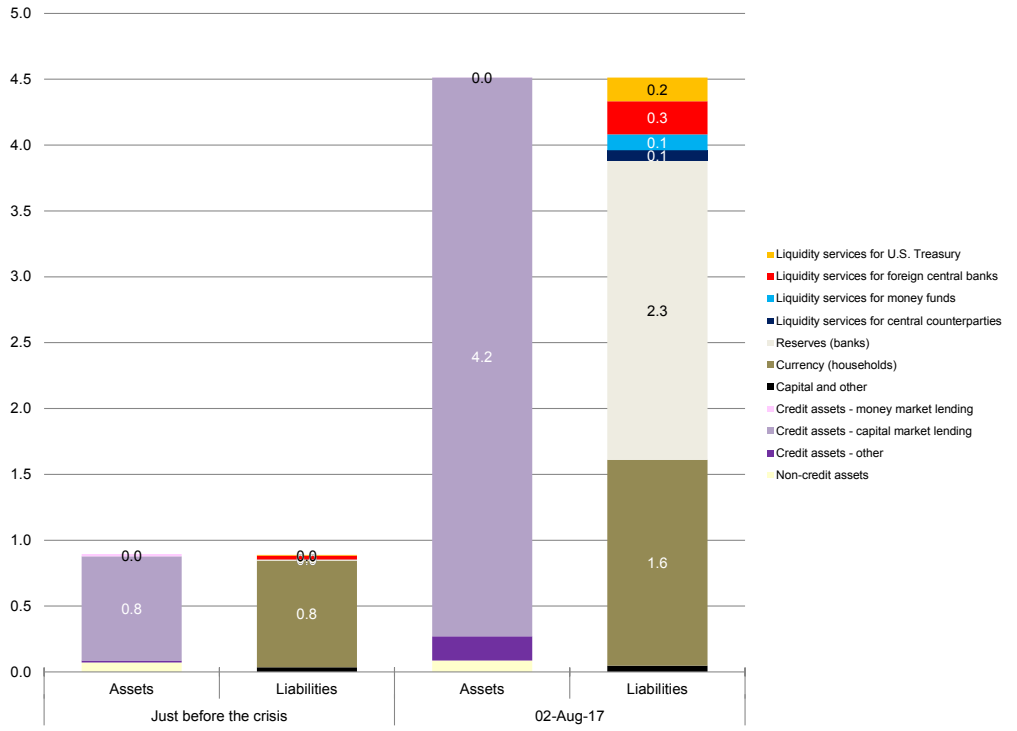
[2] Foreign central banks also moved some of their dollar reserves from U.S. Treasury bills to the Fed's foreign repo pool (see here).

[3] The volume of overnight liquidity services provided to institutional cash investors fluctuates over time. It has been increasing on a trend-basis since 2015, and peaked at $800 billion in November, 2016. In recent months, volumes fell to a lower $250 billion.

[4] Increases in currency outstanding have a similar impact on reserves. Every time a bank deposit is converted to currency, the Fed swaps reserves into currency (this is true whether deposits are withdrawn through visits to an ATM or by shifting one's liquidity to a safe at a freeport in Geneva). The result is fewer claims on banks and more on the Fed directly (see Figure 4).

Figure 1: The Fed's Increased Service Offering

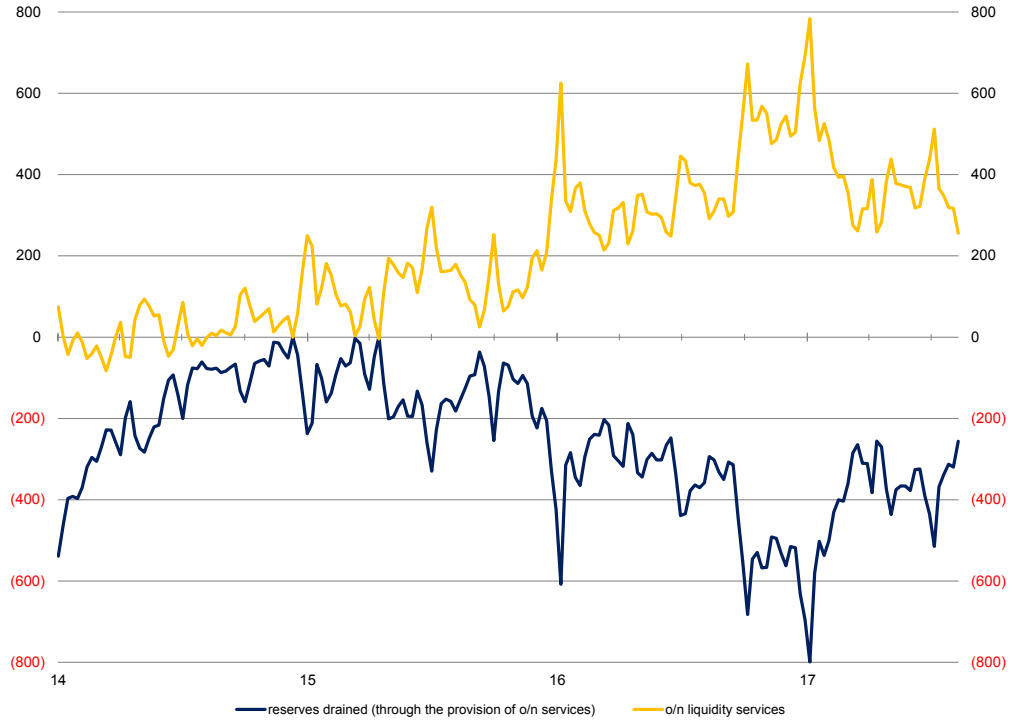
$ trillion



Source: Federal Reserve, Credit Suisse

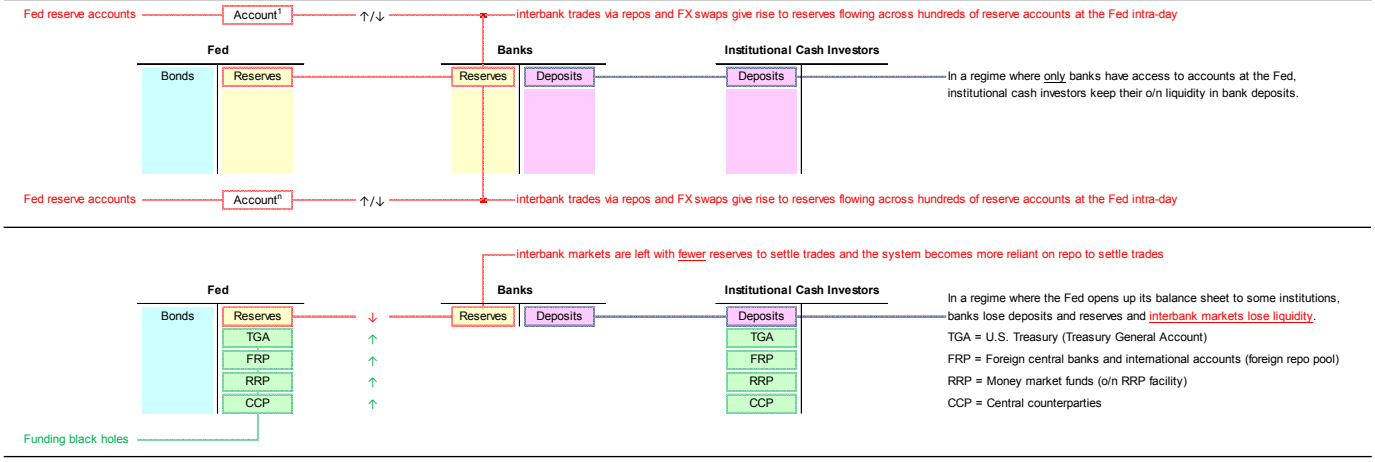
Figure 2: Reserves and Overnight Liquidity Services

$ billion



Source: Federal Reserve, Credit Suisse

Figure 3: Swaps of IOUs



Source: Credit Suisse

Because unlike banks, the Fed doesn't trade the funds it takes in via funding black holes, when the amount of reserves declines, term money markets tighten. This is especially true in the FX swap market where the amount of reserves held by banks at the Fed determines the amount of U.S. dollars that banks can swap for yen, euros, pounds and Swiss francs in the form of reserves at other central banks without having to sell or repo something first.

Reserves weren't always the grease to FX swap transactions. Before the crisis, banks stored their liquidity in interbank money markets, and endless arbitrage across interbank markets ensured parity across OIS, repo, Libor and FX swap implied funding curves. Arbitrage involves borrowing in one market and lending in another. Lending involves the creation of deposits, and interbank lending involves the creation of interbank deposits. Arbitrage involving FX swaps were typically settled using interbank deposits, and, if deposits were insufficient, one could always repo bonds cheaply by calling up a dealer.

No longer. Post-Basel III, banks keep their liquidity with the sovereign, not other banks, and reserves, not interbank deposits are the system's main settlement medium (see here).[5]

FX swaps used to mean deposit swaps. Now they mean reserve swaps.

When the amount of reserves declines, banks increase their reliance on repos to settle. But that is not without costs. In a regime where balance sheet is rationed repos are costly, and the more the banking system relies on repos to settle FX swap trades, the farther FX swap implied rates drift from the OIS curve and the wider the cross-currency basis.[6]

Investors who have grown up trading emerging markets (EM) are more familiar with the impact that central banks' liability swaps can have on conditions in money markets than investors who have grown up trading G3 money markets. Effectively what we are saying is that draining reserves is the equivalent of sterilization operations by EM central banks. Think of the PBoC buying dollars by creating yuans and then sterilizing yuans by swapping them into central bank bills. The Fed swapping reserves for other liabilities is the same.

EM central banks' sterilization operations are always deliberate. They are aimed at tying up funds to keep them from fanning excessively easy conditions in money markets and excessive lending growth. But the Fed does not think of reserves getting drained or swapped into other liabilities as sterilization and lets liability swaps run their course freely. Left unaddressed, the net impact of sterilizing reserves are tighter funding conditions, similar to the one that we have seen gradually emerge in the FX swap market since 2015.

[5] In a post-Basel III financial order, banks only trade with each other on a secured basis, not unsecured. That means that secured repos and FX swaps replaced unsecured fed funds and interbank deposits as the instruments through which the system settles.

[6] See Parts II and III for details.

Part 2 – Sterilization and the Fracking of Reserves

The sterilization of reserves in the U.S. financial system started on January 1st, 2015 – the go-live date of Basel III and the start of banks' efforts to prune their balance sheets of unwanted institutional deposits. Sterilization commenced only weeks after the Fed ended QE and the corresponding injection of reserves to the financial system in November 2014. Flows related to money fund reform drove a second wave of sterilization during 2016, but during this episode it was flows initiated by money fund investors rather than banks that drove the swap of reserves to other liabilities. By the end of 2016, the cumulative amount of reserves that have been sterilized has reached $1 trillion (see Figure 4), and FX swap implied costs of dollar funding rose to levels that are typical of crisis times (see Figure 5).[7]

Sterilization impacts FX swap-implied rates through two channels: (1) the gradual shift in the funding of intra-quarter FX swap trades away from arbitrage to "fracking" reserves in U.S. banks' HQLA portfolios, and (2) the quarter-end turn premium. The first channel we discuss in the remainder of this section, and the second we discuss in the following section.

