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Design Options for an o/n Repo Facility

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While we don't think the Fed will launch a standing repo facility anytime soon, in this edition of Global Money Notes we explain the optimal design features of such a facility. Our target audience is central bankers and STIR traders, but macro and bank equity investors are encouraged to read our report as well.

The fundamental problem the Fed will soon have to reckon with is that it has an operating framework where the target range for the o/n rates complex is policed only at the bottom – with an o/n reverse repo facility – but not at the top.

The solution to that problem should be an o/n repo facility priced 25 bps above the o/n reverse repo rate that's open without stigma to large global banks, with the explicit aim to make collateral and reserves equal – the "equalizer" bazooka.

Such a bazooka would have a "*Draghi-esque*" quality to it…

…for it would have a major market impact without the market actually using it.

That's because the facility would work through freeing up precautionary reserves that banks currently hold for intraday liquidity purposes, mostly because the monetization of bonds is uncertain during a crisis. But if a standing repo facility makes monetization easy and guaranteed, precautionary reserves aren't needed: banks could sell their reserves and wouldn't tap the Fed unless there is a crisis.

The facility would offer the best of both worlds…

…easier funding conditions without an expansion of the Fed's balance sheet.

If such a facility is in the making, the trade is to receive cross-currency bases; the looming funding market stresses we recently warned about here and here would cease to be a concern, and the Fed wouldn't have to take into account front-end technicals when setting rates – the Fed could focus purely on macro.

But an equalizer bazooka may not be ready anytime soon, if ever.

Nevermind the time required to design, test and communicate such a facility: the green-light for it isn't a New York Fed decision but a supervisory decision, and Vice Chair Quarles seems to prefer reserves in HQLA portfolios, not bonds.

We don't think the market appreciates that piece of the puzzle…

…and absent an equalizer bazooka, we're back to the need for more rate cuts as other designs would risk monetizing too many Treasuries during an inversion.

Designing a standing repo facility is fiendishly complicated…

…and that's one reason why the Fed still does not have a standing repo facility in place.

Designing a facility takes time because the institutional details of the o/n repo market are complex and navigating these complexities slows down the design process. Some of these institutional details include the hierarchy of lenders, borrowers and intermediaries, and the changing set of constraints that bind intermediaries. Then there is the question of why we need a facility in the first place – to address balance sheet or liquidity constraints, or for something as basic as policing the top of the Fed's target range for o/n rates?

Our current edition has four parts.

Part one starts with a detailed discussion of the institutional setup of the o/n repo market, and how matched repo books balance imbalances across various repo market segments.

Part two explains how the repo market deals with imbalances involving excess reserves and excess collateral and how banks and ultimately the Fed absorb these imbalances.

Part three discusses two pricing and three design options for a standing repo facility, and why a repo facility designed for banks to equalize collateral and reserves would work best.

Finally, part four concludes with a discussion of the likely market impact of such a facility and why asset purchases should be considered a complement to it, not a rival alternative.

Part I – Hierarchy at the Core

The map below shows collateral providers on the left, cash lenders on the right and dealers in the middle – in line with how most market participants think about the o/n repo market.

But we also show additional details – details that emphasize the repo market's hierarchy.

First, that both collateral providers and cash lenders fall into two categories: those that are members of the Fixed Income Clearing Corporation (FICC) and those that aren't members.

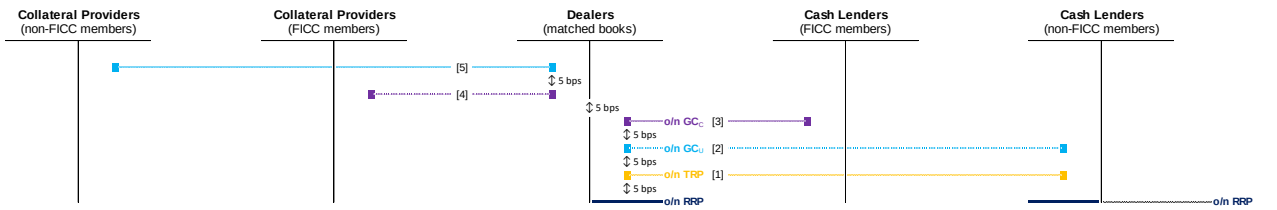
Second, that the repo market isn't really one market with one rate that clears the market, but a collection of several market segments matched up through dealer balance sheets, where each segment trades at a different rate, the rates are subject to a strict hierarchy, and the rate at which you lend or borrow depends on your place in the system's hierarchy.

Let's start our discussion of the hierarchy with cash lenders on the right hand side.

Cash lenders that are not FICC members include money market funds and hedge funds.

Money funds have access to the Fed's o/n reverse repo facility (the thick dark blue line), which sets the floor underneath all private repo rates – no money market fund will lend and no repo dealer will borrow at rates below the rate offered by the o/n reverse repo facility.

Hierarchy at the Core



Source: Credit Suisse

Money funds also lend to repo dealers at a spread over the Fed's o/n RRP rate at the o/n tri-party repo rate (the thin orange line marked [1]). Let's assume that this spread – as all other spreads that we'll discuss later – is usually 5 bps. The o/n tri-party repo rate is always the lowest of all private repo rates because money funds are long-only accounts that are captive lenders in the repo market who don't trade much, which means that there is no point in dealers paying up for their cash in hopes of winning more trading business.

Hedge funds are a different matter. Hedge funds lend to repo dealers at a spread over the o/n tri-party repo rate at the o/n GC repo rate (the thin light blue line marked [2]). The o/n GC repo rate is always higher than the o/n tri-party repo rate and that's because hedge funds are more profitable accounts to cover than money funds – they leverage up, go long and short and trade frequently – and one way for dealers to win more business from hedge funds is to pay them a better rate on their cash than they pay to money funds.

Let's next turn to cash lenders that are FICC members.

There are many types of FICC members including primary and non-primary dealers, commercial banks, the New York branches of foreign banks, some of the GSEs, custodian banks and trust banks. We'll discuss dealers and banks later in our analysis and for now we'll focus on the GSEs with FICC access – Fannie Mae and Freddie Mac – and custodian and trust banks that lend cash on behalf of clients via omnibus accounts.[1]

These accounts lend at a spread over the o/n GC repo rate at the cleared o/n GC rate (the thin purple line marked [3]). The cleared o/n GC rate is higher than the o/n GC rate because if a dealer finds another FICC member it can lend to, that transaction is nettable – which means that it does not use balance sheet. The netting benefits thus make dealers pay up for cash they borrow through cleared repos and, on the flipside, cash lenders benefit from getting an o/n rate that's better than the rates in the other market segments.

The hierarchy of o/n repo rates from the perspective of cash lenders thus looks like this:

(1) o/n reverse repos (RRPs) with the Fed pay the least

(2) o/n tri-party repos pay a spread over o/n RRPs

(3) o/n GC repos that aren't cleared with FICC pay a spread over o/n tri-party repos

(4) o/n GC repos that are cleared with FICC pay a spread over uncleared GC repos

Money market funds typically lend at the first two rates, hedge funds on the third rate and FICC members – Fannie and Freddie and custodian and trust banks on behalf of clients – lend at the fourth rate, with access to progressively better o/n rates governed by each account's wallet share and potential for netting from the perspective of repo dealers.

The Federal Home Loan Banks (FHLBs) are a special case as they are the only GSEs without FICC access, which constrains them to lending either at the o/n tri-party rate or the uncleared o/n GC rate where the choice between the two usually comes down to the operational risk appetite and trading background of a particular FHLB's cash manager.

Let's next turn to collateral providers on the left side of the above map.

Collateral providers, like cash lenders, also fall into two categories: FICC members and non-FICC members. Collateral providers that are FICC members include the same custodians and trust banks like before, but here as borrowers of cash on behalf of clients – clients which are different from the ones whose cash they've lent in the prior example.

[1] An omnibus account is an account in which the transactions of two or more accounts are combined and carried in the name of the originating broker – in this case custodian banks and trust banks – rather than designated separately.

In addition to custodians and trust banks, foreign banks like the Norinchukin Bank are some of the biggest collateral providers in FICC. Figure 1 shows the balance sheet of Norinchukin at various points in time and the dominance of repo on its funding side – the shrinking of Norinchukin's balance sheet over time has to do with the curve inversion and the erosion of the attractiveness of U.S. Treasuries on a global relative value basis.

FICC members borrow cash at the bid side of the cleared o/n GC repo market at the cleared o/n GC rate (the purple line marked [4]). The bid side of the cleared GC market trades at a spread over the offered side of the market – where FICC members lend cash – and this spread is there to compensate dealers for taking on liquidity risks that stem from lining up lenders and borrowers of cash – that is, being a market maker – during the day.

Collateral providers that are not FICC members include mostly hedge funds which borrow at a spread over the bid side of the cleared o/n GC rate at the uncleared o/n GC rate (the thin blue line marked [5]). Like before, how wide a spread a hedge fund has to pay comes down to its wallet share at a given dealer – big fish pay less, small fish pay more – and whether it has offsetting trades with the same dealer which make the trades nettable.

The hierarchy of repo rates from the perspective of collateral providers thus looks like this:

(1) o/n GC repos that are cleared with FICC cost the least

(2) o/n GC repos that aren't cleared cost a spread over cleared o/n GC repos

FICC members – mostly custodians and trust banks on behalf of institutional clients – borrow at the first rate and hedge funds – small and large – borrow at the second rate, with access to progressively lower rates and at best zero spread to cleared rates governed by each account's wallet share and potential for netting from the perspective of dealers.

We now know the major categories of cash lenders and cash borrowers in the repo market, which particular repo rates they have access to, and the business reasons that maintain a strict hierarchy between these repo rates. We next turn to an analysis of the dealers that sit between cash lenders and cash borrowers and whose balance sheets clear the market.

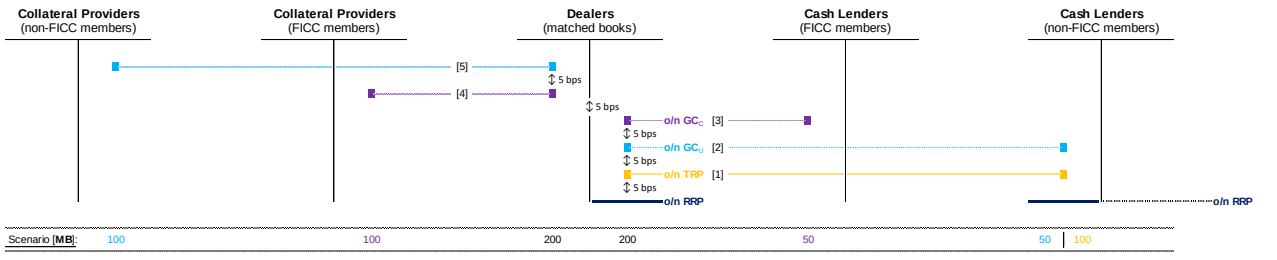
There are two particular talking points around dealers:

(1) How dealers clear the repo market through matched repo books.

(2) How different dealers specialize in different repo market segments.

The bottom of the map below shows a concrete numerical example of how matched books typically clear the repo market – all other details of the map are the same as previously. Thus, going from left to right, imagine that hedge funds need $100 billion of funding and FICC members need another $100 billion, and, on the other side, FICC members lend $50 billion, hedge funds lend another $50 billion and money funds lend $100 billion; the repo dealers in the middle borrow and lend $200 billion and run a matched repo book.

How Matched Books Balance Imbalances



Source: Credit Suisse

Importantly, dealers' matched books balance the imbalances in various market segments: for example, the repo market between hedge funds is imbalanced as is the FICC market, as in both instances borrowers seek $100 billion, but lenders only have $50 billion to lend.

Dealers bridge these imbalances by tapping money funds for the missing $100 billion, $50 billion of which balances the imbalance in the hedge fund segment of the market, and the other $50 billion balances the imbalance in the FICC segment of the market.

Before turning to a discussion of the specialization that takes place among repo dealers, we need to discuss two other markets that exist on the extreme ends of matched books.

These are the repo market for specials and the FX swap market shown on the map below.

Rates in the repo market for specials trade at a spread below the o/n RRP rate and hence the o/n tri-party and GC repo rates because in the specials market cash lenders' aim is to secure specific pieces of securities, for which they are willing to give up yield.

Implied rates in the FX swap market – which is a natural extension of the repo market – trade at a spread over the uncleared o/n GC repo rate because in the FX swap market dealers lend dollars versus other currencies which they invest in foreign collateral markets.

Whereas in the repo market involving matched books spreads between market segments are generally around 5 bps, repo rates in the specials market can trade deeply below the o/n RRP rate, and implied yields in the FX swap market can trade sharply above the uncleared o/n GC rate. For example, implied yields in tomorrow-next swaps of dollars for yen or euros can trade 50 bps over the o/n GC rate and at times hundreds of bps over!

In other words, dealers can earn the biggest spreads between specials and FX swaps, but in the world of matched repo books spreads usually don't trade wider than 20 bps – which is the best spread a dealer can get if it borrows at the tri-party rate and lends at the uncleared GC rate assuming that all market segments in-between trade 5 bps apart.

