11 June 2020
Investment Solutions & Products
Global

CREDIT SUISSE

Credit Suisse Economics

Global Money Notes #31

U.S. Dollar Libor and Swap Line Rollovers

CONTRIBUTOR

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

The market's concerns over the upcoming swap line maturities are overdone: in our view, the maturities this month will pass without any major market impact.

The current state of dollar funding markets reminds us of a bathtub full of toys, with the faucet still running and the drain at the bottom open: there is some drama developing at the bottom, as a whirlpool coming out of nowhere starts to suck some little toys in – balances in the Treasury general account (TGA) reach a record $1.5 trillion and the o/n fed funds rate ticks up a massive basis point.

The water level in the tub – the total amount of reserves in the banking system – begins to fall. But then the use of the o/n repo facility suddenly begins to rise – the faucet is being turned up on demand, and that's a good thing. In this context, we don't understand why the market is worried about the use of the repo facility: you got the standing facility you were asking for, so just use it and don't worry; and you got something even cooler – a standing dollar swap line at a low rate. With these facilities, bill supply, rising TGA balances and swap line rollovers don't matter: if the water level drops, the faucet will be turned up – on demand.

Regarding swap line rollovers we'd make two observations.

First, if the foreign banks that took dollars through the swap lines in late March still need those dollars, they will likely roll them with the Fed as the swap lines are still cheaper than the FX swap market at the three-month point. The fact that the CD market trades cheaper than the swap lines doesn't mean too much, as chunky funding needs typically get done via FX swaps, not in the CD market.

Second, if the foreign banks that took dollars through the swap lines in late March no longer need those dollars, their payback will mean less lending of dollars by banks in the ultra-short segments of the FX swap market, where dealers borrow to provide FX hedges to institutional investors in Japan and Europe. But if that will happen, dealers will simply shift their funding from banks to the Fed.

What goes up, must come down, and with the Fed's standing liquidity facilities, what drains from the tub, will surely flow back in – at a fixed price, on demand.

Because the dollars taken via the swap lines are "broadcast" by central banks through cross-currency repos, the swap lines make foreign sovereign bonds and U.S. dollars fungible. BTPs are the biggest beneficiaries of this fungibility.

Starting this week, some of the three-month U.S. dollar loans that foreign banks borrowed from the Fed's dollar swap lines during the last two weeks of March will begin to mature. By the end of June, over $350 billion of these loans will have matured. FX swaps with the BoJ and the ECB account for the bulk of these maturities at $175 billion and $140 billion, respectively, and smaller central banks account for the remainder (see Figures 1 and 2).

The market is concerned about the following:

given that it's now "cheaper" to tap the unsecured funding market and the FX swap market than to tap the Fed's swap lines, will U.S. dollar Libor-OIS and FRA-OIS spreads widen as banks shift their funding from the Fed back to the market, and if yes, by how much?

Before getting into the details, we'd make two high level observations.

First, no one really knows whether the dollars that were borrowed via the swap lines during the last two weeks of March reflected precautionary demand by foreign banks – precautionary referring to a "deer in the headlights" moment for many bank treasurers.

Recall the market environment back then (see here): prime money market funds have lost $150 billion in assets in the span of two weeks; unsecured funding markets were shut; and to fund their outflows, prime funds were asking banks to buy back their own funding.

In such an environment, banks' precautionary demand for dollars is presumably soaring, and the bulk of the $350 billion borrowed via the swap lines the last two weeks of March most likely reflects that. But conditions in funding markets have normalized since then, which means that the reserves borrowed through the swap lines then are less needed now.

So the use of the swap lines may fall when the first wave of loans start to mature, potentially by as much as $350 billion – the full amount of maturities – by the end of June.

A decline that big is not unrealistic, given the recent experience with other Fed facilities: for example, the combined use of the repo facility, the discount window, the PDCF and the MMLF declined from their recent peak by close to $300 billion, as banks' and dealers' need to borrow temporary reserves fell as the Fed added permanent reserves through QE.

Second, whether foreign banks' demand for dollars was mostly precautionary or not, once the Fed's swap lines were drawn, reserves were added to the financial system. Banks didn't just let those reserves sit at the Fed, but have been diligently deploying them in the ultra-short segment of the FX swap market – at the tom-next and one-week points.