Figure 6 shows the hierarchy of market making in the FX swap market. It shows how market making can shift from broker-dealers to banks, from foreign banks to U.S. banks and from U.S. banks doing arbitrage to fracking their HQLA portfolios in normal times, and from fracking to the Fed in crisis times. It highlights four distinct levels of intermediation.

Level 1 intermediation involves broker-dealers that run matched FX swap books and intermediate between accounts that are long dollars and wish to lend dollars via FX swaps, and accounts that are short dollars and wish to hedge their short positions via FX swaps. Dealers either sit in a bank or a bank holding company. Because they run matched books, dealers' market making activity has a neutral impact on their parent's liquidity position. But matched books seldom clear markets, and bridging imbalances in order flows is always for a parent bank's treasurer to decide one level higher in the hierarchy. It is at these higher decision-making levels where the cross-currency basis gets determined through arbitrage.

Level 2 intermediation involves foreign banks bridging imbalances through arbitrage by tapping unsecured CD and CP markets. Because foreign banks report balance sheet only on quarter-ends, intra-quarter, their balance sheets are boundless. That means that for trades shorter than three months, foreign banks will lend dollars even at very low spreads.

For trades three months or longer, the picture is more complicated. Trades shorter than three months can always be erased from balance sheets before reporting dates – e.g., overnight trades can be turned off from one day to another, and most term trades can be structured such that they mature before quarter-ends. But trades three months or longer always stay on the books on quarter-ends. Because they are reported, they use equity, and because they use equity, they better not dilute return-on-equity (RoE) targets. Most foreign banks have a leverage ratio of only 3% which means that for an RoE target of 15%, a three-month FX swap trade must earn a spread of about 45 bps at a bare-bone minimum.

Intra-quarter balance sheet galore and relatively cheap balance sheets notwithstanding, foreign banks' ability to step in as arbitrageurs is always a function of conditions in wholesale funding markets. When markets are under strain, activity shifts one level higher.

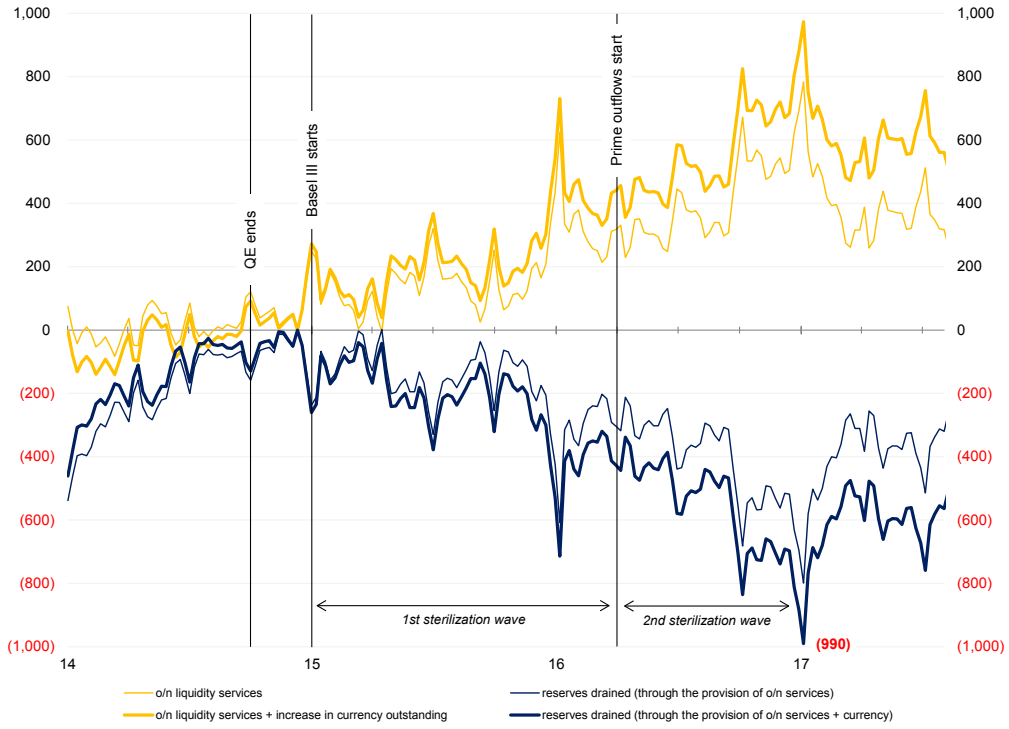
Level 3 intermediation involves U.S. money center banks stepping in for foreign banks. Unlike foreign banks, which only have access to at times volatile wholesale funding, U.S. banks have access to more stable funding such as retail deposits or FHLB advances. Access to state sponsored funding means that U.S. banks can get dollars when others can't.

But stable funding does not mean cheap balance sheets. Because U.S. banks have double the leverage ratio of most foreign banks, and because U.S. banks report balance sheet every day and not just on quarter-ends like most foreign banks, the minimum spreads at which they step in to make markets are much wider than those of foreign banks.

[7] Also see Figure A5 and A6 in the appendix.

Figure 4: Waves of Sterilization

$ billion



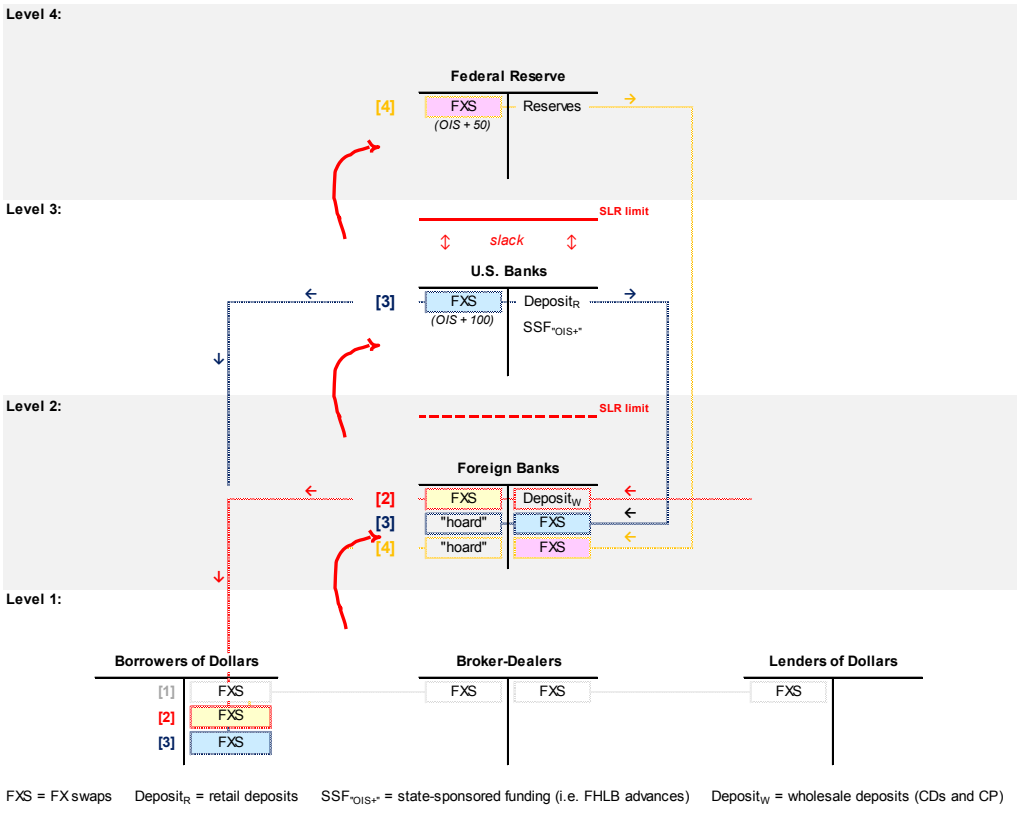
Source: Federal Reserve, Credit Suisse

Figure 5: The Mother of All Bases

percent

Source: the BLOOMBERG PROFESSIONAL™ service, Credit Suisse

Figure 6: Hierarchy at the Outer Rim



Source: Credit Suisse

For a U.S. bank subject to a 6% leverage ratio (eSLR) and a 15% return-on-equity target, three-month spreads are at least 100 bps. At face value, the math works out to 90 bps, but U.S. banks manage to a stressed SLR, not to mention their outsized G-SIB surcharges.

Level 4 intermediation involves the Fed stepping in as the system's lender of last resort at OIS + 50 bps during times of systemic credit stress. But it need not be the case that the Fed lends via the swap lines only when private markets freeze due to credit risk concerns. The Fed has neither funding nor balance sheet constraints. Whether it should step in to police term spreads at OIS + 50 bps in normal times is up to the FOMC to decide – and fostering debate about that is the job of the Manager of the System Open Market Account.

Prime money fund reform was a watershed event in that it pushed arbitrage volumes in the FX swap market away from cheap foreign to expensive U.S. balance sheets (see here). The flow of funds away from prime to government funds, and from the CD and CP market to FHLB's advances reduced the weight of foreign banks' intra-quarter arbitrage volumes and increased those of U.S. banks. Lower funding costs through advances notwithstanding, the wider spread targets of U.S. banks led to cross-currency bases drifting structurally wider.

Putting trades on for 100 bps assumes a simple arbitrage where a bank borrows reserves to lend dollars via FX swaps – a trade which would only impact banks' leverage ratios. But money fund reform also meant the sterilization of reserves, and sterilization meant that U.S. banks had to "drill" into their HQLA portfolios to meet the market's needs for dollars. By lending reserves from their HQLA portfolios, banks swap dollar liquidity for liquidity in other currencies (in the form of deposits at other central banks). This can worsen a range of Basel metrics. Fixing these requires balance sheets which can increase spreads further.

In a way, lending dollars via arbitrage is like drilling oil in Saudi Arabia and lending dollars from HQLA portfolios is like fracking – cheap and easy versus expensive and messy. Fracking is best understood through the quarter-end turn premium, which we discuss next.

Part 3 – Sterilization and the Turn Premium

Money market rates used to be a simple function of Fed expectations and a term premium. Now we need to add a turn premium – the premium that flares up around quarter-end turns. Understanding the turn premium is important because expectations for the size of *future* quarter-end turns can account for up to ½ of the cross-currency basis at longer tenors *today*.

Understanding the turn premium begins with understanding the role of reserves in the post-Basel III financial order, where balance sheet is rationed and repo costly and scarce. The turn premium exists because foreign banks turn off their arbitrage activities around quarter-end reporting dates. When arbitrage is off, money funds that typically lend to foreign banks, lend to the Fed via o/n RRPs instead. When o/n RRP take-up spikes, the volume of reserves falls and dollars get scarce. U.S. banks fill the void by fracking their HQLA portfolios for reserves. But U.S. banks are subject to tougher Basel III ratios and liquidity stress tests than foreign banks, and the price at which U.S. banks lend reserves via FX swaps depends on the degree to which the marginal trade hurts their Basel metrics. That, in turn, depends on the amount of reserves in U.S. banks' HQLA portfolios. Figure 7 shows what quarter-ends look like when reserves are abundant and when they are scarce.