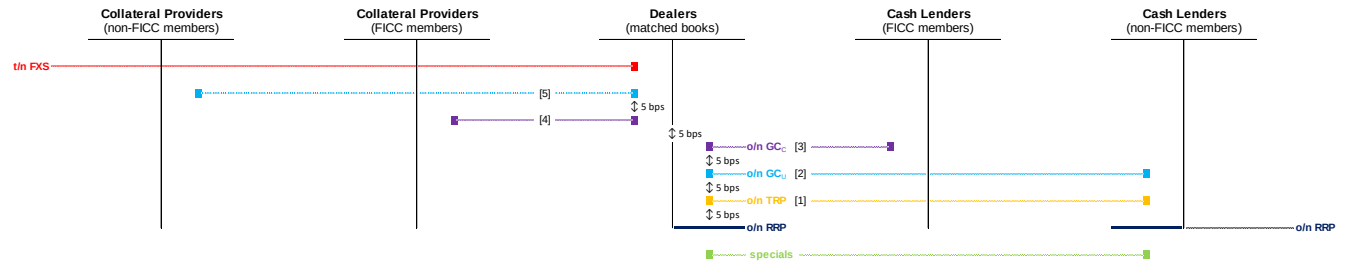
We are now ready to discuss how and why dealers specialize in various market segments.

U.S. primary dealers bound by high leverage ratios (SLR) and daily balance sheet reporting specialize in high margin specials-to-FX swap trades and in nettable trades that don't use balance sheet like FICC-to-FICC cleared o/n GC trades. Dealers with low leverage ratios and quarter-end balance sheet reporting like French dealers specialize in low margin trades where they borrow at the o/n tri-party repo rate and lend at either o/n GC rate.

Finally, dealers that do not have to comply with Basel III – so called non-primary dealers – specialize in cleared-to-uncleared GC trades, as they don't have access to tri-party repos which is the domain of large and diverse primary dealers, not small non-primary dealers.

Figure 2 shows these and other groups of primary dealers according to their specialization, and the Appendix describes how sponsored repo is changing the hierarchy on the margin.

The Extreme Ends of Matched Books



Source: Credit Suisse

Part II – Imbalances and Backstops

In the previous section, we discussed imbalances in various repo market sub-segments and how these imbalances are bridged by primary dealers through matched repo books.

But matched books seldom, if ever, clear the market. The repo market, like any market, is always moving away from or closer toward balance, but it's never in a state of balance.

There are two types of imbalances in the repo market:

(1) imbalances that involve excess reserves, and

(2) imbalances that involve excess collateral.

The questions are always: which of these imbalances dominate at any given moment; whether we are headed deeper into either imbalance or away from one and into the other; and who and at what price provides a backstop at the extreme ends of either imbalance.

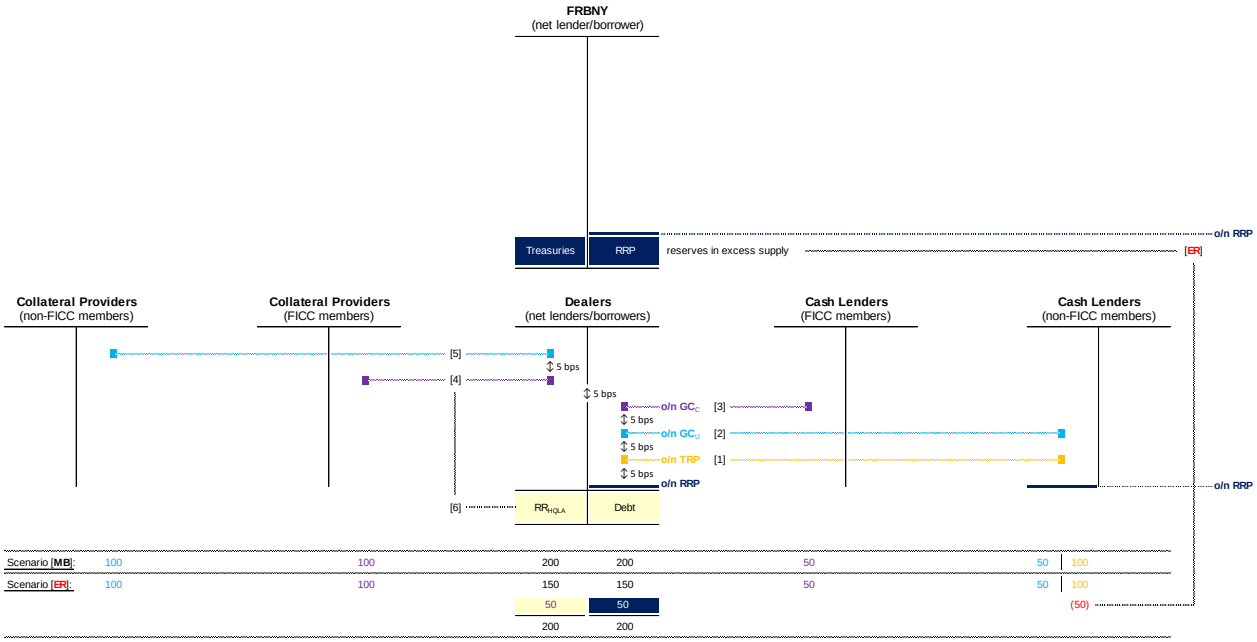
The map below shows how the repo market deals with excess reserves.

We use the matched book example from page four as our starting point and add to it a high-quality liquid asset (HQLA) portfolio for dealers and another balance sheet – the Fed's.

We highlight the HQLA portfolio on dealers' balance sheet with a shade of cream color. HQLA portfolios must be funded unsecured at terms that are longer than 30 days, and HQLA include reserves and Treasuries where Treasuries can be held either outright or "reversed in" through cleared o/n GC repos. However, because dealers are not banks, they do not have access to reserve accounts at the Fed and so for primary dealers the shortest and most liquid form of HQLA are cleared o/n GC repos. Every dealer will have some of its HQLA invested in cleared o/n GC repos and these investments will cause imbalances relative to the matched book examples that we have discussed previously; the numbers at the bottom of the map show how the repo market clears these imbalances.

Thus, before the dealer starts building a matched book for the day, it lends $50 billion in the

Imbalance [1]: Excess Reserves and the Fed's o/n RRP Facility



Source: Credit Suisse

cleared o/n GC repo market from its own HQLA portfolio (the thin black line marked [6]). Borrowers will get the remaining $150 billion they need through matched repo books, which the repo dealer builds by borrowing a combined $150 billion from cash lenders – $50 billion from FICC members and non-member hedge funds and money funds each.

But money funds have $100 billion to invest and dealers bidding for only $50 billion leaves money funds with $50 billion of uninvested cash – and the system with $50 billion of excess reserves. The entity that ends up absorbing these excess reserves is the Fed, through its o/n RRP facility (see the thin black line marked [**ER**] for "excess reserves").

Relative to the matched book example discussed at the outset, the repo market cleared through a more complicated process. The size of the repo market is still $200 billion, but matched books intermediate only $150 billion of the $200 billion, and the rest of the market is "one-sided" – cash borrowers get $50 billion from a one-sided lender which is an HQLA portfolio and cash lenders lend $50 billion to a one-sided borrower which is the Fed.

Both the HQLA portfolio and the Fed have a one-sided presence in the o/n repo market in the sense that the cash they lend or borrow isn't sourced from the o/n repo market, as in the case of matched books – HQLA portfolios borrow in term unsecured markets, not in the o/n repo market, and the collateral the Fed lends through the o/n RRP facility comes from its outright holdings of Treasuries and isn't sourced in the o/n repo market.

In essence, the market clears through two matched books – a $150 billion matched book on dealer balance sheets and a $50 billion "scrapbook" where the left side of the book is a dealer's HQLA portfolio and the right side of the book is the Fed's o/n RRP facility (we highlight the two sides of the scrapbook with light cream and dark blue, respectively).

Figure 3 shows the usage of the o/n RRP facility over time. We can see that the era of excess reserves is now over – the facility has not been used since the beginning of 2018.

The era we are trading in currently is the era of excess collateral (see here and here).

The map overleaf shows how the repo market deals with excess collateral.

We use the map from the previous page as the starting point and add more things to it, starting with an inventory of Treasuries which dealers fund with o/n repos on the margin, which we highlight in light blue color. We now have three states a dealer can operate in:

(1) long cash, which the dealer deploys in the repo market (cream color);

(2) balance, where the dealer runs a matched repo book (white color); and

(3) short cash, which the dealer raises in the repo market (light blue color).

Short cash positions and elevated dealer inventories of Treasuries go hand in hand as the reason why dealers end up short cash is because they spend their clearing balances on Treasuries and so give up their liquidity (see here). Effectively, growing Treasury inventories force a rotation in HQLA portfolios away from cash and hence o/n repos to Treasuries. To remedy their liquidity position, dealers repo their Treasuries on inventory to increase their clearing balances, which turns dealers into net borrowers in the o/n repo market – the opposite of the prior example where the dealer was a net lender in the repo market.

The numbers at the bottom of the map show how the market clears with excess collateral, where the source of excess collateral is bloated inventories of Treasuries (see here). Thus, before the dealer starts building its matched book for the day, it raises $75 billion of funding in the repo market to fund its own inventories, that is, to up its clearing balances (the thin black line marked [7]). That leaves $125 billion of cash for other borrowers, which the dealer lends via matched repo books. But borrowers still need $200 billion and so are short $75 billion of funding – and the system is long $75 billion of excess collateral

(see the thin black line marked [**EC**] for "excess collateral"). Like before, matched books couldn't balance the repo market, and so someone else will have to step in to balance it.

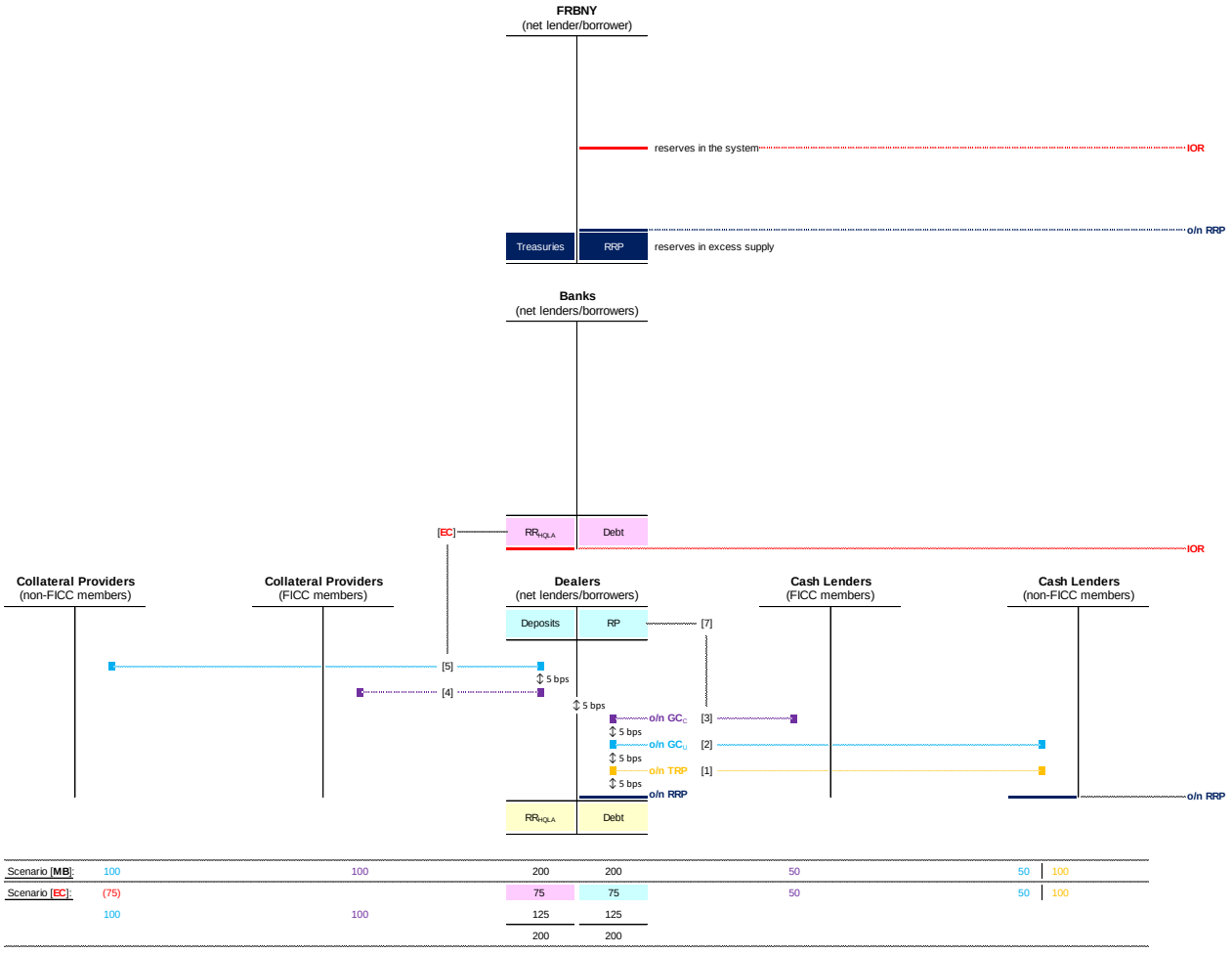
That someone else is a bank which sits above dealers in the repo market's hierarchy.