The borrowers on the flipside of these trades were primary dealers that used this funding to lend at longer-dated points in the FX swap market – typically at the three-month point – to meet the hedging needs of insurers and pension funds in Japan and northern Europe.

Thus, from our perspective, the real question isn't how banks will refinance their maturing swap line loans as they may not, but how dealers will refinance their FX swap books as banks lend less at the ultra-short end as they pay back their swap line loans to the Fed.

Our concern is the same as the market's…

…what will swap line maturities do to term funding? But we don't see a big direct impact from banks swapping public term funding for private term funding, nor an indirect impact from changes at the ultra-front end of the FX swap market rippling out to term segments.

We explore the difference between the two perspectives in three steps: first, we explain the "plumbing" of tapping the swap lines; second, we gauge the price of tapping the lines and then review how market prices drove the quantities borrowed through the swap lines; finally, we conclude that BTPs are the big winner of the current regime of "war finance" and the o/n repo facility will ensure that swap line maturities won't cause funding stresses.

Plumbing. Prices. Quantities. Let's begin…

Part I – Plumbing

Relative to the plumbing behind plain-vanilla FX swap transactions, the plumbing behind tapping the Fed's swap lines are complex. The steps involved in FX swap transactions are:

sell U.S. dollars for foreign currency spot today, take your foreign currency and reinvest it in a central bank deposit, repo or bills for say three months, and sell the future value of your foreign currency investment at today's three-month forward exchange rate, also today.

From a bank's balance sheet perspective, the FX swap transaction is just an asset swap where the bank simply swaps a deposit at the Fed for a deposit at a foreign central bank.

While the central bank deposit swap does not change the bank's balance sheet size, there is a 40 bps notional balance sheet add-on on the FX forward leg of the transaction (technically it's called "PFE" or potential future exposure). However, this notional add-on is so very small that we can consider the balance sheet impact of FX forwards *de minimis*.[1]

Once the trade is done, no margining is involved over the life of the FX swap.

Tapping the Fed's dollar swap lines through a foreign central bank is a bit more complex, and involves up to four steps ("up to" because not every bank has to take all four steps):[2]

(1) Raise foreign currency funding (in an amount equal to the dollars you need)

(2) Raise foreign currency collateral (with the cash you just raised above)

(3) Fund the haircut (the "ticket" to tap dollar auctions at your local central bank)

(4) Raise dollars at OIS + 25 bps

Using foreign currency bonds to get dollars means that banks tap the swap lines through cross-currency repos, not through FX swaps, as assumed by many. More precisely, the FX swap is between the Fed and foreign central banks, but foreign central banks "broadcast" the dollars they get from the Fed to local banks through cross-currency repos.

Unlike plain-vanilla FX swaps, there is also a margining aspect to cross-currency repos.

For example, if the spot FX value of the foreign currency collateral that's backing the dollar loans falls by 10% due to a spot FX move, a bank would have to post 10% more collateral to the central bank so that it's not in technical default on its cross-currency repo.

The costs involved in sourcing this additional collateral would have to be included in the all-in cost of tapping the swap lines, but because this component is unknown today – it depends of future FX moves – banks ignore it when gauging the cost of tapping the lines.

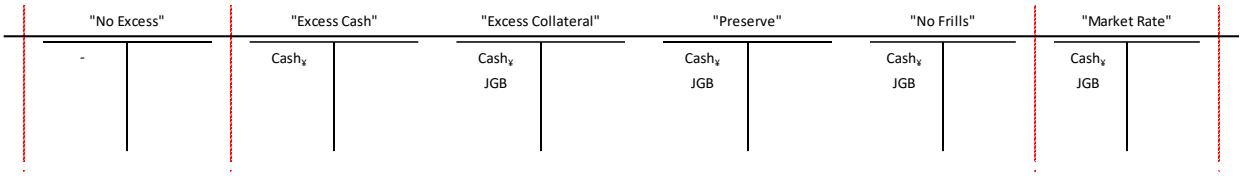
Let's now get into some specifics.

Paraphrasing Tolstoy, "every bank liquidity portfolio is liquid, but liquidity is a spectrum and every bank taps the swap lines in its own way". We noted a few paragraphs above that tapping the swap lines can involve up to for steps, but depending on each foreign bank's own "social" circumstance, tapping the swap lines can involve fewer steps. In some cases, tapping the swap lines involves only one step. In turn, the number of steps a bank has to take to tap the swap lines is important because it determines the cost of the swap lines.