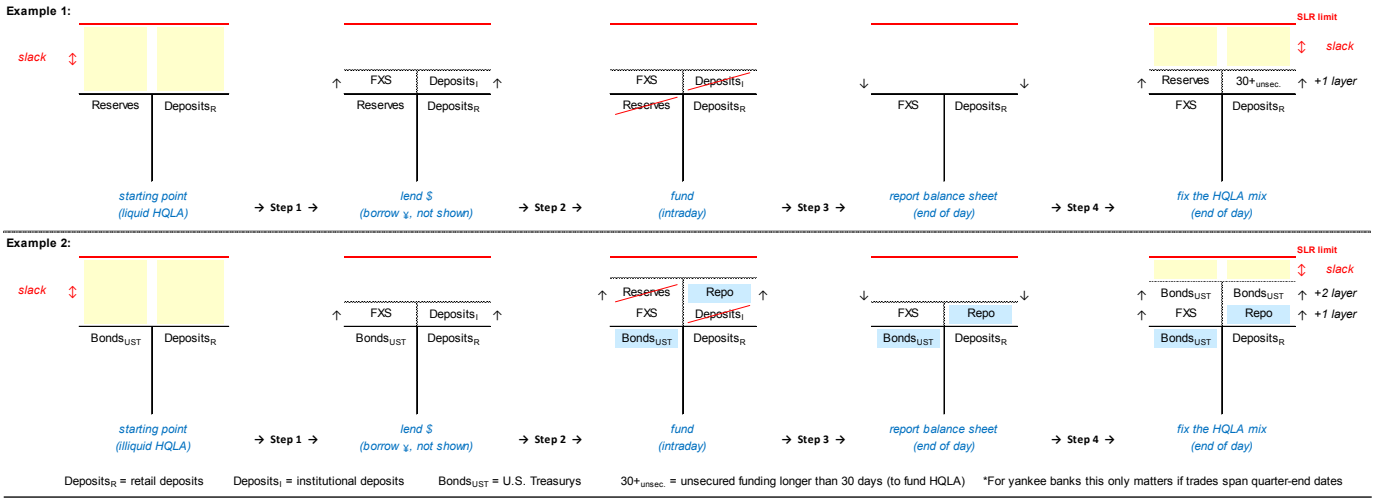
In the first example, a U.S. bank starts with reserves on the asset side of its balance sheet, funded with retail deposits. The bank then lends dollars through an FX swap transaction (step 1): it books an FX swap loan on the asset side and a deposit on the liability side, which expands its balance sheet. When the borrowing entity withdraws the dollars, the bank funds the withdrawal by wiring reserves to the reserve account of the recipient bank (step 2). Once the flows have settled, the bank files its end-of day balance sheet snapshot (step 3): its SLR is unchanged, but its LCR is qualitatively different. Its LCR is different because the FX swap trade reduced the bank's dollar liquidity (fewer reserves at the Fed) and increased the bank's yen liquidity (more reserves at the BoJ). The Fed may or may not have issues with this. If the bank that lent the dollars keeps most of its dollar HQLA in the form of reserves at the Fed, swapping some dollars for yen (reserves for reserves) may not raise eyebrows. But if the bank that lent dollars keeps most of its dollar HQLA in the form of U.S. Treasuries or MBS, the swapping of dollars for yen may not be possible without taking some remedial action – the Fed may require the bank to increase the amount of reserves in its HQLA portfolio to restore its dollar liquidity to the starting point (step 4). In this case, the FX swap trade is not balance sheet neutral. The expansion of the HQLA portfolio increases the bank's balance sheet and brings it closer to the SLR limit.[8]

In the second example, a U.S. bank has Treasuries instead of reserves in its HQLA portfolio. Like before, the bank lends dollars to a borrowing entity through an FX swap trade (step 1), and the borrowing entity withdraws its dollar deposit to spend it on something. But the way the bank funds the withdrawal of dollars is different from before. Treasuries are more liquid than most securities, but are less liquid than reserves – they cannot be used for settlement (step 2). The bank lending the dollars cannot fund the withdrawal of dollars unless it turns Treasuries into cash through the repo market.[9] This funding step represents an extra cost that was not there in the previous example. Once the trade has settled, the bank files its end-of-day balance sheet report: its SLR got worse and its LCR got worse too (step 3). Its SLR is worse because it used balance sheet to fund the withdrawal of dollars. Its LCR is worse too because repos encumber bonds and only unencumbered bonds count as HQLA. To fix its LCR, the bank has to raise unsecured funding and buy more Treasuries (step 4). This funding step represents yet another extra cost that was not there in the prior example. By the time this is done, the bank's balance sheet increased by two extra layers, leaving only half the slack as before. This will raise the price of the next FX swap trade.

[8] We have little visibility into the philosophy with which the Fed stress-tests banks' HQLA portfolios. Whether the FX swap trade described above would pass from an LCR perspective is determined through the Fed's CLAR process. The point is that FX swap trades that are funded secured (not unsecured) impact banks' LCR, which in turn must be taken into account when pricing them.

[9] In a post-Basel III financial order, banks only trade with each other on a secured basis, not unsecured. That means that secured repos and FX swaps replaced unsecured fed funds and interbank deposits as the instruments through which the system settles.

Figure 7: Fracking is Messy!



Source: Credit Suisse

Figure 8 shows what sterilization does to one-week forward points around quarter-ends. As sterilization grows, the turn premium grows too, and as the turn premium grows, the cross-currency basis widens. The turn premium grows because fewer reserves make it harder for U.S. banks to step in for foreign banks without having to take steps to protect their Basel III ratios. As the above examples explained, starting liquidity positions matter – stepping in as market maker is much easier when HQLA portfolios are flush with reserves.

Figure 9 shows what sterilization does to the GCF repo rate. As sterilization grows, the turn premium grows too as the quarter-end netting needs of dealers are exacerbated by U.S. banks tapping the GCF market to fund FX swap trades. The spread between o/n GCF and o/n tri-party repo rates grows progressively wider as well, which is a sign of reserves getting more scarce in the interbank money market. In addition, o/n tri-party rates tend to trade at a growing spread over the o/n RRP rate as dealers attempt to take in more cash from government money funds to lend into the o/n GCF market which trades at a premium.

These dynamics have an important message for anyone looking for the o/n fed funds market to trade tighter as reserves are drained: stop expecting that, it will never happen!

Unsecured markets like the fed funds (FF) market are dead under Basel III as banks no longer trade with each other on an unsecured basis. Only secured money markets survive. Locally, banks settle via repos. Globally they settle via FX swaps. The strains you're waiting for in the FF market are right in front of your eyes in the repo and FX swap markets.

These dynamics have an important message for the Fed as well. Reserves are not excess. Dropping the E from IOER is progress (see Simon Potter's speech here versus here), but talking the talk ain't the same as walking the talk. Taper with care, or the dollar gets scarce!

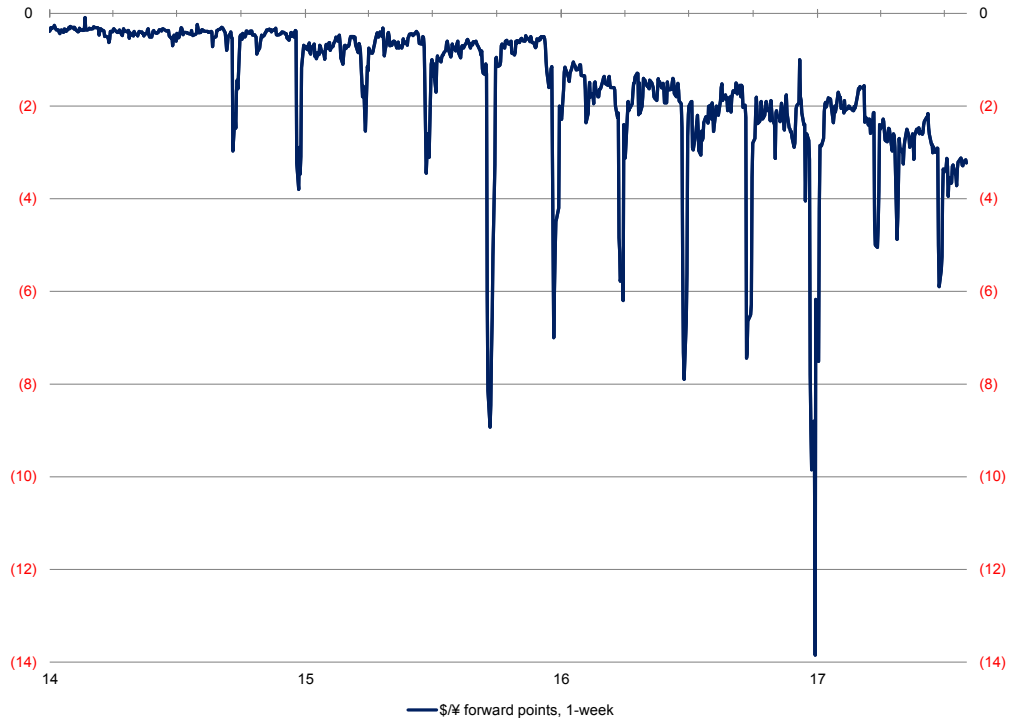
If the dollar gets scarce, the Fed may need to inject reserves back into the system through open market operation on the asset side of its balance sheet much sooner than it thinks.

To ease funding conditions, the Fed would have to inject reserves back into the system, for example through the dollar swap lines. Doing so would involve booking dollar loans at OIS + 50 bps in the form of FX swaps on the asset side of the balance sheet, and creating those dollars in the form of reserves on the liability side of the balance sheet (see Figure 10).

In other words, to keep conditions in the FX swap markets unchanged, market making activities on the liability side of the Fed's balance sheet which drain reserves, should have a symmetrical counterpart on the asset side ready to add reserves back in as needed. At the very least, this would involve "relaxing" access to the swap lines on quarter-ends, to offset some of the funding pressures that come from the recurring spikes in RRP take-up.