Like dealers, large banks also have to maintain HQLA portfolios, but unlike dealers, banks have reserve accounts at the Fed which pay the interest on reserves rate, or IOR. We highlight banks' HQLA portfolios with a different color (pink) than what we used for dealer's HQLA portfolios because the economics of banks' HQLA portfolios are different.

Because dealers do not have access to reserve accounts at the Fed, they'll always invest their liquidity in the cleared GC repo market regardless of where the cleared o/n GC rate prints relative to IOR. The same is not true for banks: because banks earn the IOR rate as the base case, they will lend in the repo market only if the GC rate trades above IOR (see the thick red line at the bottom of banks' HQLA portfolios indicating a hurdle rate).

As in the excess reserves example before, here too, the repo market clears through two matched books – a $125 billion matched book on dealer balance sheets and a smaller, $75 billion "scrapbook" where the right side of the book reflects dealer funding needs due to rising inventories and the left side of the book is a large bank's HQLA portfolio (we highlight the two sides of the scrapbook with light blue and pink color, respectively).

Imbalance [2]: Excess Collateral and Bank HQLA Portfolios



Source: Credit Suisse

Figure 4 shows all the banks that have a direct pipe into the cleared o/n GC repo market – these are the banks that can absorb excess collateral in the o/n repo market on scale.

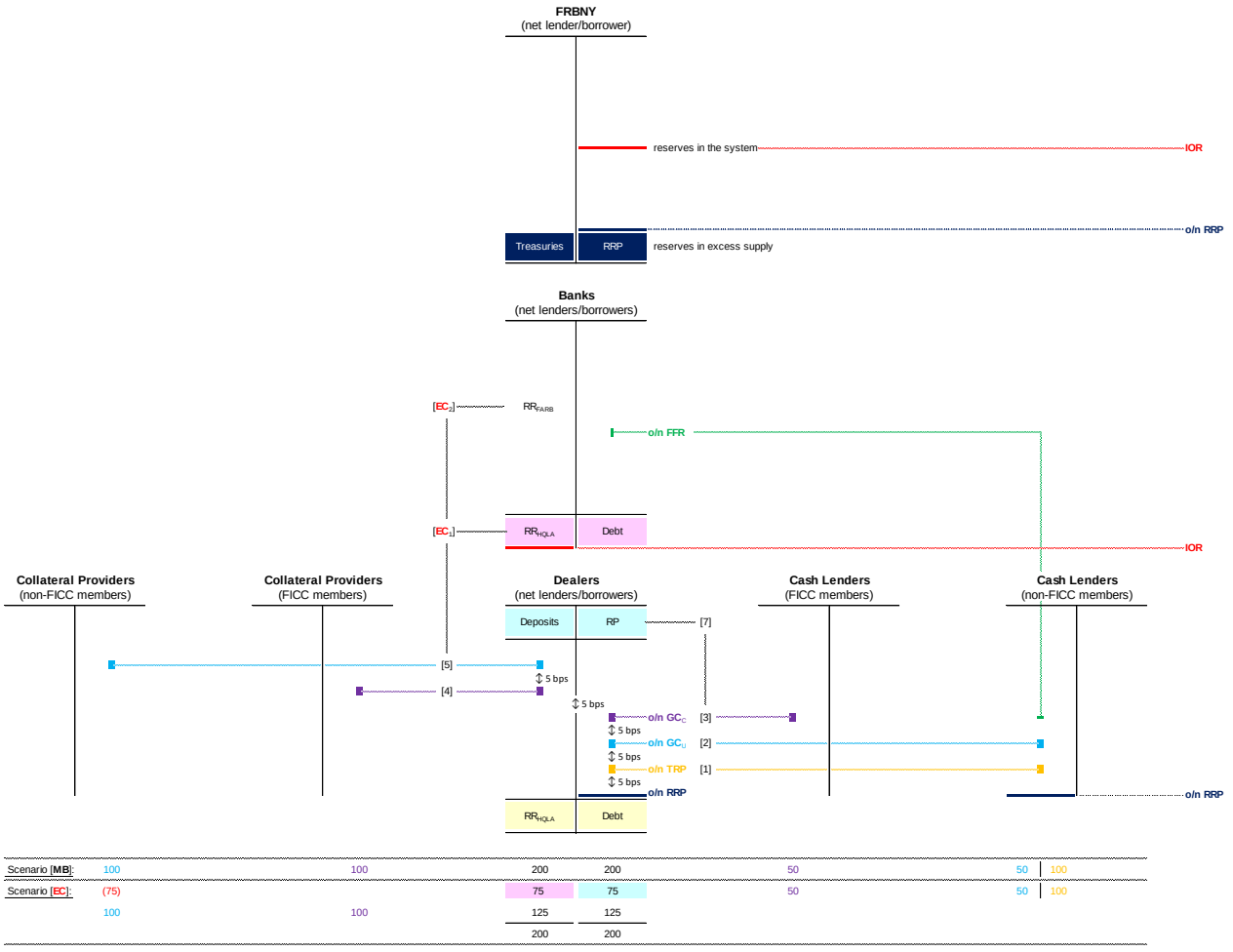
These banks are different from the custodian and trust banks we discussed previously – custodian and trust banks lend on behalf of customers that are non-banks who lend in the GC market regardless of where GC trades relative to IOR. The banks in Figure 4 lend their own money, and will only lend in the o/n GC repo market if GC rates print above IOR.

These banks' HQLA portfolios represent the largest pools of dollar liquidity that can absorb large amounts of excess collateral in the system – but they are not the only ones.

The map below shows o/n fed funds – GC repo arbitrage trades available for all banks that aren't balance sheet constrained intra-quarter. The map is the exact same as before, but it includes two extra pipes: a green line between banks and non-FICC cash lenders to denote the flow of money from FHLBs to banks through the o/n fed funds (FF) market, and a thin black line marked [EC_2] to show how the reserves raised in the o/n FF market are lent in the cleared o/n GC repo market to help absorb excess collateral in the system.

Both arbitrage and bank HQLA portfolios have their limits, and when those limits are reached flows get kicked further up the hierarchy – to the Fed. The map overleaf shows what happens

Imbalance [3]: Excess Collateral and the o/n Fed Funds Market



Source: Credit Suisse

when dealers' funding needs increase further due to a further increase of collateral supply and bank HQLA portfolios and arbitrage flows cannot absorb additional excess collateral.

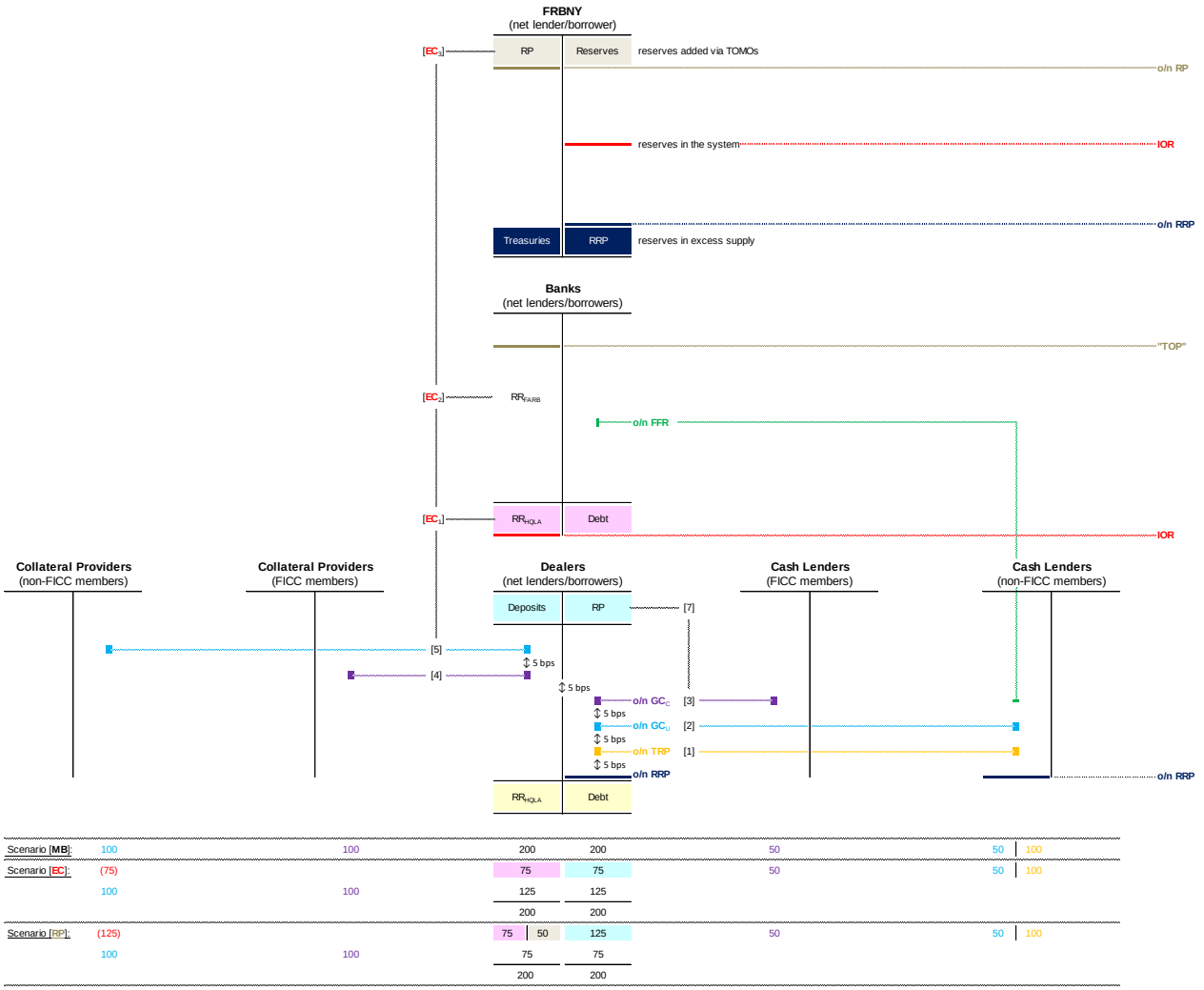
The numbers at the bottom of the map show an additional $50 billion increase in dealers' funding needs, which reduces the funds available for matched books to $75 billion and increases the market's funding gap – and the amount of excess collateral – to $125 billion.

While banks were able to absorb $75 billion of excess collateral before, absorbing the next $50 billion may not be that simple. One reason why banks may struggle to reverse in an additional $50 billion of collateral is because they are at their intraday liquidity limits – whatever reserves they have left they need for regulatory reasons and can't do more repos.

Similarly, given the relative size of the o/n FF and o/n GC markets, an aggressive bid for o/n FF from arbitrageurs may have eliminated the spread between o/n FF and GC rates, closing off an additional channel through which excess collateral was absorbed previously.

As bank HQLA portfolios reach intraday liquidity limits and arbitrage opportunities fade, o/n GC rates start to gap higher until they blow through the top of the Fed's target range and the Fed has to backstop the market with a fixed-price, full-allotment o/n repo facility.

Imbalance [4]: Excess Collateral and an o/n Repo Facility



Source: Credit Suisse

We show these developments by adding a brown shaded area to the Fed's balance sheet and marking the bottom of the shaded area with a thick brown line to indicate that the Fed would only lend through the o/n repo facility if cleared GC rates are above the target (see the black line marked **EC**$_3$ that merges into pipes **EC**$_1$ and **EC**$_2$ on the previous page).

As in the examples above, here too, the repo market clears through two matched books – a $75 billion matched book on dealer balance sheets and a $125 billion "scrapbook" where the right side of the book reflects dealer funding needs due to inventories and the left side of the book is comes partly from bank HQLA portfolios and partly from the Fed (we highlight the left side of the scrapbook with light pink and brown colors, respectively).

We now have a pretty clear understanding of how the repo market clears.

The map on the previous page shows in one place three basic states of the repo market – long cash, balance, short cash – and how the Fed and banks fit into the bigger picture:

(1) how excess reserves in the system are absorbed by the Fed via o/n RRPs

(2) how balanced books, i.e. matched books, circulate reserves through the system

(3) how excess collateral is absorbed by banks and ultimately the Fed via o/n RPs

The map also shows how these three states of the repo market line up versus the Fed's target range for the o/n rates complex and where flows kick in from various entities:

(1) how the o/n RRP rate – to bottom of the range – is a floor to o/n repo rates

(2) how banks don't lend in the repo market unless o/n repo rates trade above IOR

(3) how the o/n RP rate – the top of the range – is a ceiling to o/n repo rates

The map also shows how the Fed serves as a dealer of last resort in the repo market – how the Fed deals with the long cash, balance and short cash states of the repo market:

(1) long cash states correspond to excess reserves which the Fed needs to sterilize using the o/n RRP facility so that o/n rates do not print below the target range

(2) balanced states correspond to o/n rates printing within the Fed's target range – the Fed's "matched book" state where reserves float freely between accounts

(3) short cash states correspond to excess collateral which the Fed has to monetize, – turn into reserves – using the o/n RP facility so o/n rates stay within the band.