We next turn to a review of the factors that determine how many steps a foreign bank has to take to tap the swap lines and then review the balance sheet impact of taking these steps.

[1] The 40 bps add-on means that on a $100 million FX forward trade, a bank would book a $400,000 notional add-on.
[2] We will explain overleaf the factors that determine the number of steps that a bank has to take to tap the swap lines.

Tolstoy and Liquidity



Source: Credit Suisse

The exhibit above shows six positions that a bank – let's assume a Japanese bank – can start from when trying to raise U.S. dollars. Going from left to right, the positions are:

(1) "No Excess": this case refers to a bank that doesn't have reserves at the BoJ in excess of its intraday liquidity needs or Japanese government bonds (JGBs) in excess of its LCR needs, so it will have to go through the first three steps to tap the swap lines, i.e. raise yen cash, raise JGBs and fund the haircut. Because megabanks are more than compliant on their intraday liquidity needs and LCRs, this example likely represents the situation of regional and Shinkin banks in Japan.

(2) "Excess Cash": this is a bank that has lots of excess yen reserves at the BoJ but no JGBs, so the only step it will have to take to raise the target dollar amount is raise enough JGBs to cover the target amount and the haircut to tap the BoJ. Here we would invoke James Sweeney and Manmohan Singh's notion that collateral is king, as sometimes you can only do things with collateral, not cash – in this case, you need JGBs to tap the lines, not reserves (see here and here).[3]

(3) "Excess Collateral": this is a bank that has both excess yen reserves and JGBs, so it will have to raise only a bit of collateral to cover the haircut to tap the BoJ.

(4) "Preserve": this is a bank whose treasurer prefers not to touch the structure of the bank's liquidity portfolio – it doesn't want to spend reserves or encumber JGBs – so it will borrow the JGBs for a small fee in the unsecured collateral market where regional banks lend to megabanks (there is no government involvement). Like in the previous two cases, the bank will take only two steps to tap swap lines: borrow JGBs to cover the target dollar amount and the haircut to tap the BoJ – but in contrast to the previous two cases, the bank's reserve balances at the BoJ and the encumbrance of its JGB portfolio didn't change. HQLA was preserved.

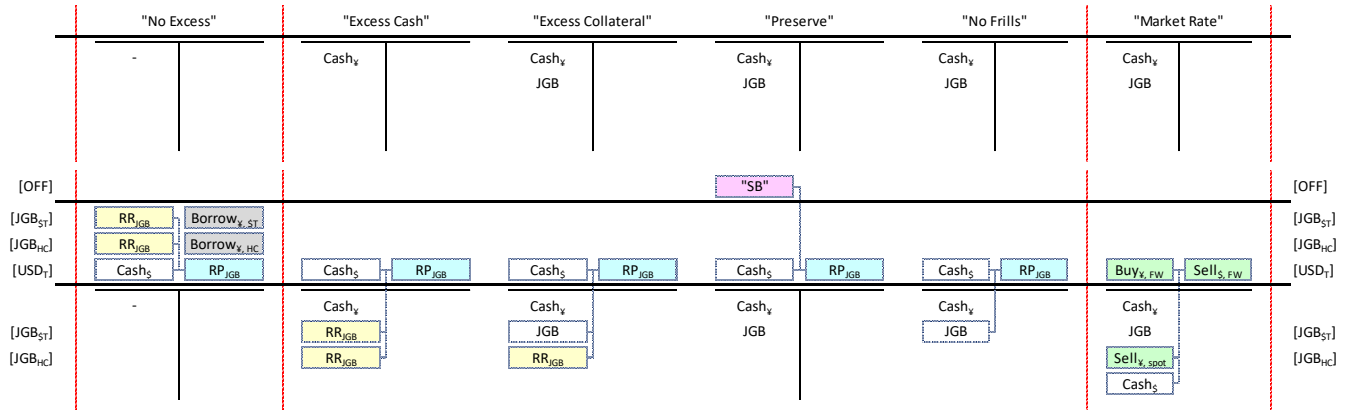
(5) "No Frills": this is a bank that's extremely flush with JGBs and is not subject to the LCR or other metrics – and so it is more flexible with its liquidity portfolio – and the only thing it will have to do to tap the swap lines via the BoJ is to pledge the JGBs it already has. There won't be additional costs like above in tapping the swap lines – only the Fed's "advertised" rate of OIS+25 bps, clean and simple.