Figure 8: Sterilization and the Turn Premium in the FX Swap Market

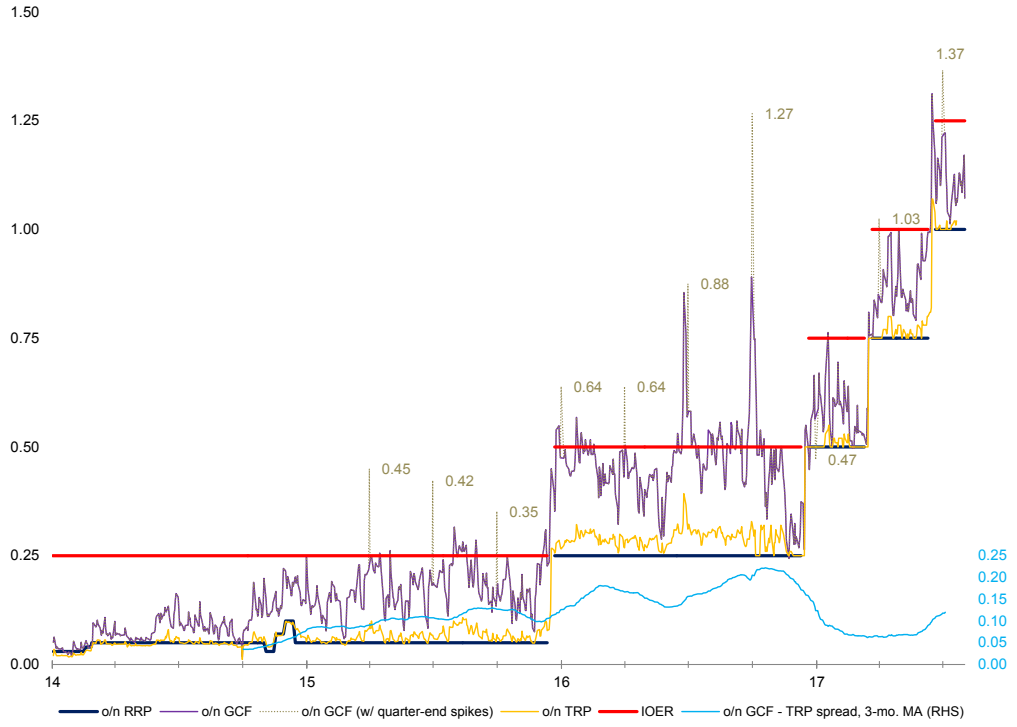
forward points



Source: the BLOOMBERG PROFESSIONAL™ service, Credit Suisse

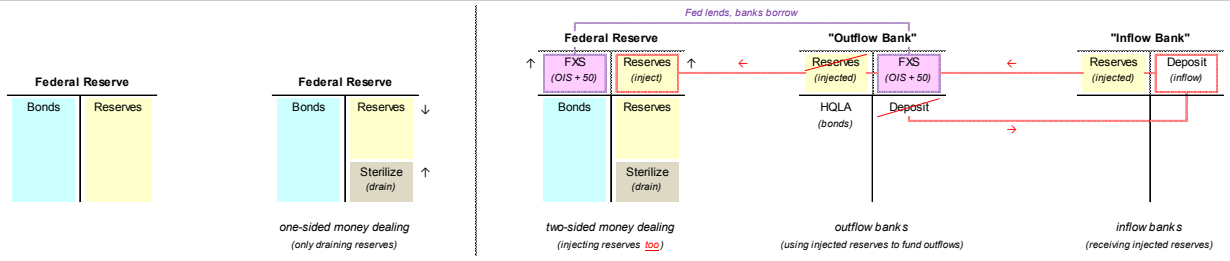
Figure 9: Sterilization and the Turn Premium in the GCF Repo Market

percent



Source: the BLOOMBERG PROFESSIONAL™ service, Credit Suisse

Figure 10: Neutralizing Sterilization



Source: Credit Suisse

Part 4 – Sterilization and J.P. Morgan

For the moment, the Fed operates squarely as a one-sided money dealer: it makes markets only on the liability side of its balance sheet but not on the asset side. Figure 11 shows the Fed's one-sided nature as market maker and the volume of sterilization in context.

First, market making in overnight liquidity services which drain reserves (the light blue line) are currently not being neutralized by activities which would add reserves back in either via repos, FX swaps or discount window lending (see the dark blue, red and orange lines).

Second, the amount of reserves sterilized to date is by no means trivial – it is close to the amount of reserves added through either the discount window or the swap lines in 2008. The injection of reserves through the swap lines in 2008 substituted for the breakdown of interbank markets – reserves replaced interbank deposits as the settlement medium. But today, reserves are the system's settlement medium. Draining as much of them as the amount added at the height of the crisis is bound to have a significant market impact, especially considering that the size of the FX swap market doubled since then (see here).

The reason why the Fed remains a one-sided money dealer is that its guiding philosophy about liquidity provision remains anchored by the view that it should add reserves only during crisis times when markets cease to exist due to a flare-up of credit risk concerns. Liquidity provision in order to police the range within which FX swap markets trade in normal times – i.e., outside of crises – is not yet a stated aim of the Fed, and so when the OIS + 50 bps bound for FX swap implied rates is breached, the Fed does nothing about it.

Short of a public backstop to the FX swap market, only private backstops are available in normal times. In turn, the spreads at which private backstops kick in are to a large extent determined by the parameters with which the Fed chose to apply Basel III to U.S. banks. As our discussion above has shown, these private spreads are at least 100 bps, which has implications for how wide cross-currency bases can go in times of stress (see Figure 12).

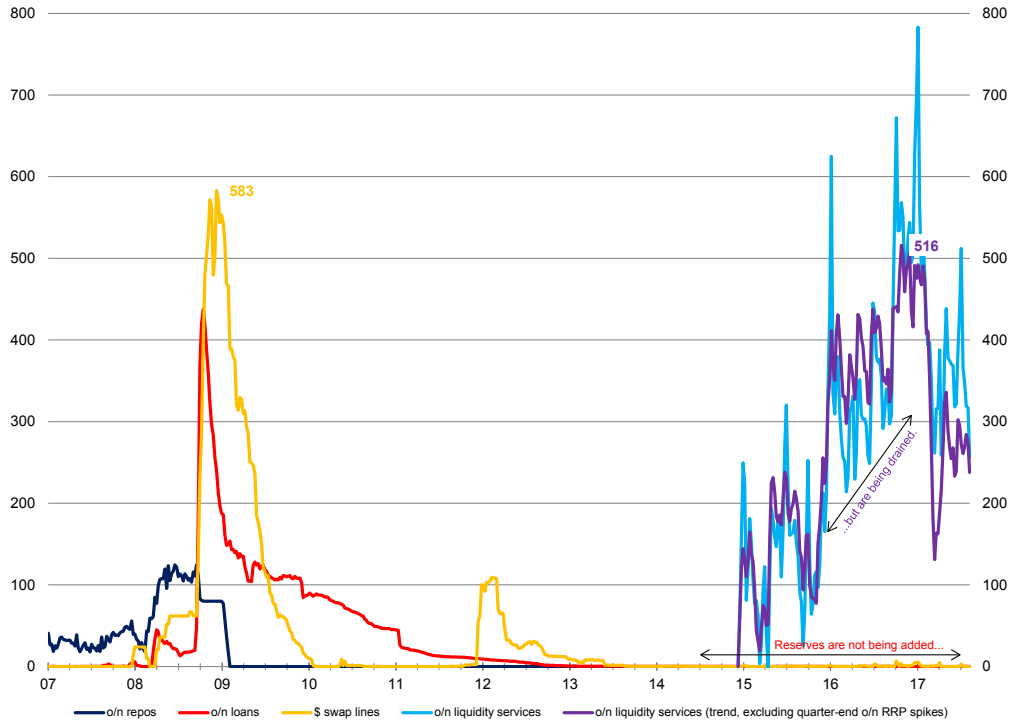
By being unwilling to step in to police the cross-currency basis at OIS + 50 bps, the Fed leaves it to large U.S. banks to act as the world's dollar lenders of next-to-last resort, and to one large U.S. bank in particular – J.P. Morgan Chase Bank, N.A. of Columbus, OH.

Unlike the Manager of the SOMA, J.P. Morgan cannot create reserves out of thin air, but it holds far more reserves than any other bank in the financial system (see Figure 13). With slight exaggeration, J.P. Morgan has twice as many reserves at the Fed as the second most reserve-rich U.S. G-SIB (Wells Fargo), four times as many as the third most reserve-rich U.S. G-SIB (Bank of America), and more than all foreign G-SIBs combined.

Having a lot of reserves does not mean being a money market Samaritan. The game is to figure out where less liquid banks would lend, and lend just below that rate (see Figure 14). As discussed above, the less liquid a bank's HQLA portfolio, the harder it is to lend reserves via FX swaps and the higher the price charged for dollars. J.P. Morgan is the closest to the example of a bank that can frack its HQLA portfolio without messing up any of its Basel III metrics. Think of J.P. Morgan's HQLA portfolio as the "Bakken Shale" of the global financial system, and the bank as the system's *de facto* lender of next-to-last resort.