Let's next put some numbers behind our framework.

Figure 5 shows the o/n tri-party rate and the cleared GC rate relative to the target band. It shows that since the beginning of 2018, the o/n tri-party repo rate went from trading at the bottom of the target band, to trading near the top of the target band, and from trading below the IOR rate to trading above it. Figure 6 shows the top percentiles of GC trades, which tell a similar story – collateral supply is pushing repo rates outside the target band, with more and more of the lending done at rates above the IOR rate coming from banks.

Figure 7 shows the demand for cash via o/n cleared GC repos – note the lack of trends until 2018, and the sharply rising trend afterwards driven by a series of demand shocks and curve inversions marked by the vertical orange lines that lead to growing dealer inventories and associated funding needs (see here). Figure 8 shows the supply of cash through o/n tri-party repos and through sponsored repos, and the light blue line shows the balance between demand and supply and how the o/n repo market has been drifting from an excess reserves regime pre-2018 to an excess collateral regime post-2018.

If we are right, as collateral supply snowballs between now and year-end the light blue line will drift deep into negative territory and drive stresses in o/n funding markets (see here).

Part III – The Design Menace

Implicit in our discussion of imbalances is another aspect of the repo market's hierarchy which is that dealers' needs always come first, and clients' needs always come second.[2]

In the excess reserves example we saw how primary dealers deploy their own liquidity first; the customer – money funds – came second, and the Fed had to clean up the imbalance – as a dealer of last resort, it had to sterilize excess reserves with the o/n RRP facility.

In the excess collateral example we saw how dealers fund their own inventories first; the customer – carry traders – came second, and the Fed had to clean up the imbalance – as a dealer of last resort, it had to monetize excess collateral with the o/n RP facility.

In both examples, the periphery of the shadow banking system (see here, here and here) comes up short and it falls on the Fed to trade with the periphery to clean up imbalances.

To deal with the problem of excess reserves, the Fed had to open up its balance sheet to counterparties it didn't trade with before – like money funds. Similarly, to deal with the problem of excess collateral, the Fed will have to expand the scope of accounts it trades with further, and open up its balance sheet to all carry traders that are FICC members – that's what the logic of our analysis of imbalances implies and what the market expects.

Remarkably simple and remarkably symmetric…

…but there is a catch!

From Fed's perspective, it's simpler to open up the balance sheet to new counterparties to deal with an excess reserves problem than it is to deal with an excess collateral problem – the supply of excess reserves is finite and their sterilization through an o/n RRP facility doesn't inflate the Fed's balance sheet; in contrast, the supply of excess collateral is infinite and their monetization through an o/n RP facility inflates the Fed's balance sheet…

…potentially without a limit.

Put differently, excess reserves are a byproduct of the Fed's own balance sheet actions and the o/n RRP facility absorbs the byproduct that banks – given leverage constraints – would only bid for at rates below the o/n RRP rate, that is, below the Fed's target range.

The Fed is in control…

…of its balance sheet size and the bottom of the target range, but not its liability mix.

In contrast, excess collateral is a byproduct of fiscal policy and demand for Treasuries and the o/n RP facility absorbs collateral that banks – given intraday liquidity constraints – would only bid for at rates above the o/n RP rate, that is, above the Fed's target range.

The Fed is in control…

…of the top of the target range, but not its balance sheet size.

It's either a control of prices or quantities, but not both – and from the Fed's perspective, it is easier to give up control over its liability mix by opening its balance sheet to money funds than it is to give up control over its balance sheet size by opening up to all FICC members.

Given the Fed's sensitivity to the size of its balance sheet, in an excess collateral regime, the Fed needs to be careful about two aspects of an o/n repo facility – pricing and access.

[2] In crisis times, this hierarchy is turned on its head: customers run from the dealers as their own liquidity comes first, and dealers' needs come second. For real-life examples of these dynamics see Too Big to Fail by Andrew Ross Sorkin.

The pricing aspect of a fixed-price, full-allotment o/n repo facility revolves around a still outstanding question, which is: what is the Fed trying to achieve with a repo facility?

(1) To put bounds on funding market stresses around calendar-turns?

(2) To enforce the top of the target range for the o/n rates complex?

If it is the former, the facility should be priced 50 bps over the top of the target range – that would eliminate painful calendar turns like the one we had on December 31st, 2018, and at the same time let o/n markets deal with more manageable episodes of stress.

If it is the latter, the facility should be priced 25 bps over the o/n RRP rate – that would ensure that o/n rates do not print over the top of the target range, just like the o/n RRP facility ensures that o/n rates do not print below the bottom of the target range.

Figure 9 shows the o/n repo facility priced at 50 bps over the top of the target range and how that pricing strategy would eliminate not all, but only the worst of calendar turns.[3]

Figure 10 shows the o/n repo facility priced at 25 bps over the o/n RRP rate and how that pricing strategy would eliminate all prints above the top of the target band – whether they have to do with calendar turns or imbalances on regular funding days.

Which one should/will the Fed choose?

In our view, the fundamental problem the Fed will soon have to reckon with is that it has an operating framework where the target range for the o/n rates complex is policed only at the bottom, but not at the top. While the Fed has an o/n RRP facility that ensures that rates do not fall below the bottom of the target range, it does not have an o/n repo facility that ensures that rates do not go above the top of the target range, and a facility that's priced to deal with bad calendar turns won't help in policing the top of the target range.

From the Fed's perspective, o/n rates printing outside the target range on average days is worse than o/n rates printing outside the target range on days when the calendar turns – however bad calendar turns may be, they only last a few days, but they do not persist.

In contrast, o/n rates printing outside the target range can persist and if they do persist, the Fed has a problem – it loses control over financial conditions in the ultra front-end.

That leaves pricing the o/n repo facility at the top of the target range – that is, 25 bps over the o/n RRP facility – as the solution, and if its priced there, the question of who the Fed gives access to that facility becomes extremely sensitive and extremely important.[4]

Consider for example the logical conclusion regarding access that flowed from our analysis of how imbalances involving excess collateral should be resolved by the Fed…

…by giving all FICC members of access to the o/n repo facility.

But if the facility is priced at the top of the target range, giving access to FICC members at large is a definite no-go, for it may cost the Fed control over the size of its balance sheet.

Therefore, access must be carefully calibrated.

In the remainder of this section we discuss three design options for an o/n repo facility, with access available to all FICC members, primary dealers only and banks (G-SIBs) only.

[3] Had we had a facility priced at 50 bps over the top in place historically, it would have calmed only two calendar turns.
[4] Maybe the Fed does not view the "what are we solving for" and "how to price an o/n repo facility" questions as a binary choice between managing calendar turns and policing the top of the band, respectively. Maybe the Fed will opt for a facility priced to deal with calendar turns first, and when enforcing the top of the target band becomes an issue they'll cut the pricing of the facility from 50 bps over the top to "top" to deal with enforcing the top of the target band.

The map below shows *Design #1* where FICC members – both outright and sponsored – tap overnight liquidity from the Fed at a price of o/n RRP plus 25 bps through pipe [4], and then lend that liquidity in the tomorrow-next (t/n) FX swap market through pipe [8].

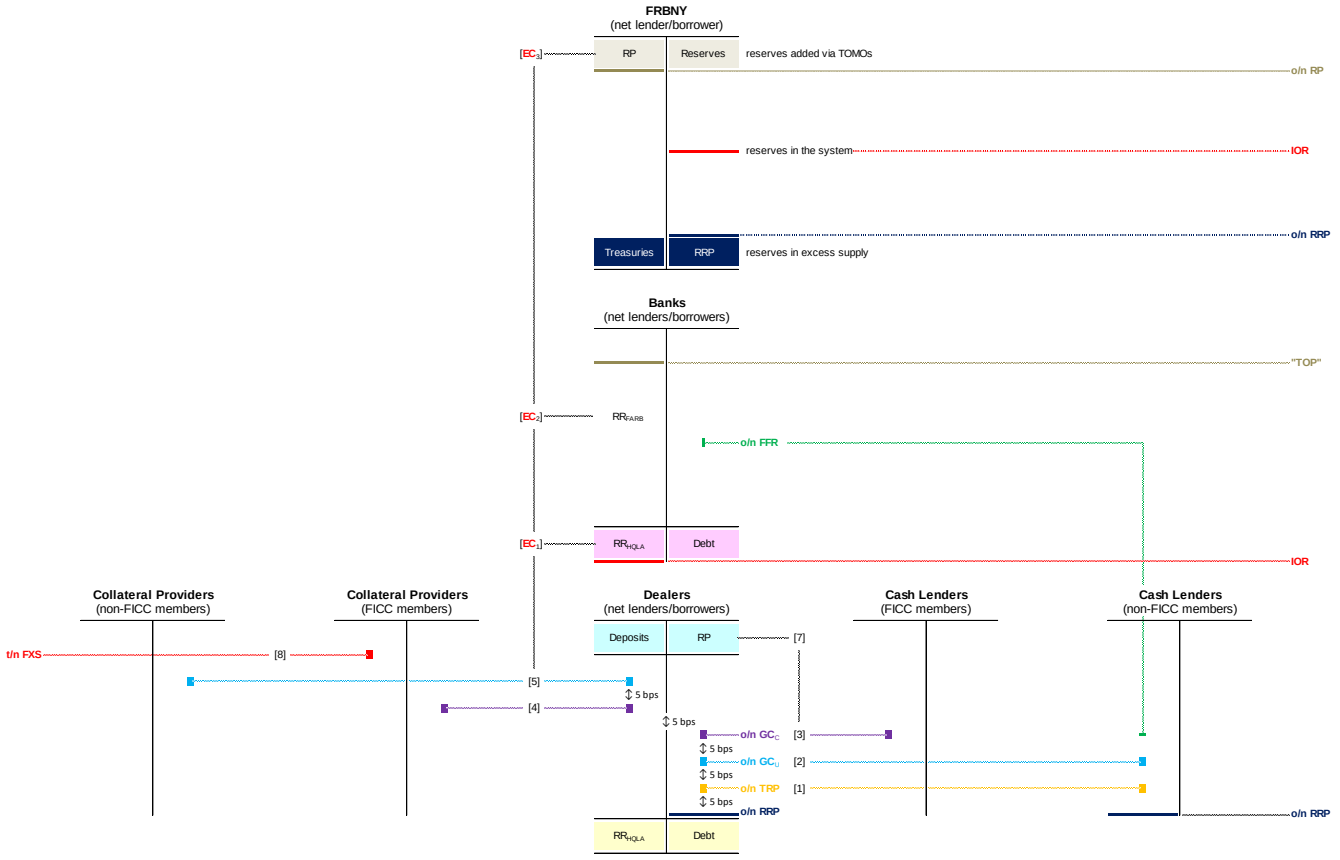
Figures 11 and 12 show implied yields in t/n swaps of dollars for ¥ and €, respectively; the thick brown line shows the price of the o/n repo facility and the charts suggests that sponsored members could borrow from the Fed at the thick brown line and lend at the orange and blue lines to harvest t/n bases that typically trade 50 bps above the brown line.

This scenario is not unlikely, given that sponsored members of FICC already include a dozen hedge funds and hundreds of bond funds at large asset managers (see here), and that these funds have no balance sheet constraints that would hold them back from conducting arbitrage. These accounts would presumably post a lot of collateral at the Fed to raise cash to conduct either riskless arbitrage trades in the FX swap market at best, or riskier trades in other markets where the facility is used as a funding vehicle at worst.

Thus, optically, a fixed-price, full-allotment o/n repo facility accessible to FICC members, has a whiff of moral hazard to it and reminds us of TALF – TALF was actually better, as under TALF borrowers could only do pre-specified trades with the funds they borrowed.

Yet another issue with the Fed lending into FICC at large is that from a legal perspective, it is unlikely that the Fed will be content with being a *pari passu* lender in a clearinghouse – the Fed likes to be super-senior in its dealings, which in the case of lending into FICC would involve subordinating other members of FICC which is a major coordination problem.