(6) "Market Rate": this is a cash rich bank with lots of excess yen reserves at the BoJ that considers swapping its excess yen for dollars in the private FX swap market.

The exhibit overleaf expands on the above exhibit and plots the actual steps involved in tapping the swap lines in the first five cases and the market in the sixth. These steps are:

[3] To which we would answer that for a bank, collateral is superior to reserves only in circumstances where you need to tap central banks (central banks lend only collateralized), but in normal circumstances, reserves beat collateral, because when the FX swap market is functioning well, you need reserves at a central bank or, if you are a non-bank, positive balances in a bank deposit to do swaps, not collateral. Our point is that reserves and collateral are both key, but their relative importance shifts around depending on circumstances and depending on one's place in the hierarchy.

The Steps Involved in Tapping the Swap Lines



Source: Credit Suisse

(1) "No Excess": raise yen cash in unsecured markets in an amount equal to the U.S. dollars you need (Borrow$_{¥, \$T}$ in grey color), and then raise collateral by lending the yen cash in the GC repo market (RR$_{JGB}$ in cream color); repeat the same steps to fund the haircut needed to tap the swap lines through the BoJ (JGB$_{HC}$ in white color); take all the collateral you raised above (RR$_{JGB}$ in cream color), and pledge them to the BoJ (RP$_{JGB}$ in blue color) to tap the swap lines for dollars (Cash$_{\$}$ in white color) to cover your target dollar amount (USD$_T$ in white as well).

(2) "Excess Cash": unlike the previous example, which involved all four steps, this example involves only three steps. The bank already has the yen so it doesn't need to raise yen cash, only the collateral to cover the target dollar amount and the haircut to tap the dollar swap lines through the BoJ (RR$_{JGB}$ in cream color and JGB$_{\$T}$ and JGB$_{HC}$ on the left-hand sidebar, respectively). The bank then takes all the collateral it raised in the above two steps and pledges it at the BoJ like before.

(3) "Excess Collateral": unlike the prior example, which involved three steps, this example involves only two steps. Raise JGB collateral to fund the haircut to tap the swap lines through the BoJ (RR$_{JGB}$ in cream color), and pledge that collateral and some pre-existing collateral to the BoJ to get the target dollars (JGB$_{HC}$ and JGB$_{\$T}$ on the left-hand sidebar and Cash$_{\$}$ and USD$_T$, respectively).

(4) "Preserve": like in the previous example, this example too involves only two steps. Borrow the JGBs from a regional bank for a fee in a "repo-style" transaction in an amount that covers the target dollars one needs and the haircut needed to access the swap lines through the BoJ ("SB" in pink color), and next pledge the borrowed collateral at the BoJ to get the target amount of dollars you need.

(5) "No Frills": unlike any of the previous examples, there is only one step here – take some excess JGBs and pledge it at the BoJ and get the dollars you need.

(6) "Market": unlike any of the previous examples, this example does not involve tapping the swap lines. It's a market-based FX swap transaction involving the spot purchase and simultaneous forward sale of U.S. dollars as discussed above.

These examples show that the first option is the most balance sheet intensive for banks, adding three new balance sheet layers and the others add only one balance sheet layer.[4]

[4] The low-balance sheet intensity of cases two to five can change as yen reserves are spent and JGBs are encumbered.

Part II – Prices and Quantities

Let's next populate our balance sheets with prices.

The exhibits below and overleaf show the all-in cost of tapping the Fed's dollar swap lines through the BoJ and the ECB, respectively, for each of the five cases discussed above, alongside the sixth case which was tapping the FX swap market through a vanilla FX swap.

We used the following assumptions to populate the balance sheets:

(1) For both the BoJ and the ECB we assume that banks raise unsecured funding at the three-month OIS rate and raise collateral through three-month GC repos.

(2) For the BoJ we assume an average haircut on JGBs of 2% (see here).

(3) For the ECB we assume that the European government bonds that most banks pledge as collateral are OATs, and assume an average haircut of 3% (see here).

(4) For the BoJ we assume that banks pay 25 bps to borrow JGBs uncollateralized, and for the ECB we assume that banks pay 40 bps to get OATs uncollateralized.