Figure 11: Sterilization in Context

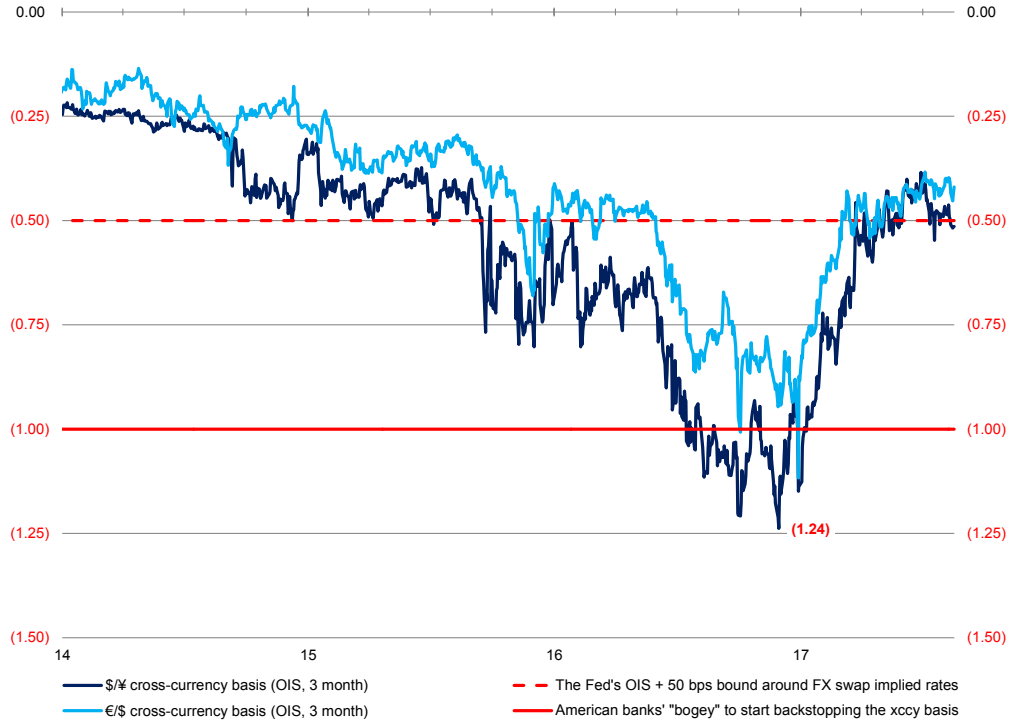
$ billion



Source: Federal Reserve, Credit Suisse

Figure 12: Public vs. Private Backstops

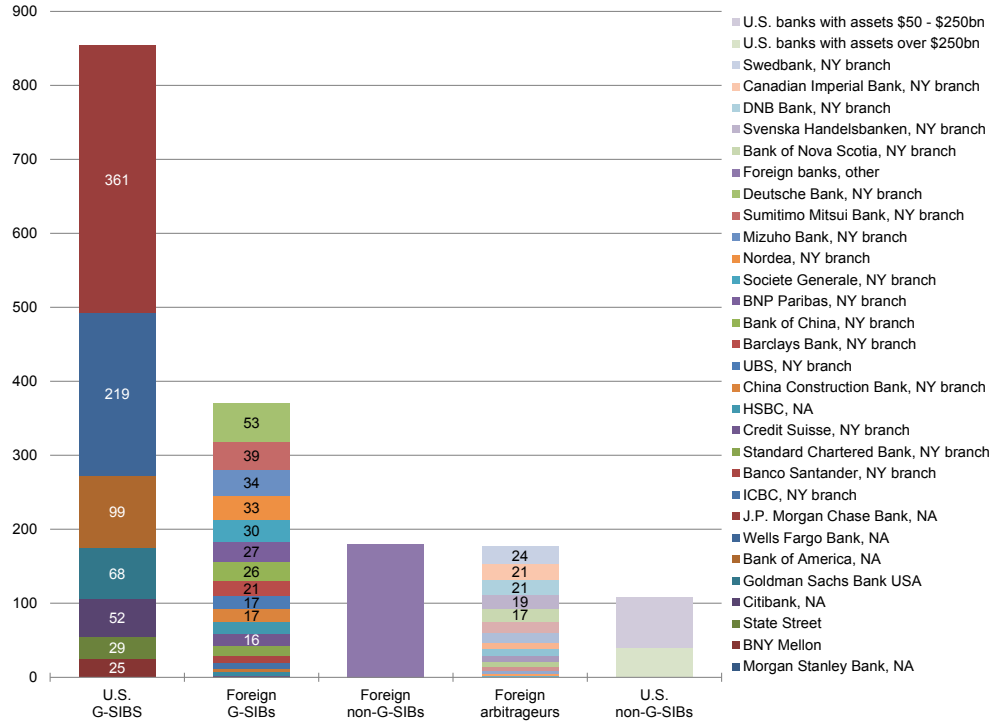
percent



Source: the BLOOMBERG PROFESSIONAL™ service, Credit Suisse

Figure 13: J.P. Morgan's Absolute Dominance

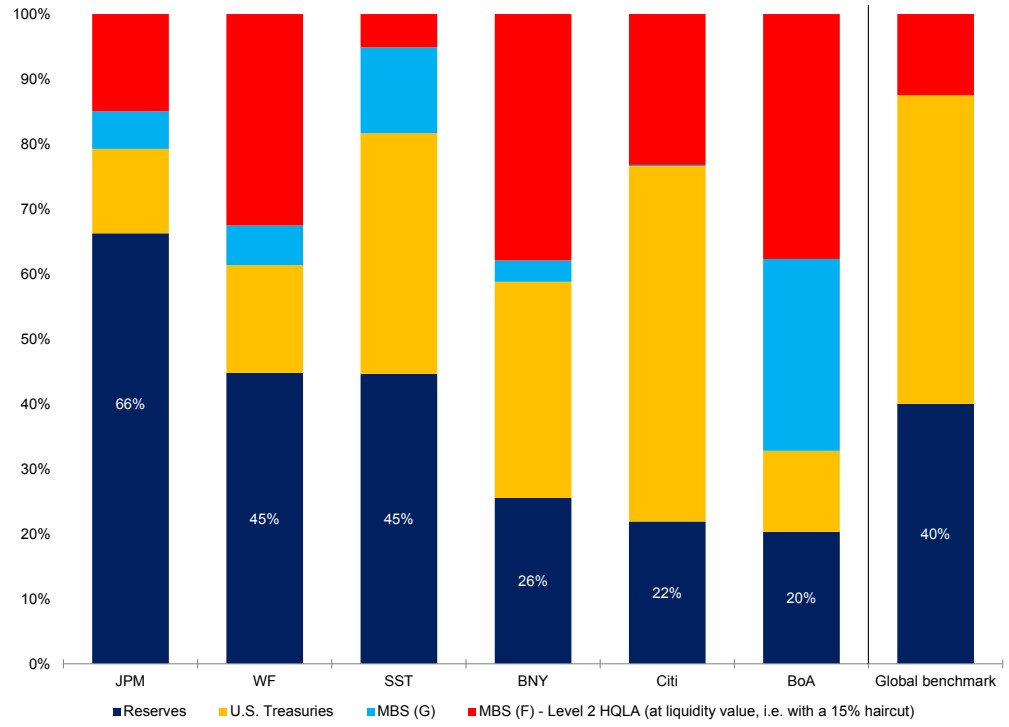
2017Q1, $ billion



Source: Federal Reserve, FFIEC, Credit Suisse

Figure 14: J.P. Morgan's Relative Dominance

2017Q1, percent



Source: FFIEC, BIS, Credit Suisse

Part 5 – Sterilization in Reverse

When J.P. Morgan's spreads are tested, everyone's on edge – including the Fed. After all, what spreads of over 100 bps over OIS mean is that in some regions of the world, dollars are going for a price that's way outside the Fed's desired range for FX swap implied rates, and imply at least four additional hikes over and above what's actually been administered.

Calls for a more liberal access to the swap lines and the Fed to step in as market maker to enforce the OIS + 50 bps bound were intense last year in the wake of money fund reform. But the Fed remained silent about the widening of cross-currency bases and the tightness of global dollar funding markets in general. Central bankers at the BoJ, the RBA and the BIS cared about the basis and gave smart speeches, but there were no speeches from the Fed.

A good bank treasurer knows about every major shift to occur on his bank's balance sheet – weeks in advance. Maybe the reason why the Fed decided to hold off on deploying the FX swap lines last fall was that it knew full well that due to the looming debt ceiling, its largest customer was about to run down its cash balances. That in turn would mean an injection of about $400 billion of reserves into the banking system – sterilization in reverse.

Figure 15 shows what happens when reserves enter the system via reverse sterilization. When U.S. Treasury ran down its cash balances from $400 to $50 billion late last year (see Figure A1), the supply of bills only fell by $100 billion. This means that most of the decline in TGA balances came from Treasury paying for social programs (UI claims, etc.), the wages and salaries of federal employees, and the vendors of the federal government.

The accounts of the individuals and businesses that received these payments are mostly with large U.S. banks. As the federal payments trickled in, U.S. banks' balance sheets increased on both sides. On the asset side, banks credited customer deposits with the funds received from the federal government. On the liability side, the Fed credited banks' reserve accounts and debited the TGA every time the U.S. Treasury made a payment.

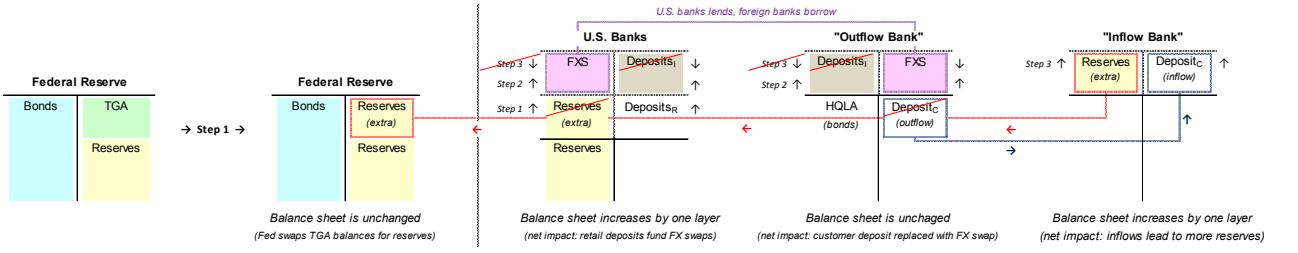
This type of balance sheet expansion is the best any bank can wish for. The types of liabilities that increased are retail and corporate operating deposits. These deposits cost nothing as they are noninterest-bearing. They also have very low HQLA requirements. That means that they can be used to fund whatever. The types of assets that increased are reserves which are super liquid. That means that they can be lent whenever, wherever.

How do you spend $250 billion of reserves quickly as a money center bank? By lending them in the richest corner of the global money market, which is the FX swap market…

A good treasurer knowns that whether reserves are injected through the swap lines or U.S. Treasury spending down its cash balances is the same thing. Either way, the banking system would end up with more reserves and global funding conditions would ease.

The way reserves flow into the FX swap market from reverse sterilization is similar to the way reserves flow into the FX swap market from the activation of the dollar swap lines (compare Figure 15 to Figure 10 on page 11). But there are also some crucial differences.

Figure 15: Covert Liquidity Injection



Source: Credit Suisse

Adding reserves via reverse sterilization happens passively as the Fed accommodates customers' flows on its balance sheet – just like any private bank would. In contrast, adding reserves via the dollar swap lines happens with the active participation of the Fed – like giving a speech on eliminating stigma associated with the use the dollar swap lines.

Adding reserves through reverse sterilization means that U.S. banks lend on reserves via FX swaps, and adding reserves via the swap lines means that the Fed lends reserves via FX swaps. Banks have balance sheet constraints and a minimum spread target of 100 bps, but the Fed has no balance sheet constraints and could lend at spreads as low as 50 bps.

Most importantly, an increase in noninterest-bearing deposits due to reverse sterilization means that the marginal cost of dollar funding for U.S. banks changes from OIS-like levels to zero, which can bleed through to the cross-currency basis. An increase in reserves and zero-interest deposits at all major U.S. banks also means that the value of J.P. Morgan's HQLA portfolio and it's CIO's ability to police the cross-currency basis diminishes, similar to how the value of the Bakken Shale diminishes when Saudi Arabia floods the oil market.

Figure 16 shows what the surge in zero-interest funding did to the FX swap market. Using the $/¥ cross as our benchmark, three-month FX swap implied rates have been trading around 1.50 percent despite the fact that the Fed hiked rates three times since December. How come? Because U.S. banks did not have to raise reserves via OIS-linked funding. Noninterest-bearing deposits did the trick. More reserves also meant easier fracking on quarter-ends, as the decline in turn premia year-to-date suggests (see Figures 8 and 9).

If the cross-currency basis could speak...

…it would scream that there is more to understanding it than demand outstripping supply and Basel III limiting banks' ability to fill the gap via arbitrage. The world is more nuanced.

Figure 17 shows the five phases the FX swap market has gone through since 2014. What's been constant since 2014 was growing monetary policy divergence between the U.S. and other markets. What's been in flux was the plumbing of the global financial system and the absolute amount of U.S. dollars sloshing around in the form of reserves at the Fed.

Phase 1, which lasted from January 2014 to September 2015, was driven by foreign banks getting Basel III compliant and adjusting their spread targets for term FX swap trades.

Phase 2, which lasted from October 2015 to April 2016, was driven by Treasury draining $300 billion in reserves from the system and the impact that had on the turn premium.

Phase 3, which lasted from April 2016 to October 2016, was driven by money fund reform pushing arbitrage flows away from cheap foreign balance sheets to expensive U.S. ones. In the case of the $/¥ basis, it was most definitely not driven by Japanese banks tapping the FX swap market – we know this from data from the Bank of Japan which shows no increase in Japanese banks' bid for dollars via FX swaps over this period (see Figure 18).