Design [1]: Fed Lends into FICC, o/n Repo Facility Priced at the Top of the Target Range



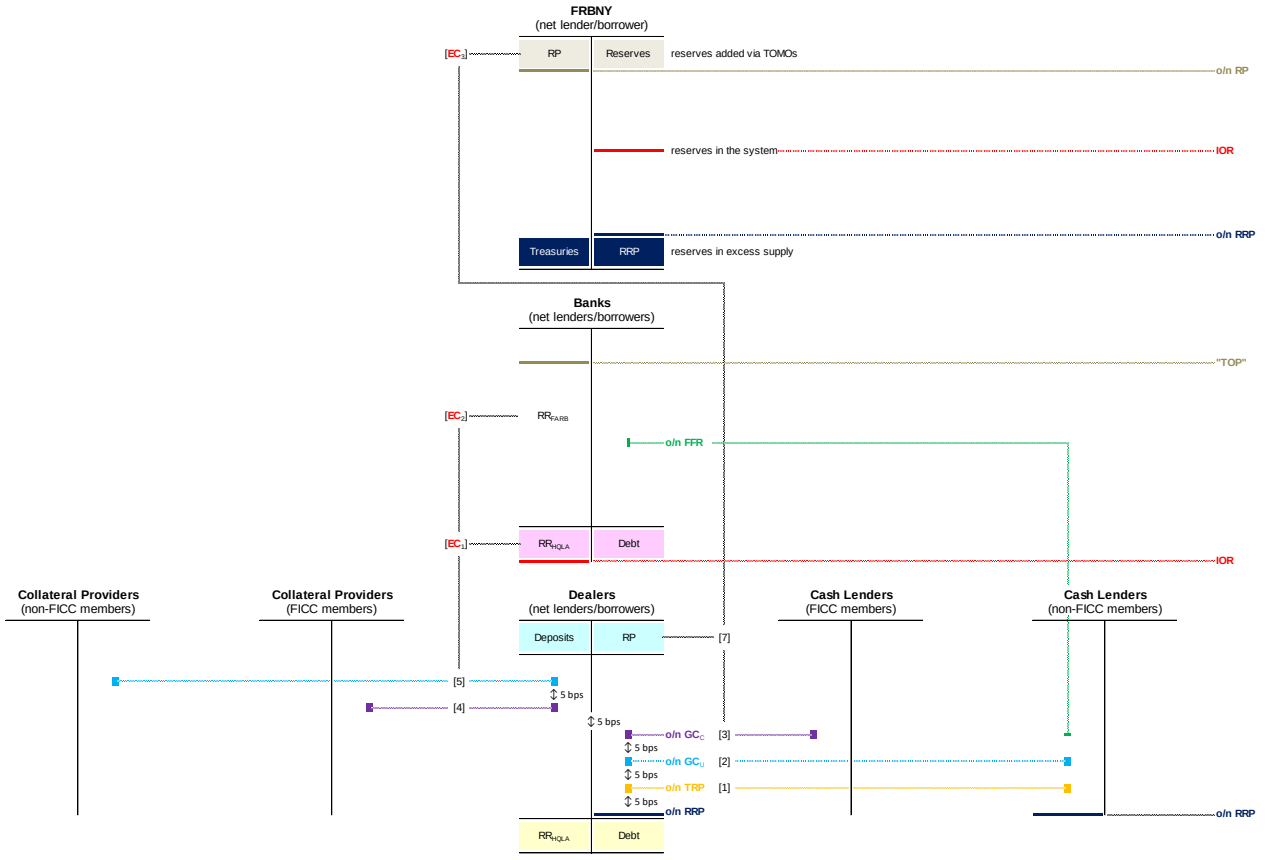
Source: Credit Suisse

If lending into FICC at large is too broad and too risky for the Fed's taste, the Fed could narrow the list of eligible counterparties to primary dealers only as shown on the map below – this is *Design #2.* The Fed is on more familiar ground, as traditionally it has conducted temporary open market operations (TOMOs) with primary dealers and in that sense a fixed-price, full-allotment o/n repo facility for dealers is like a "back to the future" moment.

The principal difference between the map below and the map on the previous page is that the pipe labeled [**EC**$_3$] does not lead into FICC at large, but rather, to a specific subgroup of FICC members – primary dealers. In the context of our discussion of excess collateral, an o/n repo facility would help primary dealers fund their growing Treasury inventories, and ensure that the rate at which dealers fund is never above the top of the target range.

This mechanism would ensure that as primary dealers' own funding needs crowd out matched repo books, the "funding gap" on the offered side of the matched book is filled by the Fed as discussed in Part III. But there is one major problem with this approach, which is that the group of primary dealers is not a homogenous bunch: three of the twenty-four primary dealers aren't subject to Basel III, which means that some dealers represent more counterparty risk for the Fed than others. Furthermore, there are basic issues of "fairness" – why should dealers that are not subject to Basel III but that happen to be primary dealers have access to the facility while dealers that are subject to Basel III that do not happen to be primary dealers do not. Finally, if the Fed chooses to go beyond primary dealers to include all Basel III compliant dealers, is it fair to exclude smaller dealers when the list of primary dealers already includes some that are not Basel III compliant? In a politically charged setting, these questions can't be ignored and are hard to manage.

Design [2]: Fed Lends to Dealers, o/n Repo Facility Priced at the Top of the Target Range



Source: Credit Suisse

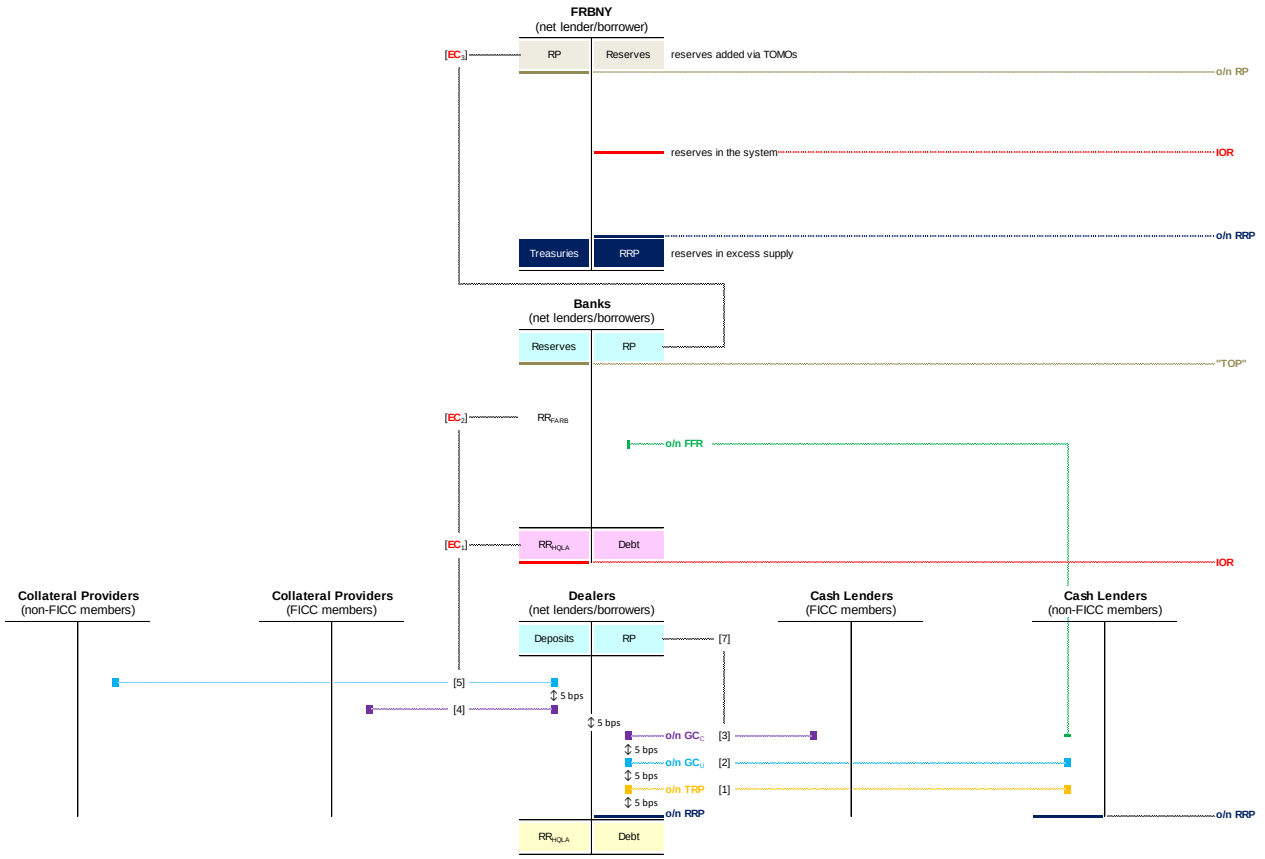
Thus, lending too broadly – into FICC at large – has moral hazard and legal issues, and lending too "clubby" – to primary dealers only – has counterparty risk and fairness issues.

This brings us to *Design #3*, which is to give access to the facility to large banks only.

The map below shows how this approach would work. Thus, the pipe labeled [**EC_3**] goes from the Fed to banks only, and would improve the flow of reserves by effectively freeing banks from their intraday liquidity constraints. Recall that in an excess collateral regime, the first group of entities to step in to absorb imbalances are banks, not the Fed, and that the Fed steps in only when banks reach a point where they can't lend any more reserves and can't reverse in any more collateral. That's typically the point where banks are bound by intraday liquidity constraints. Intraday liquidity constraints exist because the Fed forces banks to hold liquidity in the form of reserves because it is well understood that Treasuries – no matter how liquid in a relative sense – may be hard to monetize during crises. In English, banks cannot hold all their HQLA in the form of bonds, because all the banks won't be able to sell all their bonds at the same time in a stressed market environment; reserves and only reserves can provide round-the-clock liquidity during episodes of stress.

The o/n repo facility could get around that problem. If pitched as a facility that would equalize collateral and reserves, it would change the monetizability assumption of bonds during crisis times so that the Fed would allow large banks trade reserves for collateral, which in turn would allow banks to lend more freely in the repo market and effectively run their reserve balances down to the amount of required reserves, which would free up around $500 billion of reserves that currently cannot float freely in the system (see here).

Design [3]: Fed Lends to Banks, o/n Repo Facility Priced at the Top of the Target Range



Source: Credit Suisse

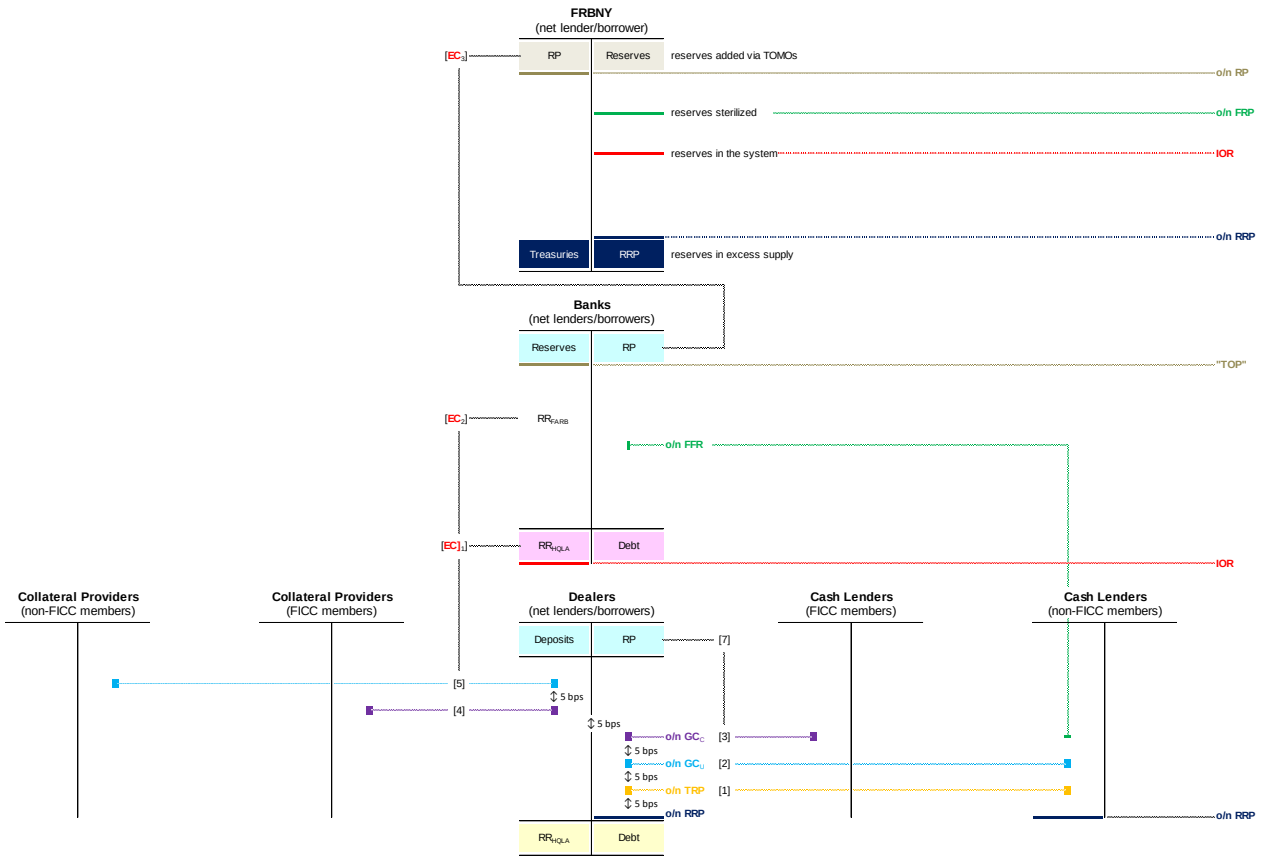
A fixed-price, full-allotment o/n repo facility, priced at the top of the target range, designed for banks only and pitched as a tool to basically equalize collateral and reserves, is the best design option, in our view, one that would also go around the moral hazard, counterparty risk and fairness issues that came up in thinking through the other alternatives.