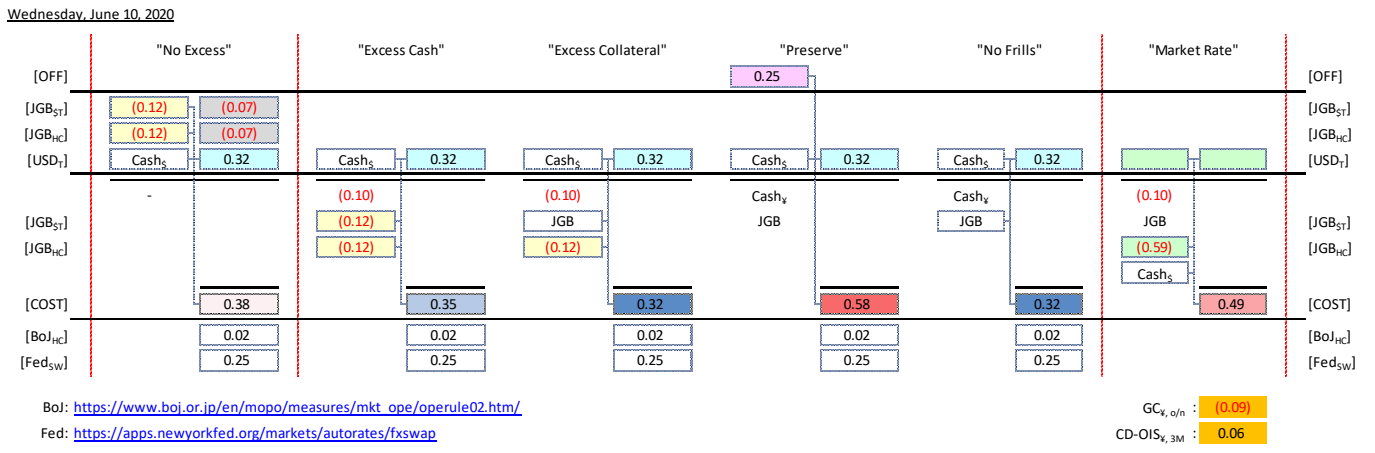
We think these assumptions are realistic, but if the reader would like to make adjustments on the margin, the orange cells in the bottom right-hand corner provide the needed inputs:

a backward looking average of o/n GC repo rates to switch term repo rates for o/n rates, if the reader wants to assume daily posting of collateral to central banks instead of term; and a CD spread over OIS to switch from raising cash at OIS flat to OIS plus a CD spread.[5]

None of these adjustment factors are big enough to change the conclusions emerging…

Plugging live market prices into our balance sheets show that in the case of Japan, collateral rich banks sitting on piles of JGBs are in the best position to tap the swap lines, paying only 32 bps for three-month dollars (the third and fifth balance sheets from the left). The next cheapest option is the second one at 35 bps, and the third cheapest option is the very first one – the case of a bank with no excess HQLA in its treasury – at 38 bps; the most expensive way of tapping the swap lines is by borrowing JGBs for a fee at 58 bps.