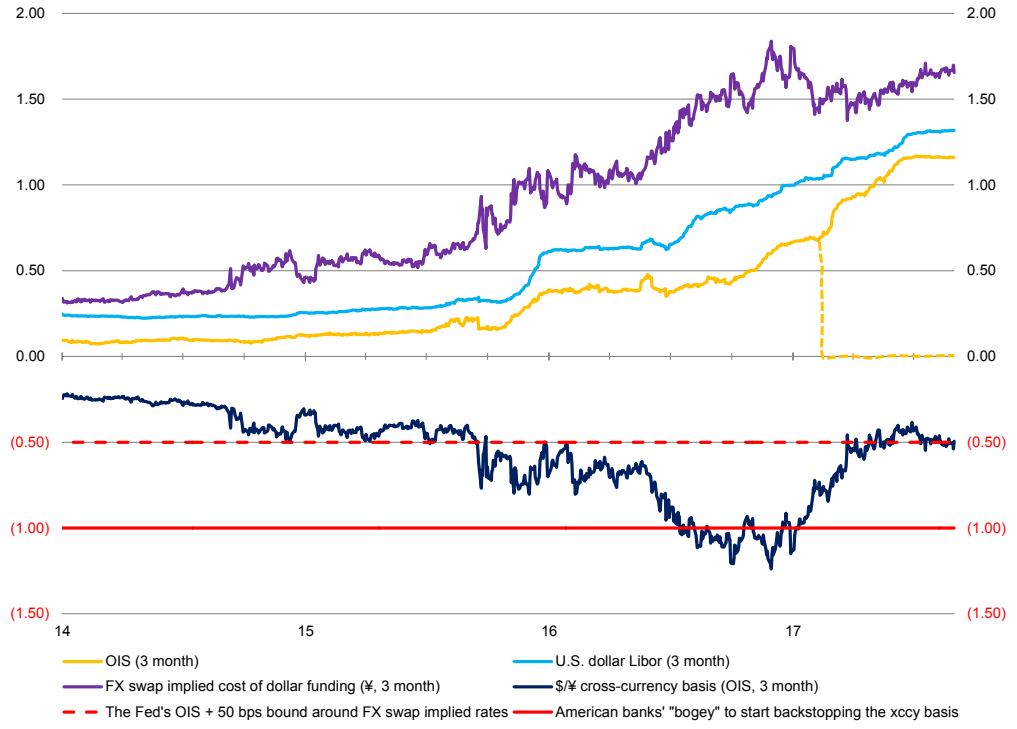
Phase 4, which spanned the fourth quarter of 2016, was very good times for J.P. Morgan. Fracking the Bakken Shale became RoE positive and lending dollars from it turned markets. We learned that the next time the three-month $/¥ basis widens to over 100 bps over OIS, it'll soon start to narrow. When it comes to cross-currency bases, do not fight J.P. Morgan!

Phase 5, which is the regime we've been in since January 2017, was driven by Treasury burning through its cash balances. $300 billion in reverse sterilization stole J.P. Morgan's thunder just as Saudi Arabia flooding the world with oil stole the Bakken Shale's thunder.

Japan's bid for U.S. fixed income is still there, so the story that reduced hedging needs depressed the basis is hard to believe. Banks drove the net sale of U.S. dollar assets since November – lifers and pension funds did not. And as Figure 18 shows, the corresponding decline in Japan's bid for dollars was in repo and not in FX swaps. Ditto for the story that real money accounts coming out of the weeds when the basis was wide was what turned the market. If that were true, those accounts should no longer be lending at current spreads and their absence should definitely have reversed the basis. Details matter!

Figure 16: Getting Dollars at Off-Market Prices

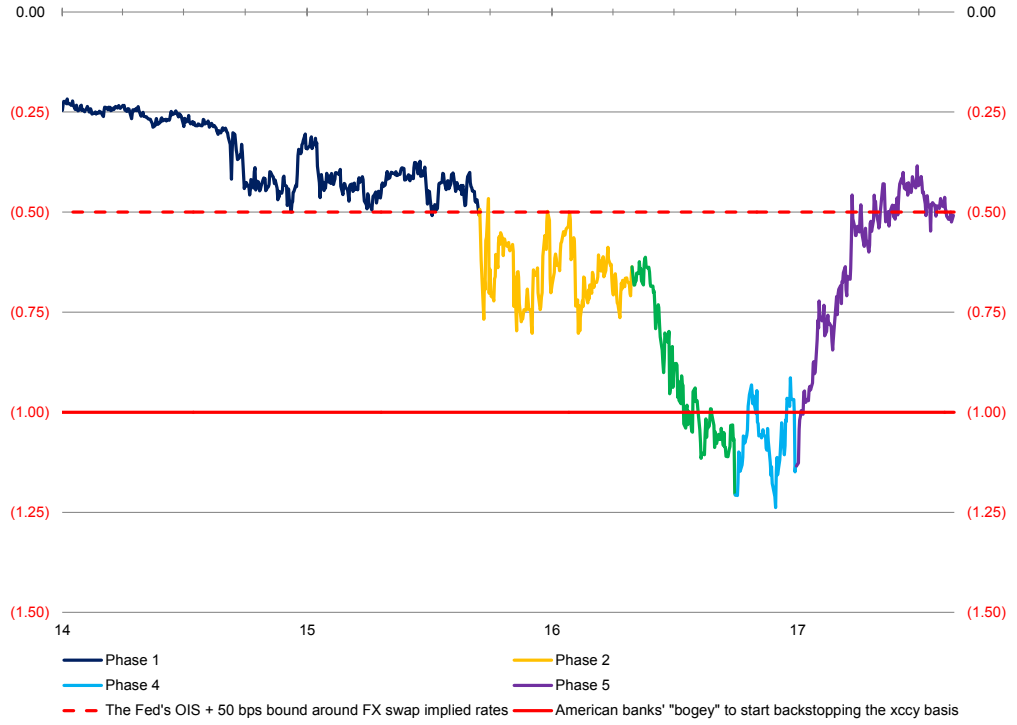
percent



Source: the BLOOMBERG PROFESSIONAL™ service, Credit Suisse

Figure 17: If the Cross-Currency Basis Could Speak…

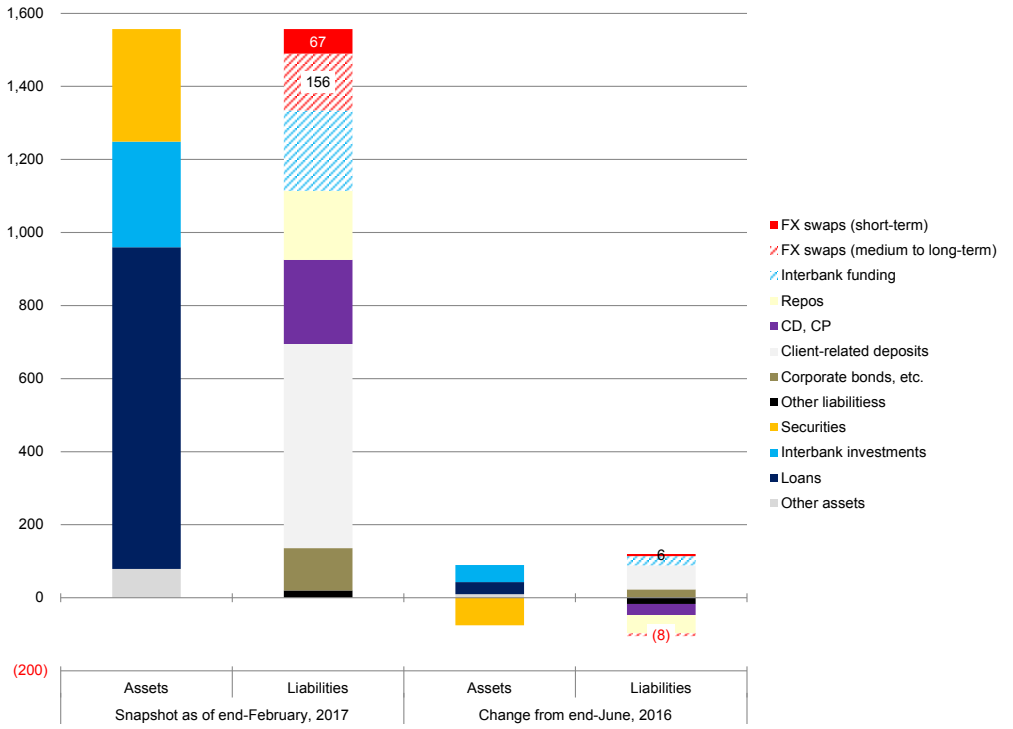
percent



Source: the BLOOMBERG PROFESSIONAL™ service, Credit Suisse

Figure 18: Japanese Banks Did Not Drive the $/¥ Basis Wider…

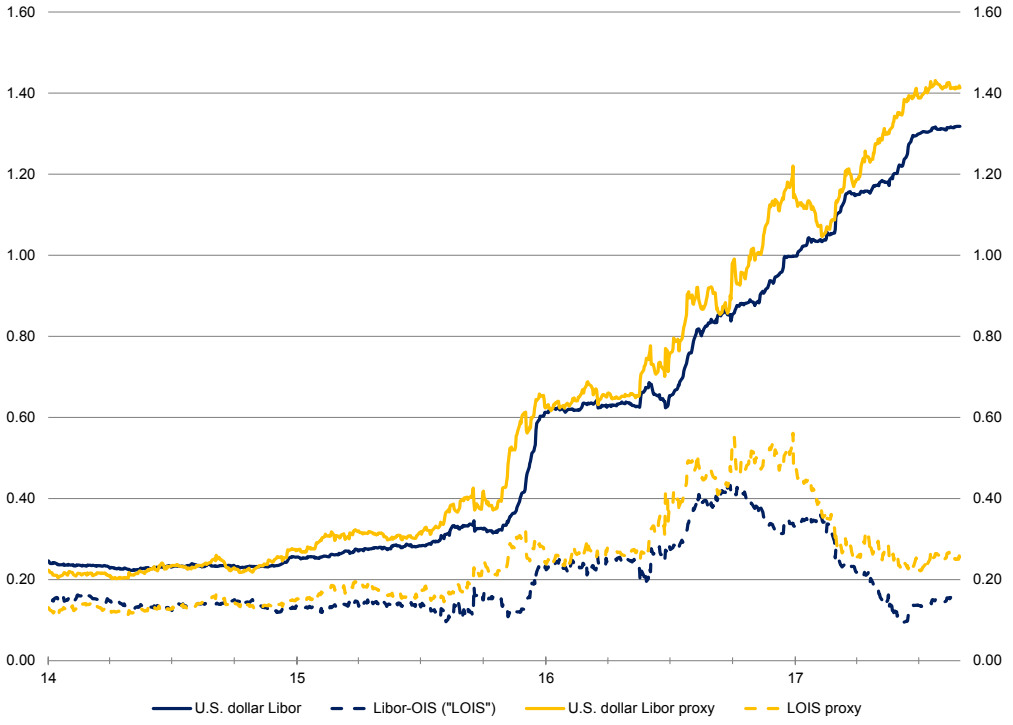
$ billion



Source: Bank of Japan, Credit Suisse

Figure 19: Reverse-Engineering Libor

percent



Source: the BLOOMBERG PROFESSIONAL™ service, Credit Suisse

Conclusions – Sterilization Redux

Sterilization will soon rear its ugly head again.

We know from the most recent Refunding Statement of the U.S. Treasury (see here), that TGA balances will be back up to $400 billion by the end of 2017. Draining that much in reserves will reverse most of the easing that we have seen in funding markets this year.

Fewer reserves mean more fracking and more fracking means wider cross-currency bases. Fewer reserves also mean tougher quarter-ends and greater turn premia, which, in turn, mean even wider cross-currency bases. Treasury normalizing its cash balances is bound to sap global funding markets, and the FX swap market will bear the brunt of normalization.

FX swap-implied rates have great relevance for banks' U.S. dollar Libor submissions in a post-Basel III financial order, and an even greater relevance post-money fund reform.

Banks no longer trade with each other on an unsecured basis under Basel III and so submissions for interbank-offered rates should mostly reflect secured transactions. For a while, banks could substitute unsecured interbank transactions for unsecured transactions with money funds in the CD and CP market. But money fund reform reduced the depth of those markets, which hurt banks' ability to issue unsecured paper reliably and frequently.