Given that most reserves in the system are held by G-SIBs and that it's also predominantly G-SIBs that have a pipe into the cleared o/n GC repo market, it would be sufficient for the Fed to open this facility to G-SIBs only. This approach would also be free of any counterparty risk and fairness issues as all G-SIBs are Basel III compliant, and where Basel III doesn't equalize banks from a counterparty risk perspective, G-SIB surcharges do.

Everyone is familiar with the experience of being served bread with butter in a restaurant. Sometimes, the butter that's served is cold and is hard – even impossible – to spread. Sometimes, the butter that's served is just the right temperature and is easy to spread. Treasuries are hard to spread and reserves are easy to spread, and the idea here is to heat up the butter and make it easier to spread – to equalize collateral with reserves. Butter that's served at just the right temperature is the domain of fine dining restaurants, and fine dining is limited to a fortunate few. Similarly, fine dining in collateral markets should also be limited to a fortunate few – to G-SIBs. If the repo market is hierarchical, access to the Fed's fixed-price, full-allotment o/n repo facility should be hierarchical too.

That brings us to the end of our discussion of the repo market and the map below shows the complete hierarchy of the repo market with the Fed sitting atop as the system's dealer of last resort – a state the Fed will finally attain once it launches an o/n repo facility.

Dealer of Last Resort



Source: Credit Suisse

Part IV – Market Impact and Conclusions

In the current edition of Global Money Notes, we discussed all the reasons why designing a standing repo facility is so hard and identified a design that we think would work best, which is a fixed-price, full-allotment o/n repo facility open without stigma to large banks, with the goal of equalizing collateral and reserves – which we call the equalizer bazooka.

The market impact of such a facility would be big, front-end bases would compress a lot; if we get such a facility before year-end, the trade is to receive core cross-currency bases.

The facility would have a "*Draghi-esque*" quality to it…

…as it wouldn't have to be used for it to have an impact and so the Fed's balance sheet wouldn't even increase. The mere existence of the facility would embolden large banks to trade their reserves for repos or Treasuries – redistribution would shift into higher gear.

That's because the aim of the facility is to free up the precautionary reserves banks hold because the monetization of bonds is uncertain during crises. But if an o/n repo facility makes monetization easy and guaranteed, precautionary reserves are no longer needed, and banks won't call on the Fed to monetize bonds right away – unless there is a crisis.

The standing repo facility would thus not inflate the Fed's balance sheet in good times, only in bad times. The standing repo facility would effectively free up banks' idle reserves, and it wouldn't add new reserves to the system off the bat. Here is how it would work…

…banks like J.P. Morgan trade out of reserves and buy Treasuries outright or via repos, which would eliminate the risk of front-end funding pressures we discussed here and here; the reserves formerly held by J.P. Morgan would flow either to the central liquidity desks of asset managers or primary dealers – or more precisely, their respective clearing banks; asset managers and primary dealers would deploy this liquidity either by lending to banks with balance sheet for cross-currency arbitrage trades or do these trades themselves.

Reserves went from sitting idle, satisfying intraday liquidity metrics, to floating more freely; intraday liquidity constraints went from binding to non-binding; and funding markets got more efficient – barring SLR constraints, front-end spreads should compress considerably.

But we don't know if, we don't know when and we don't know how FRBNY will act…

…not to mention a major structural obstacle which is that the green-light for the bazooka is a supervisory decision and not a FRBNY decision and that as recently as February 25th, Vice Chair Quarles still appeared to favor reserves over bonds in bank HQLA portfolios.

The impact of asset purchases ("mini-QEs") would be similar, but less efficient.

Market participants generally perceive repo-based forms of liquidity injection more efficient than those based on asset purchases, so they generally frown when they hear "mini-QEs".

In our view, the Fed should not be thinking about a standing repo facility and "mini-QEs" as either/or options, but as co-existing tools to deal with reserves scarcity in the future.

Open market operations are not rocket science – it's either TOMOs or POMOs.

TOMOs, or temporary open market operations should always be the Fed's first defense – the standing repo facility – and if the usage of TOMOs is too large, too frequent and too disintermediating, it's a sign to do permanent open market operations, or POMOs, instead. The signal coming from banks' uptake of a standing repo facility will always speak louder and more accurately than a million surveys trying to gauge banks' need for reserves.

Plumbing is primitive…

…and the last thing the Fed should do is to turn it into a survey-based pseudo-science.

Appendix – Sponsored Repo and the Hierarchy

Part I of our analysis has sown that the cleared o/n GC rate is a "special" repo rate – it's special from the perspective of cash lenders, as it's the highest rate one can earn; it's special from the perspective of cash borrowers, as it's the lowest rate one can pay; and it's special from the perspective of dealers as cleared trades don't use balance sheet, which makes the spread between the bid and offered side of the market "free" money.

Think of cleared repo as the "sun" of the repo universe – a rate around which everything else revolves. We can express lending rates as a spread to the bid side of the market, borrowing rates as a spread to the offered side of the market, and the spread between the bid and offered sides of the market as the value that dealers place on intraday liquidity.

Every ecosystem is subject to evolution and the repo market is no different.

Sponsored repo is the most significant development to impact the repo market since the introduction of Basel III, for sponsored repo flattens the hierarchy of the o/n repo market.

The map below shows how.

Sponsored repo allows "*well capitalized bank members*" of FICC to sponsor cash lenders and cash borrowers to become sponsored members of FICC. In English, this means that money funds and hedge funds that until now could only lend at the o/n tri-party rate and the uncleared o/n GC rate can now lend at the higher cleared o/n GC rate, and that hedge funds that until now could only borrow at the uncleared o/n GC rate can now borrow at the lower cleared o/n GC rate. The net effect of sponsored repo is that the o/n repo complex trades at tighter spreads to the center of the universe – that is, sponsored lenders and borrowers are emancipated as they get to trade at "screen levels".

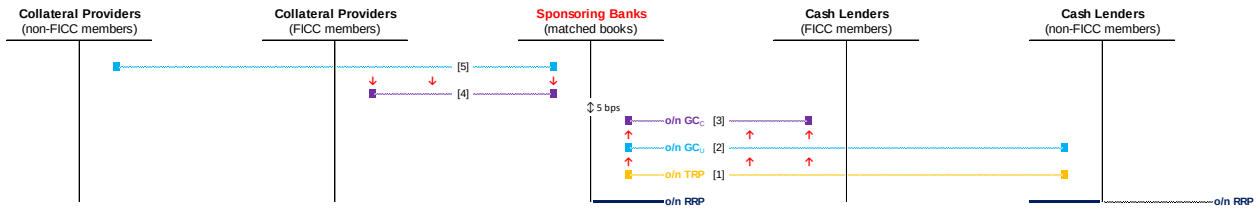
Naturally, dealers loathe emancipation and a flatter hierarchy as those erode their livelihood – the spreads discussed in the prior section. The growth of sponsored repo to date has been driven by entities that are not dealers, but banks – and three banks in particular: The Bank of New York Mellon, State Street Bank and J.P. Morgan Chase Bank, N.A..

Sponsored repo revolves around the idea of matched books as the idea for these banks – subject to high leverage ratios and daily balance sheet reporting – is to intermediate in the repo market in a way that does not use their balance sheet, which is only possible if they intermediate between "outright" or sponsored members of the FICC (see here).

Hundreds of bond funds of large asset managers, just over a dozen hedge funds and two dozen money funds are already sponsored members of FICC. Money funds currently lend about $200 billion in the sponsored repo market, and according to a recent article, hedge funds and the bond funds of large asset managers lend an additional $50 billion.

Because sponsored repo only works in a matched book context, it offers no help in dealing with imbalances in the repo market. Prices always gap because of imbalances, and imbalances are dealt with by banks and the Fed higher up in the system's hierarchy.