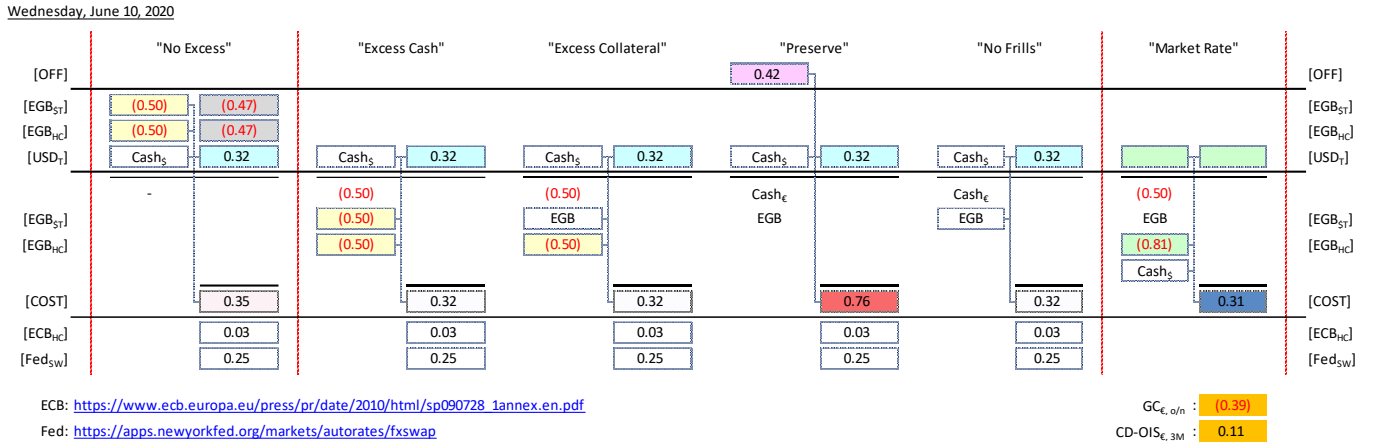
Tapping the Swap Lines through the BoJ



Source: Credit Suisse

[5] CD stands for certificate of deposit.

Tapping the Swap Lines through the ECB



Source: Credit Suisse

In the case of the eurozone, the cheapest options are those of collateral rich banks at 32 bps and 32 bps, respectively – in this case, French banks with lots of excess OATs. The next cheapest option is the first one at 35 bps, and the most expensive option involves tapping the swap lines by borrowing OATs unsecured for a fee at a steep 76 bps.

Unlike the all-in cost of tapping the swap lines through the BoJ, the all-in cost of tapping the swap lines through the ECB varies based on the type of sovereign bonds that banks pledge as collateral. Because repo rates are higher on peripheral sovereign bonds than core sovereign bonds, banks have an incentive to source BTPs over OATs and bunds to tap the swap lines. This applies in the case of uncollateralized collateral borrows as well, where BTPs can be borrowed for a fee of 30 bps for three months versus 40 bps on OATs.

Let's next take a look at the price of the swap lines relative to the market over time, and how these relative prices drove the quantity of dollars borrowed via the BoJ and the ECB.

Figures 3 and 4 show the amount of dollar liquidity swaps between the Fed and the BoJ and the all-in cost of tapping the BoJ for three-month dollars for each scenario discussed. Notice the path of the quantity of dollars that Japanese banks borrowed through the BoJ: a sharp jump during the last two weeks of March, followed by a modest use during April, and no marginal use since May. The amount of dollar liquidity swaps aligns perfectly with the decline of the cost of dollars in the FX swap market – the use of the swap lines flatlined precisely when the market price of three-month dollars fell below the cost of the swap lines with borrowed collateral and when the unsecured CD market reopened in May.

Figures 5 and 6 show the same for the ECB. But in contrast to the case of the BoJ, the uptake of the swap lines here is different: a heavy use during the last two weeks of March, and then a sudden flatlining. Here too, the use of the swap lines flatlined precisely when the market price of dollars fell below the cost of tapping the lines with borrowed collateral.

These figures show that unless all banks tap the swap lines with borrowed collateral, the swap lines are still the cheapest game in town for raising three-month dollars on scale: in Japan, most ways of tapping the dollar swap lines are cheaper than the cost of raising three-month dollars in the FX swap market, and are only 5-7 bps more expensive relative to prices in the unsecured CD market. In the eurozone, the situation is exactly the same.

The situation is different at the one-week point, however. Figures 7 and 8 show that the cost of raising one-week dollars through the swap lines is higher than the market price. But judging from this week's auction results, some foreign banks prefer to pay an extra 15 bps to roll their dollar funding with the Fed to avoid the risk of paying up in the market.

Conclusions

Three conclusions emerge from our analysis.

First, in case that foreign banks do need the dollars they borrowed from the swap lines, the market's concerns about the coming wave of swap line loan maturities are overdone.

The dollar swap lines are still cheaper than the market and provide unlimited dollars at a "fixed" price. Tapping the swap lines does not carry the risk of not getting "done" at the prices posted on the screen. No one really knows the marginal liquidity of bank portfolios under Covid-19, and so refinancing chunky swap line rollovers in the market may run the risk of moving the FX swap market too much – where the small advantage of tapping the market becomes a big disadvantage. This is the type of tactical thinking that would explain why Japanese banks took one-week dollars from the Fed this week above market prices.

Thus, if foreign banks still need most of the dollars they borrowed through the swap lines during the dark days of late March, they will most likely roll their swap lines with the Fed – the market impact of this will be minimal both in the ultra-short and three-month segments.