Following the guidelines set forth in The Wheatley Review of Libor (see Box 4.B), banks next switched to the FX swap market as a reliable source of inputs for Libor submissions. As such, the weight of FX swap-implied rates in model-driven submission likely increased since last October. Unfortunately, there is no way to test this assumption, as in June 2016, ICE stopped the publication of individual panel members' U.S. dollar Libor submissions.

Figure 19 shows our quick attempt to reverse-engineer U.S. dollar Libor submissions using FX swap-implied rates. The results are not perfect, but they seem encouraging.[10]

Establishing a link between FX swap-implied rates and U.S. dollar Libor is important, because if sterilization tightens the FX swap market it also makes Libor-OIS widen. In our view, Treasury normalizing its cash balances will cause funding spreads to widen by 20 bps from current levels by the end of 2017, with more to come during the first quarter as expectations for turn premia in FX forwards get re-priced as reserves get scarce again.

The Fed's plan to start shrinking its balance sheet later this year will exacerbate these trends as 2018 progresses – from the perspective of funding markets, destroying reserves through balance sheet taper is the same as sterilizing reserves through liability swaps. But for the rest of 2017, the fixed income market event to focus on is not balance sheet taper, but the normalization of Treasury's cash balances. And if the fallout from the latter will mean a replay of the spread widening we've seen in global dollar funding markets late last year, the Fed may even re-consider the timing, pace and endpoint of its grand tapering plan.

As Mike Tyson would say: *"Everyone has a plan 'till they get punched in the mouth"*…

One thing is for sure: having loads of reserves means being able to harvest the option value of cash in a post-Basel III world where reserves determine how money markets trade. If there is one bank that's set to benefit from sterilization or taper, that bank is J.P Morgan.

If there is one thing that everyone who trades the basis in a post-Basel III world should do is to follow closely how U.S. G-SIBs' HQLA portfolios and Basel III metrics evolve over time, for reading that stuff may just be as important as Fed watching used to be in the past!

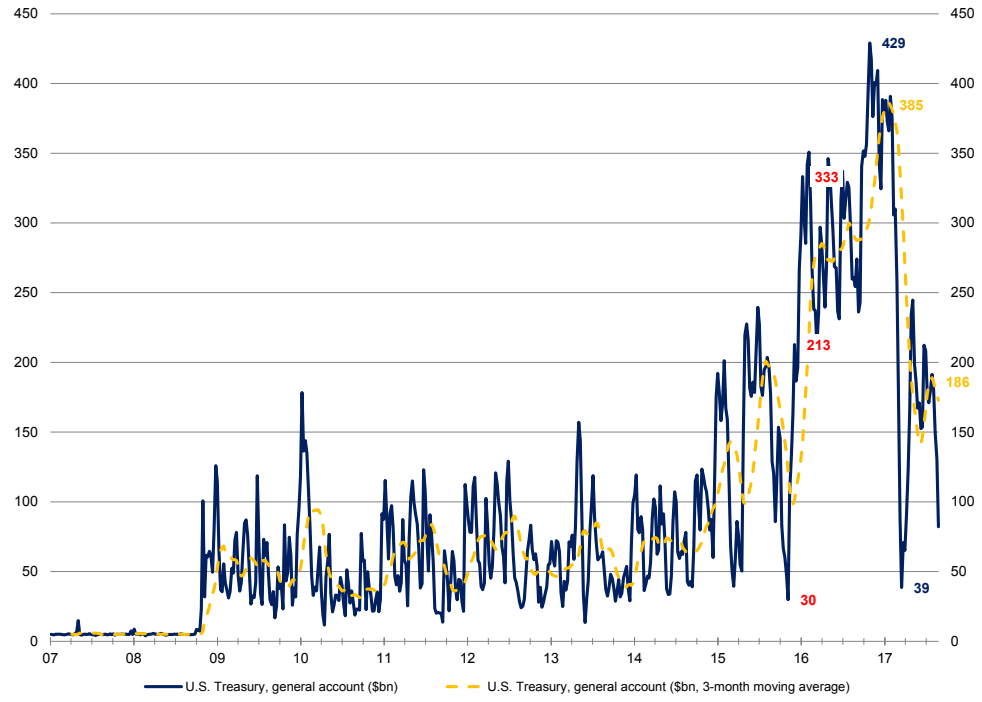
Reserves matter. He who has the most, controls the market for liquidity…

[10] Our back of the envelope calculation is based on the following assumptions. Banks submit either OIS, repo or FX swap-implied funding levels. Of the 17 panel members, only 9 remain once the top four and bottom four submissions are thrown out. We assign a weight of one for GCF repo-based submissions, two for OIS-based submissions, three for FX swap-implied rates derived from GBP, two for FX swap-implied rates derived from EUR and finally, one for FX-swap implied rates derived from CAD. Libor submitters may be using smoothing techniques (which are permissible) to dampen the volatility of FX-swap implied rates.