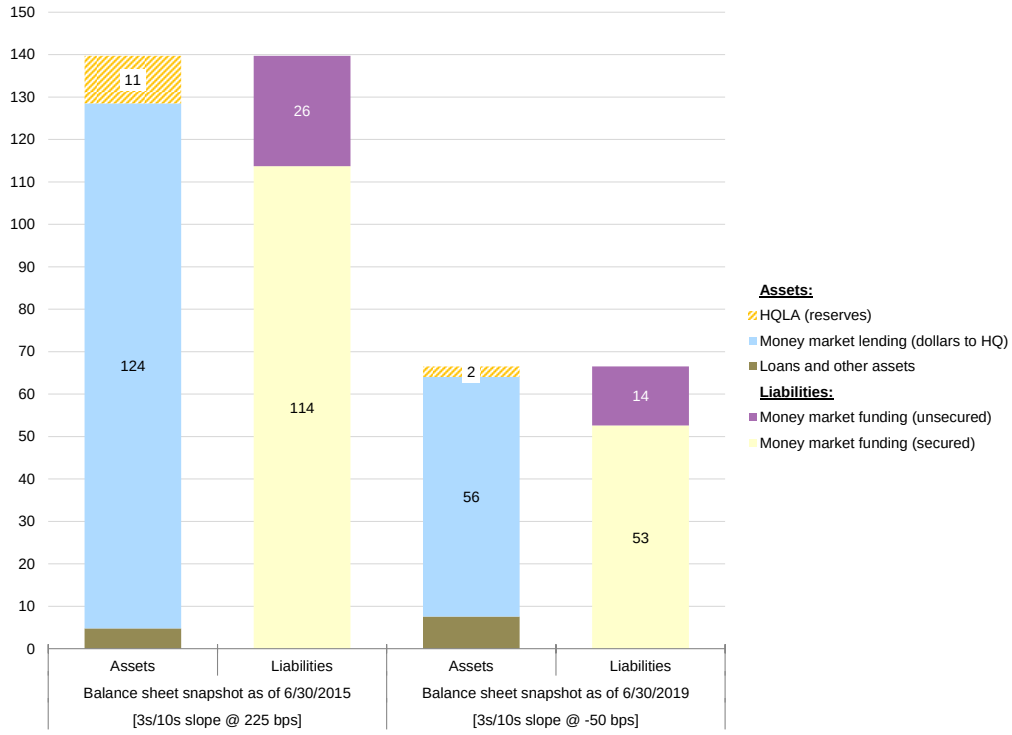
Sponsored Repo Compresses Spreads



Source: Credit Suisse

Figure 1: The Norinchukin Bank's Repo Needs

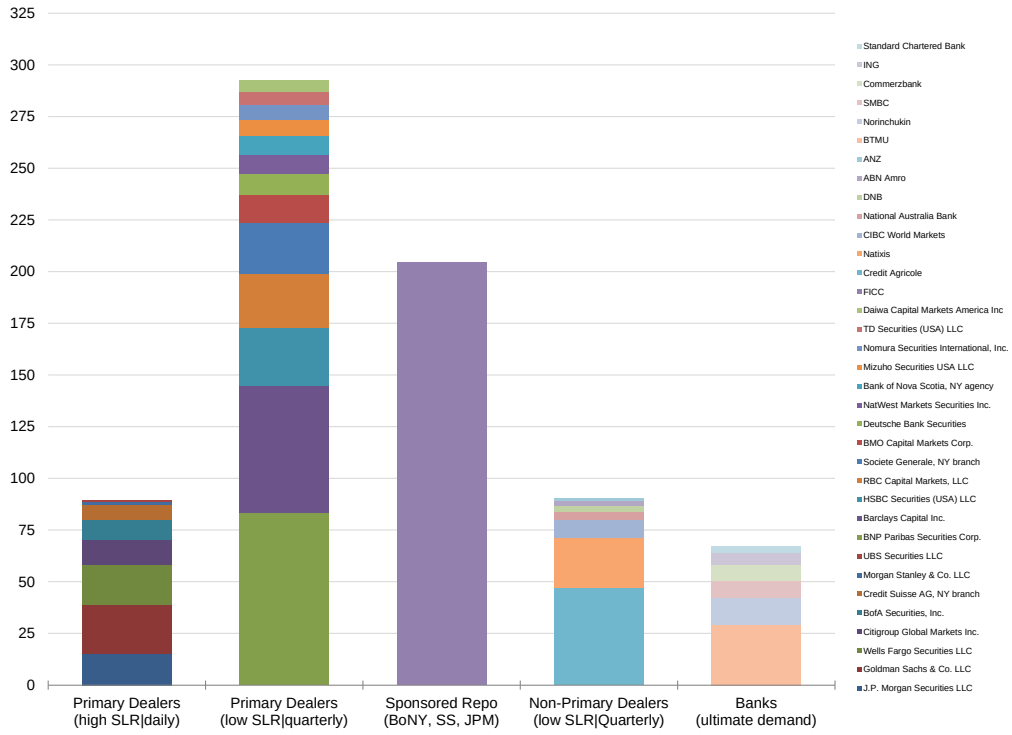
$ billions



Source: the BLOOMBERG PROFESSIONAL™ service, call reports, Credit Suisse

Figure 2: Demand for o/n Tri-Party Repos

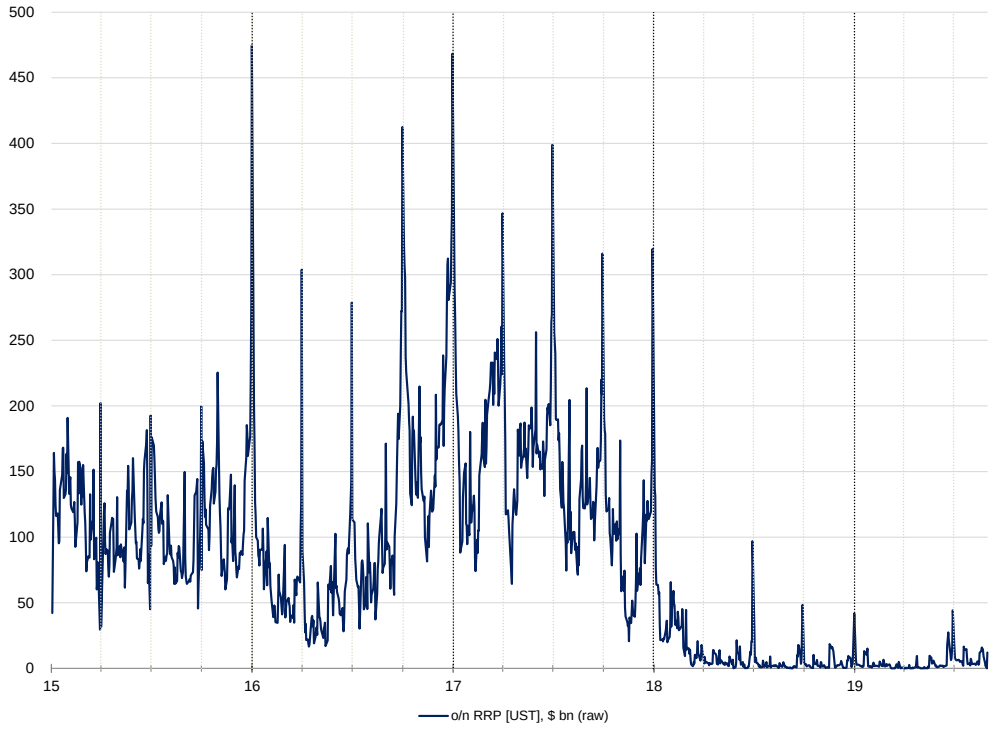
$ billions as of July 31st, 2019; we adjusted J.P. Morgan's numbers down to its pre-inversion trend to exclude inventory-related funding needs (see here).



Source: Office of Financial Research, Credit Suisse

Figure 3: The Era of Excess Reserves is Over

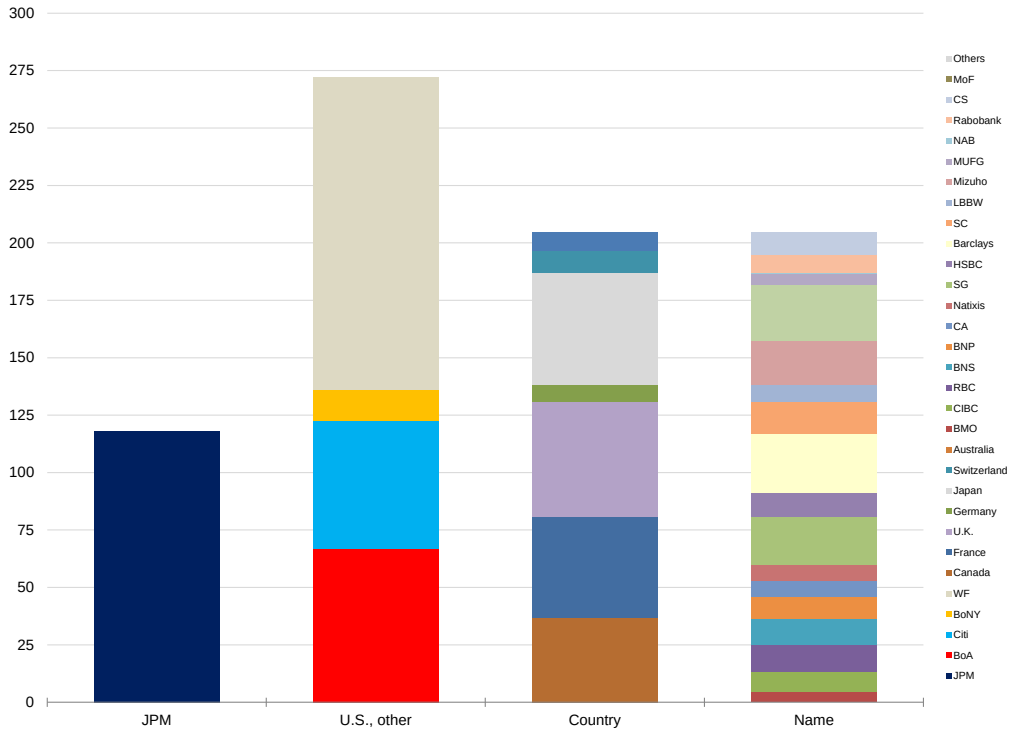
$ billions



Source: FRBNY, Credit Suisse

Figure 4: Reserves at Banks with a Direct Pipe into the o/n GC Repo Market

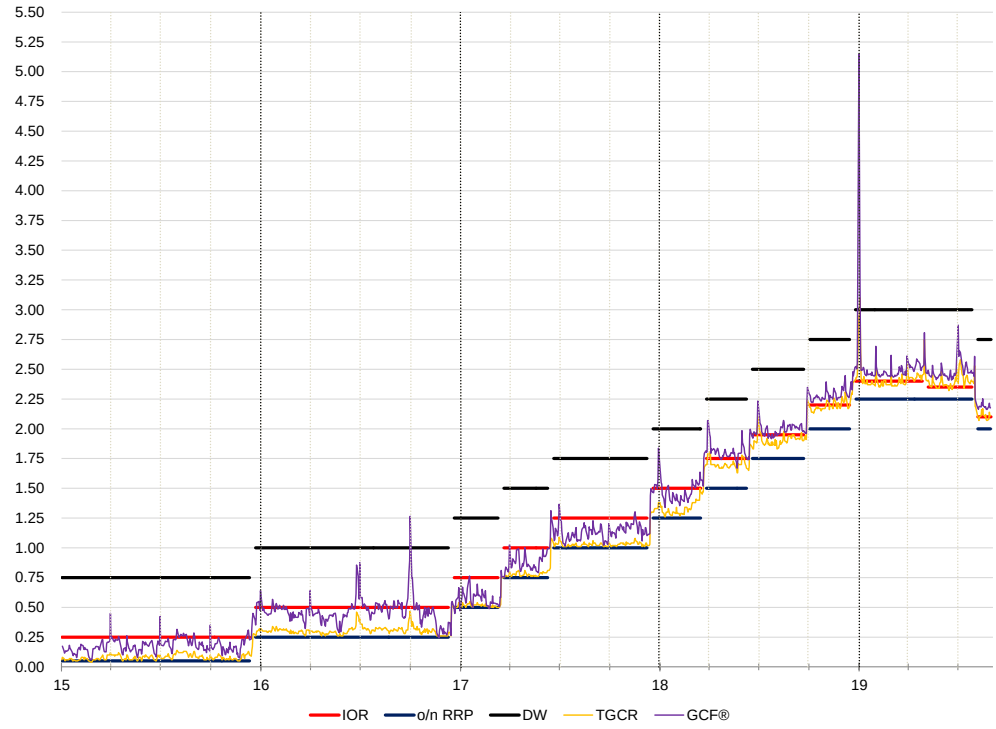
$ billions, as of June 30th, 2019



Source: Call reports, Credit Suisse

Figure 5: Repo Rates Relative to the Target Band [1]

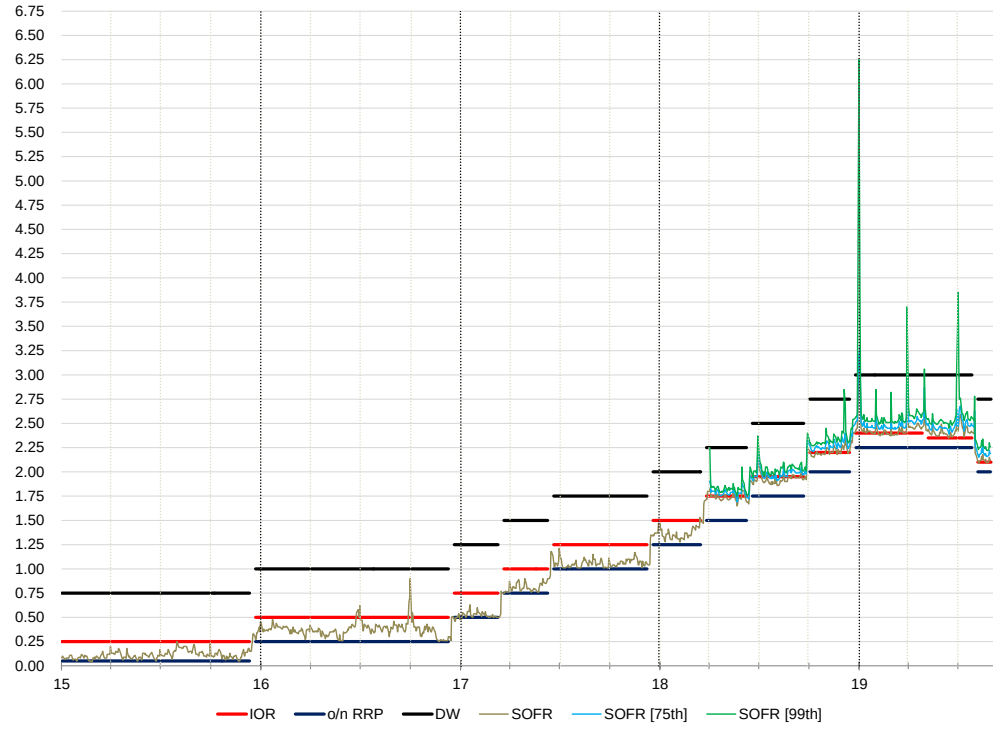
percent



Source: the BLOOMBERG PROFESSIONAL™ service, Credit Suisse

Figure 6: Repo Rates Relative to the Target Band [2]

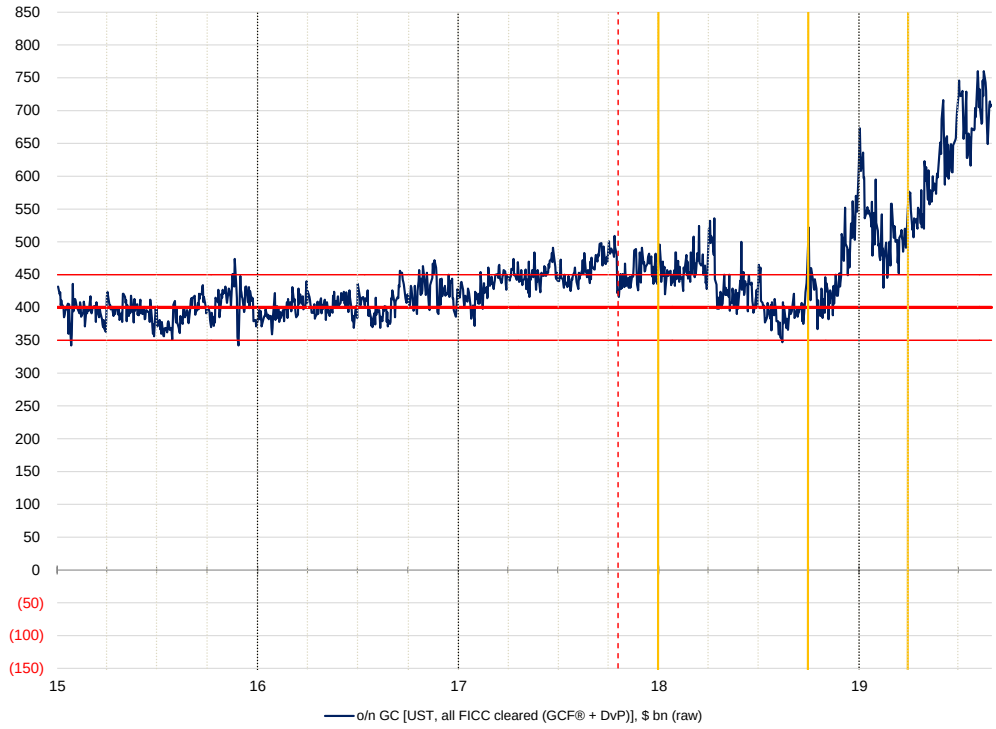
percent



Source: the BLOOMBERG PROFESSIONAL™ service, Credit Suisse

Figure 7: Growing Dealer Inventories of Treasuries Drive Demand for o/n GC Repos

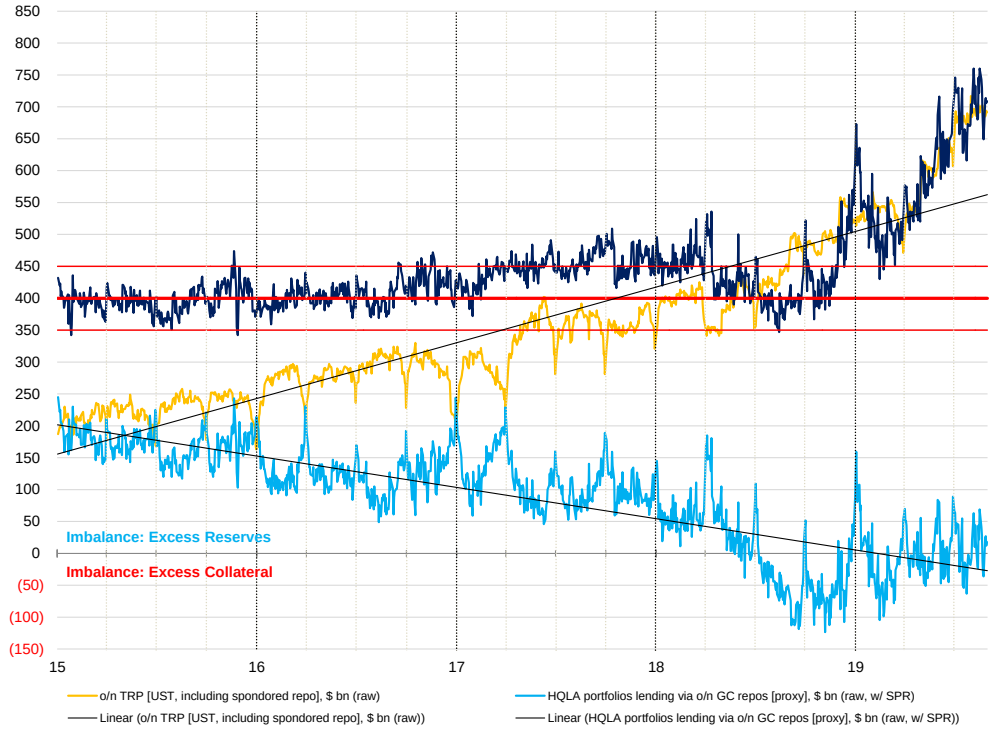
$ billions, red dashed line notes the start of taper and the orange lines mark corporate tax reform, the FX-hedged curve inversion and the "3s/10s" inversion



Source: FRBNY, Credit Suisse

Figure 8: The Journey from an Excess Reserves to an Excess Collateral Regime

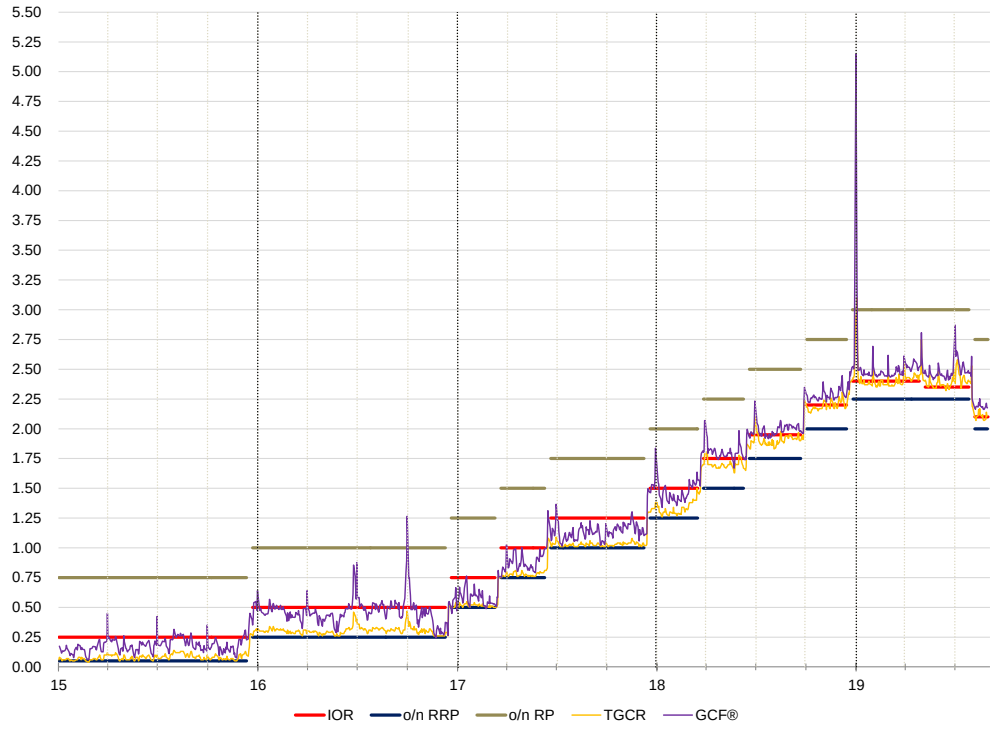
$ billions



Source: FRBNY, Credit Suisse

Figure 9: An o/n RP Facility Priced to Deal with Calendar Turns

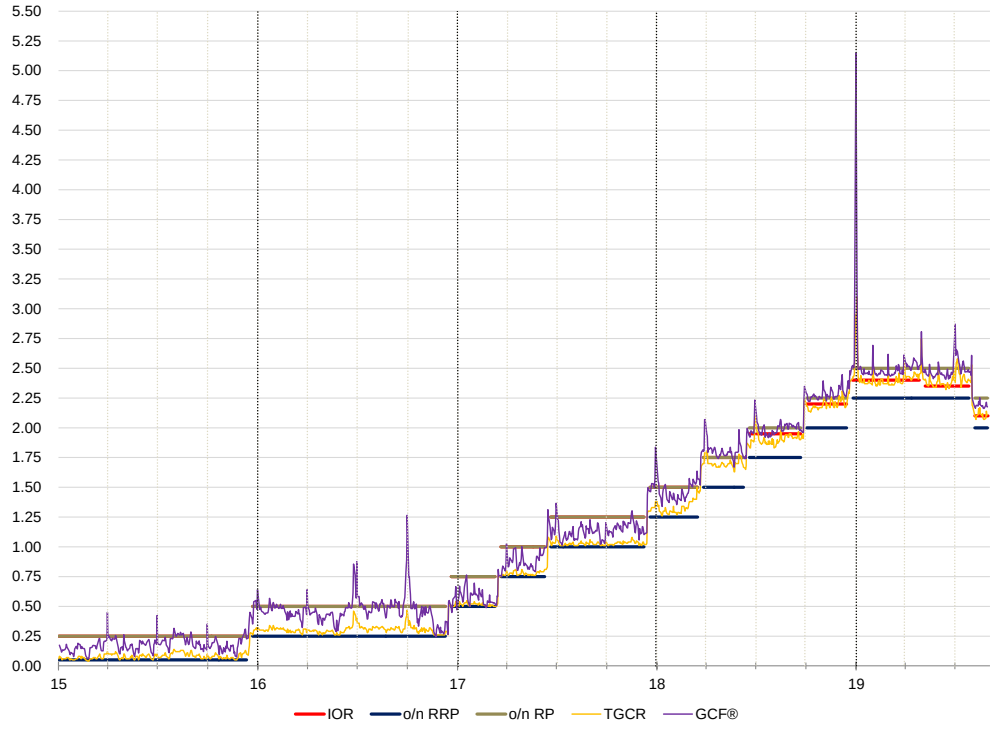
percent



Source: the BLOOMBERG PROFESSIONAL™ service, Credit Suisse

Figure 10: An o/n RP Facility Priced to Police the Top of the Band

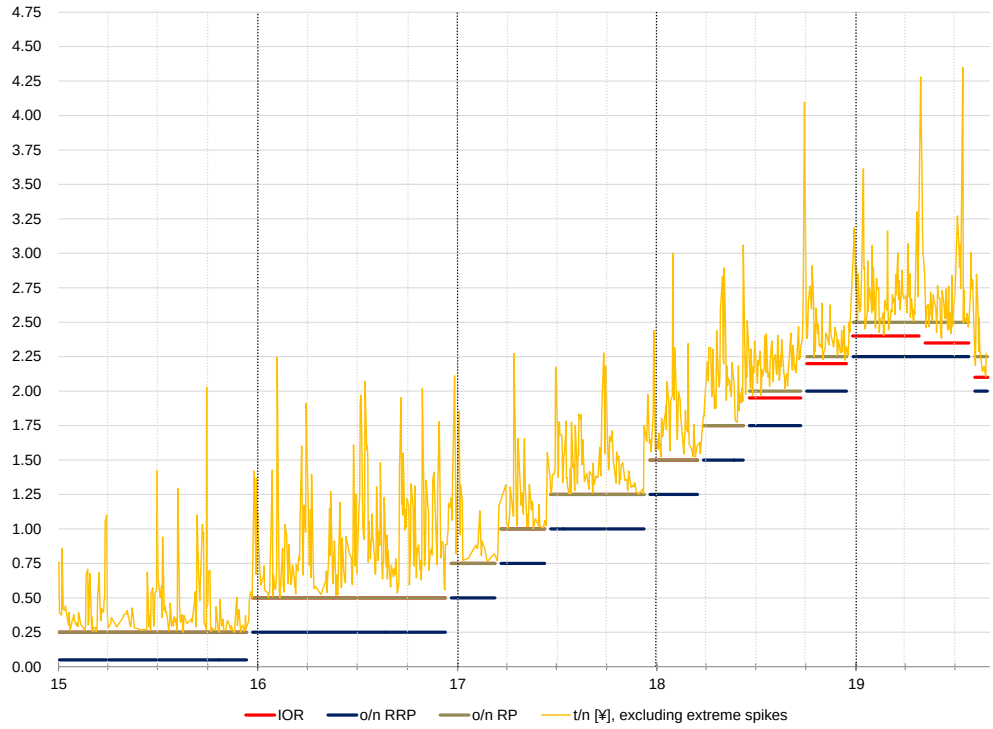
percent



Source: the BLOOMBERG PROFESSIONAL™ service, Credit Suisse

Figure 11: Using the o/n RP Facility to Arbitrage the $/¥ Basis

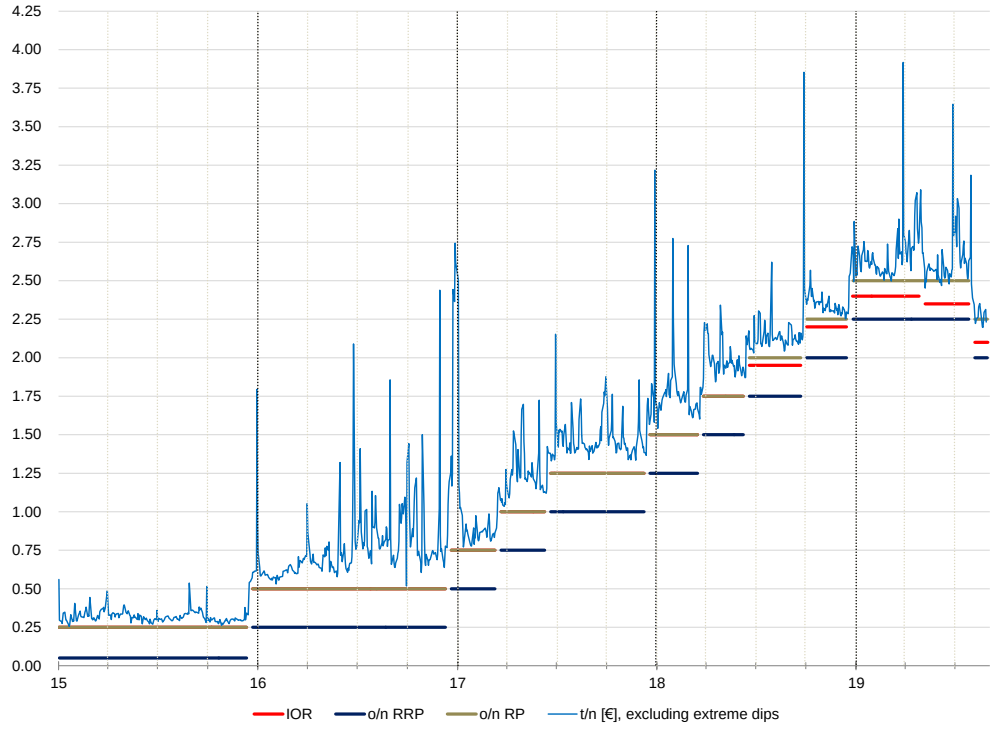
percent



Source: the BLOOMBERG PROFESSIONAL™ service, Credit Suisse

Figure 12: Using the o/n RP Facility to Arbitrage the €/$ Basis

percent



Source: the BLOOMBERG PROFESSIONAL™ service, Credit Suisse

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