Appendix

Figure A1: Overnight Liquidity Services for the U.S. Treasury

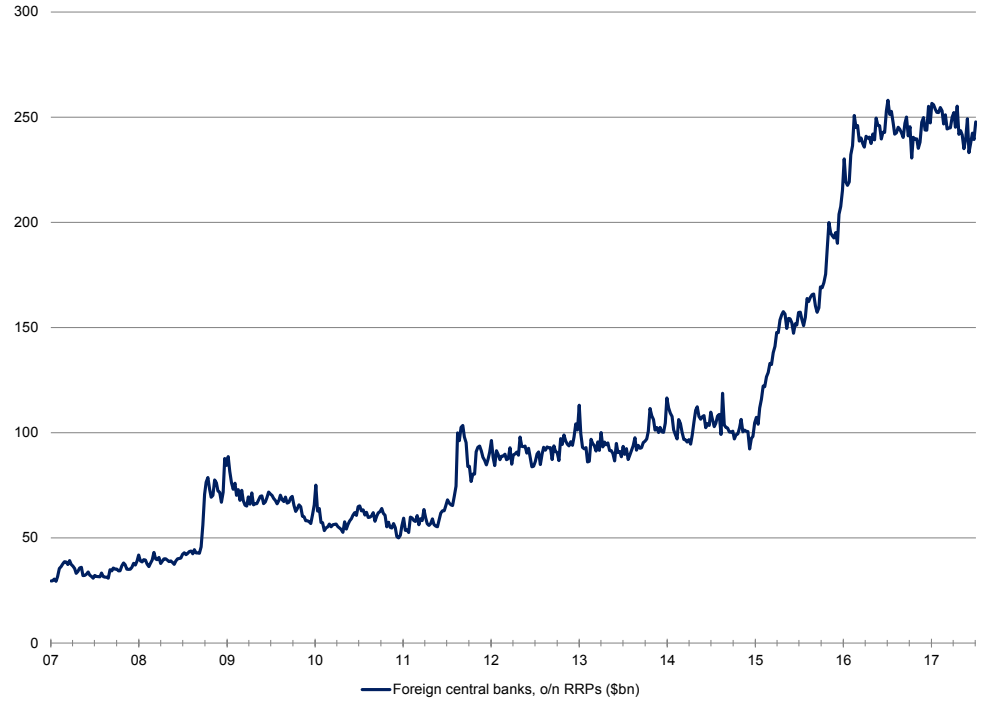
$ billion



Source: Federal Reserve, Credit Suisse

Figure A2: Overnight Liquidity Services for Foreign Central Banks

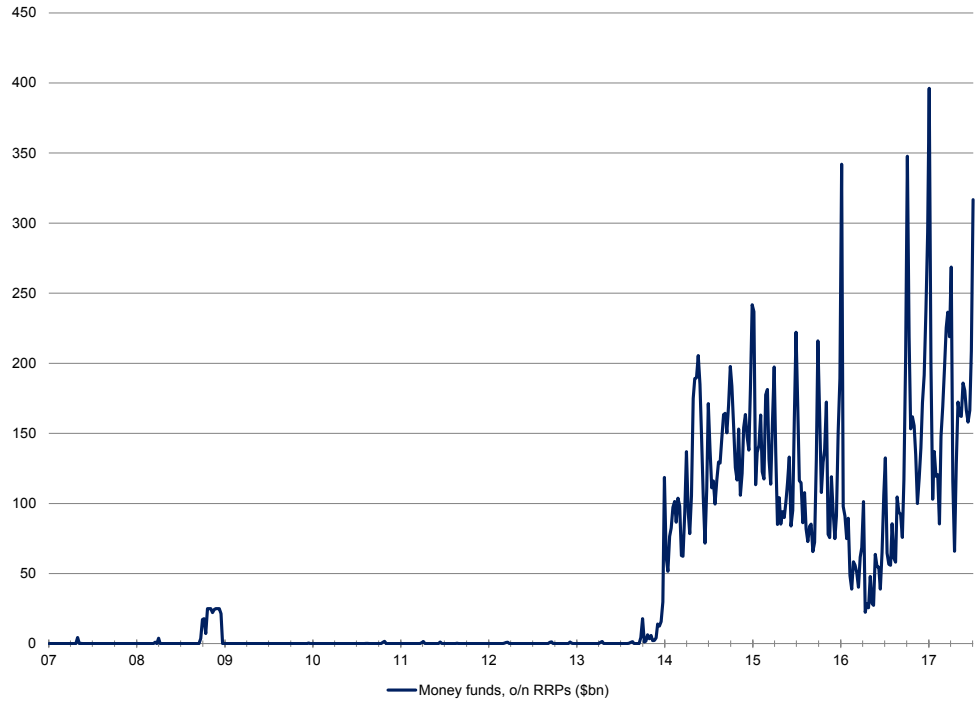
$ billion



Source: Federal Reserve, Credit Suisse

Figure A3: Overnight Liquidity Services for Money Market Funds

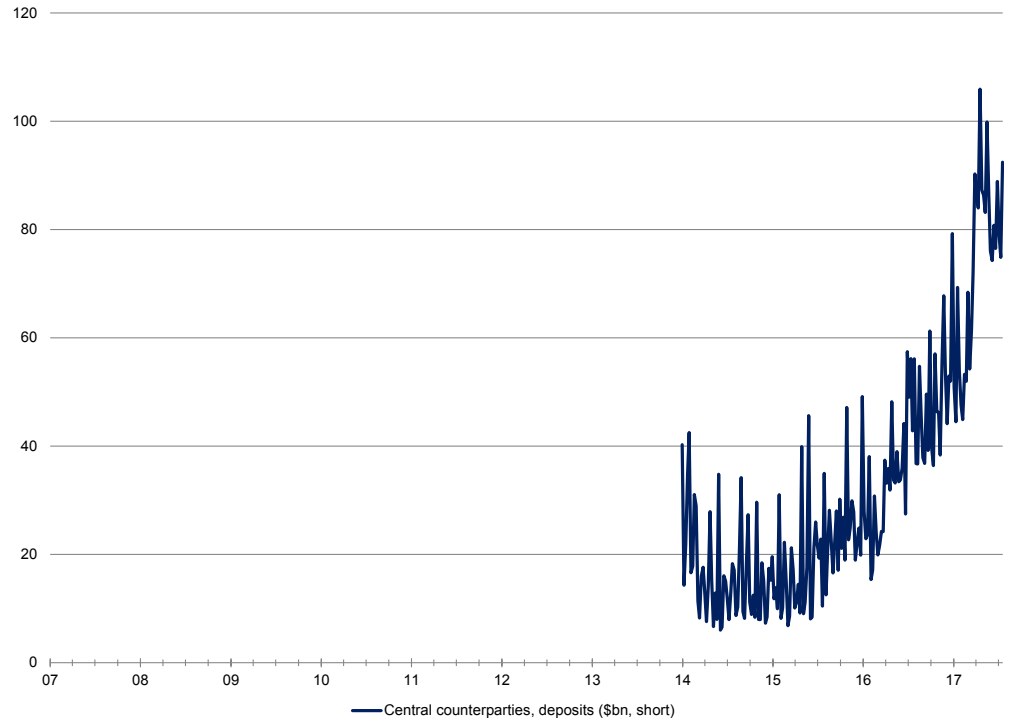
$ billion



Source: Federal Reserve, Credit Suisse

Figure A4: Overnight Liquidity Services for Central Counterparties

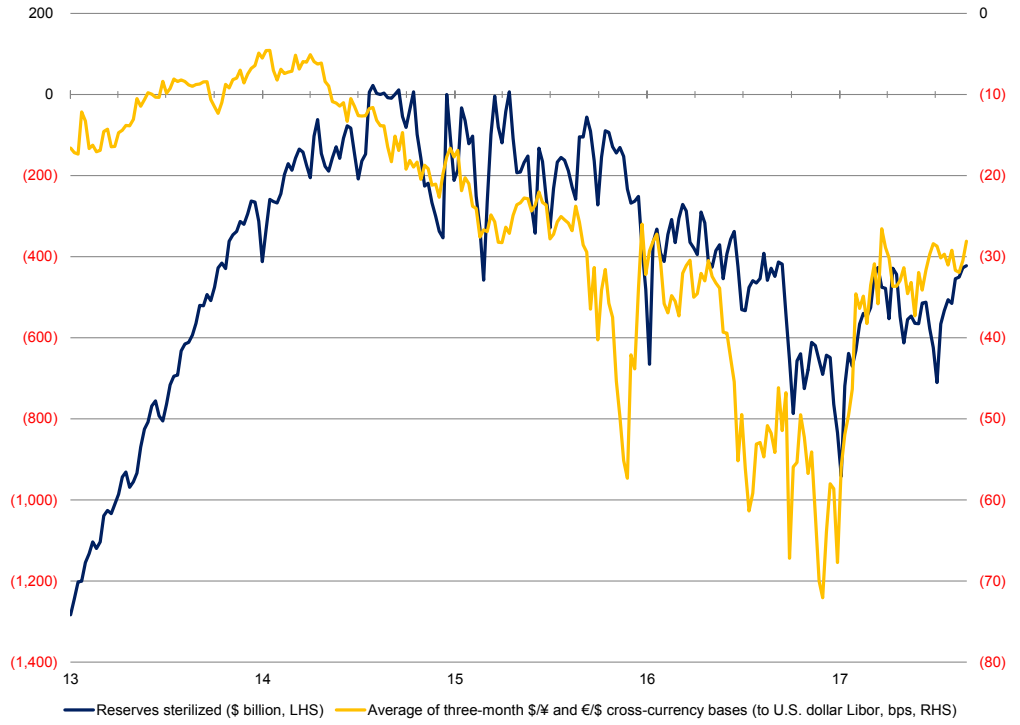
$ billion



Source: Federal Reserve, Credit Suisse

Figure A5: Sterilization and the Cross-Currency Basis (1)

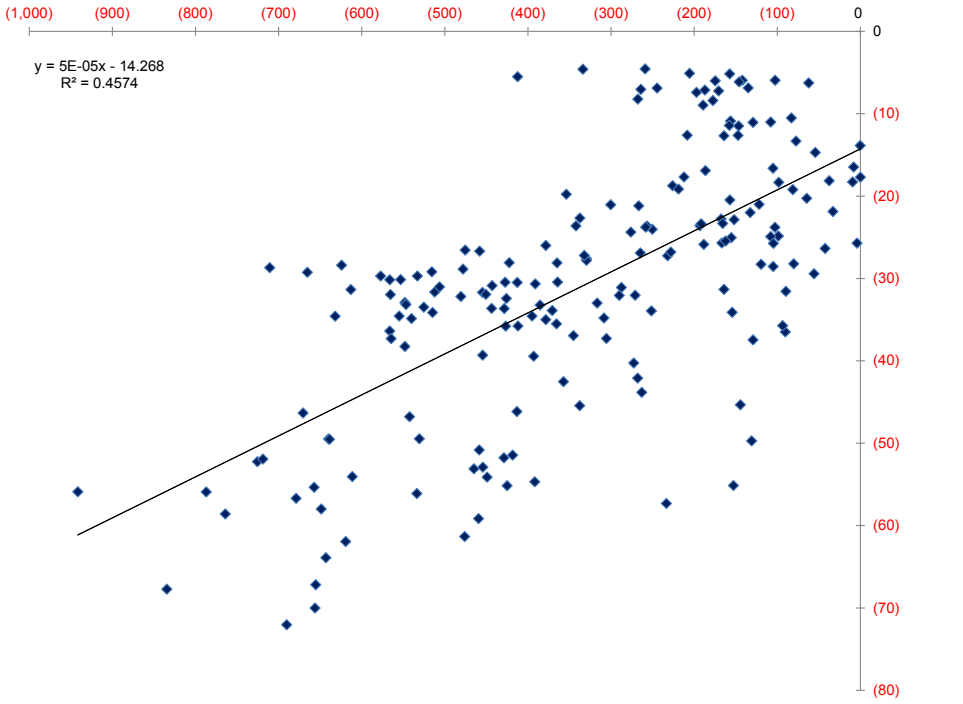
$ billion (LHS) and basis points (RHS)



Source: the BLOOMBERG PROFESSIONAL™ service, Federal Reserve, Credit Suisse

Figure A6: Sterilization and the Cross Currency Basis (2)

Reserves sterilized ($ billion, x-axis) and the average of the €/$ and $/¥ cross-currency (bps, y-axis)



Source: the BLOOMBERG PROFESSIONAL™ service, Federal Reserve, Credit Suisse

GLOBAL FIXED INCOME AND ECONOMIC RESEARCH

James Sweeney, Managing Director
Head of Fixed Income and Economic Research
+1 212 538 4648
james.sweeney@credit-suisse.com

Dr. Neal Soss, Managing Director
Vice Chairman, Fixed Income Research
1 212 325 3335
neal.soss@credit-suisse.com

US / GLOBAL ECONOMICS AND STRATEGY

James Sweeney
Chief Economist
+1 212 538 4648
james.sweeney@credit-suisse.com

Xiao Cui
+1 212 538 2511
xiao.cui@credit-suisse.com

Zoltan Pozsar
+1 212 538 3779
zoltan.pozsar@credit-suisse.com

Melissa Pumphrey
+1 212 538 4211
melissa.pumphrey@credit-suisse.com

Jeremy Schwartz
+1 212 538 6419
jeremy.schwartz@credit-suisse.com

Wenzhe Zhao
+1 212 325 1798
wenzhe.zhao@credit-suisse.com

Praveen Korapaty
Head of Interest Rate Strategy
212 325 3427
praveen.korapaty@credit-suisse.com

Jonathan Cohn
212 325 4923
jonathan.cohn@credit-suisse.com

EUROPEAN ECONOMICS AND STRATEGY

Neville Hill
Head of European Economics & Strategy
+44 20 7888 1334
neville.hill@credit-suisse.com

Anais Boussie
+44 20 7883 9639
anais.boussie@credit-suisse.com

Peter Foley
+44 20 7883 4349
peter.foley@credit-suisse.com

Sonali Punhani
+44 20 7883 4297
sonali.punhani@credit-suisse.com

Veronika Roharova
+44 20 7888 2403
veronika.roharova@credit-suisse.com

Giovanni Zanni
+44 20 7888 6827
giovanni.zanni@credit-suisse.com

David Sneddon
Head of Technical Analysis
44 20 7888 7173
david.sneddon@credit-suisse.com

Christopher Hine
212 538 5727
christopher.hine@credit-suisse.com

GLOBAL FX / EM ECONOMICS AND STRATEGY

Shahab Jalinoos
Head of Global FX Strategy
212 325 5412
shahab.jalinoos@credit-suisse.com

Honglin Jiang
44 20 7888 1501
honglin.jiang@credit-suisse.com

Trang Thuy Le
+852 2101 7426
trangthuy.le@credit-suisse.com

Alvise Marino
212 325 5911
alvise.marino@credit-suisse.com

Bhaveer Shah
44 20 7883 1449
bhaveer.shah@credit-suisse.com

Kasper Bartholdy
Head of Global EM Strategy
+44 20 7883 4907
kasper.bartholdy@credit-suisse.com

Ashish Agrawal
+65 6212 3405
ashish.agrawal@credit-suisse.com

Daniel Chodos
+1 212 325 7708
daniel.chodos@credit-suisse.com

Nimrod Mevorach
+44 20 7888 1257
nimrod.mevorach@credit-suisse.com

Berna Bayazitoglu
Head of EEMEA Economics
+44 20 7883 3431
berna.bayazitoglu@credit-suisse.com

Alexey Pogorelov
+44 20 7883 0396
alexey.pogorelov@credit-suisse.com

Carlos Teixeira
+27 11 012 8054
carlos.teixeira@credit-suisse.com

Alonso Cervera
Head of Latin America Economics
+52 55 5283 3845
alonso.cervera@credit-suisse.com

Juan Lorenzo Maldonado
+1 212 325 4245
juanlorenzo.maldonado@credit-suisse.com

Casey Reckman
+1 212 325 5570
casey.reckman@credit-suisse.com

Alberto Rojas
+52 55 5283 8975
alberto.rojas@credit-suisse.com

Nilson Teixeira
Head of Brazil Economics
+55 11 3701 6288
nilson.teixeira@credit-suisse.com

Paulo Coutinho
+55 11 3701-6353
paulo.coutinho@credit-suisse.com

Iana Ferrao
+55 11 3701 6345
iana.ferrao@credit-suisse.com

Leonardo Fonseca
+55 11 3701 6348
leonardo.fonseca@credit-suisse.com

Lucas Vilela
+55 11 3701-6352
lucas.vilela @credit-suisse.com

ASIA PACIFIC DIVISION

Ray Farris, Managing Director
Head of Fixed Income Research and Economics, Asia Pacific Division
+65 6212 3412
ray.farris@credit-suisse.com

EMERGING ASIA ECONOMICS

Dr. Santitarn Sathirathai
Head of Emerging Asia Economics
+65 6212 5675
santitarn.sathirathai@credit-suisse.com

Vincent Chan
Head of China Macro
+852 2101 6568
vincent.chan@credit-suisse.com

Deepali Bhargava
+65 6212 5699
deepali.bhargava@credit-suisse.com

Weishen Deng
+852 2101 7162
weishen.deng@credit-suisse.com

Michael Wan
+65 6212 3418
michael.wan@credit-suisse.com

JAPAN ECONOMICS

Hiromichi Shirakawa
Head of Japan Economics
+81 3 4550 7117
hiromichi.shirakawa@credit-suisse.com

Takashi Shiono
+81 3 4550 7189
takashi.shiono@credit-suisse.com

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