Second, in case that foreign banks don't need the dollars borrowed from the swap lines, the market's concerns about the coming wave of swap line maturities are overdone too.

Here, the relevant dynamic is that as foreign banks pay off their maturing swap line loans, they will lend less at the ultra-short tom-next and one week points in the FX swap market, and the loss of that funding will upset the recent stability of rates at the ultra-short end, which will then ripple out on the FX swap curve and push three-month and longer-dated FX swap implied funding rates, unsecured CD rates and ultimately U.S. dollar Libor higher.

But with all due respect, who cares if we lose foreign banks as large, marginal lenders of borrowed reserves when we have a quasi-standing repo facility where dealers can take borrowed reserves from the Fed at 10 bps. We would simply go from dealers taking borrowed reserves from foreign banks through short-dated FX swaps, to dealers taking borrowed reserves from the Fed directly. It would actually cost dealers less to fund their FX swap books with the o/n repo facility as the Fed offers reserves at IOR flat, whereas foreign banks lend their reserves via short-dated FX swap trades at IOR + a small spread.

Thus, if foreign banks no longer need the U.S. dollars they took from the swap lines and stop lending in the FX swap market, the Fed will be there to step in with the repo facility.

Third, the swap lines, combined with the fact that foreign central banks broadcast dollars through cross-currency repos makes foreign sovereign bonds and U.S. dollars fungible!

BTPs beat any other type of collateral banks can pledge at the ECB and at central banks that accept collateral beyond local sovereign bonds – for example the BoE and the SNB – as they yield better than any other sovereign collateral sitting on a bank's balance sheet, and their price is "protected" by the ECB. That, and the fungibility of BTPs with dollars should ensure strong demand for BTPs from bank portfolios for the foreseeable future (note that neither BTPs nor bonos were hit during last week's global bond market selloff).

So stay calm, wash your hands and carry on…

It's singularity.

It's war finance.

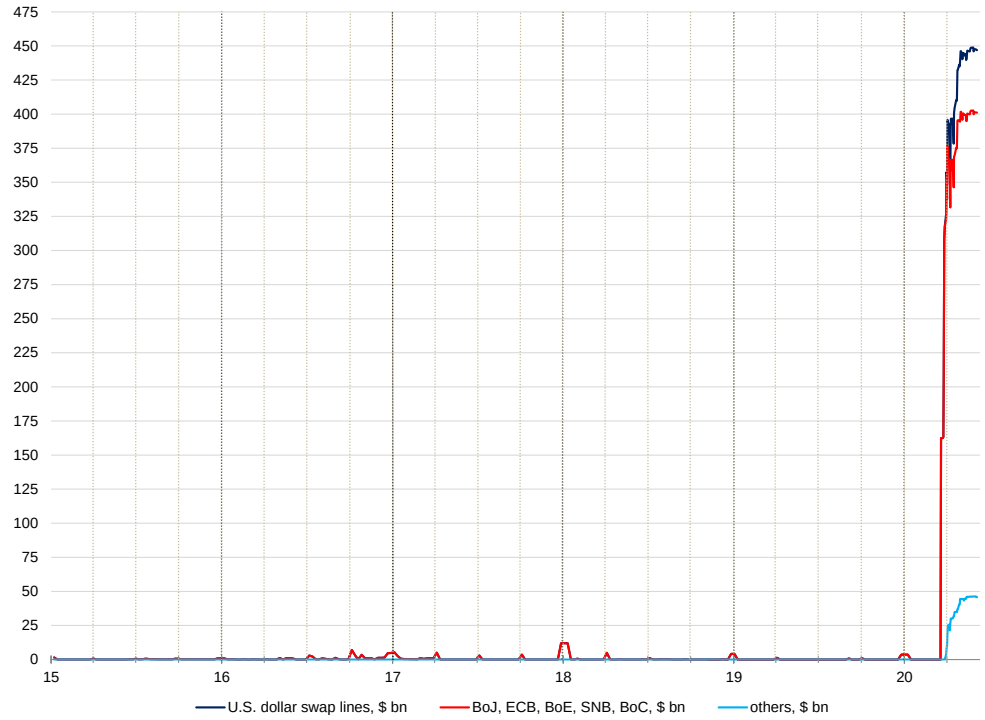
It's a pancake party…

…where chunks of hazelnuts become hazelnut cream in an instant with standing facilities: we maintain our view that U.S. dollar Libor-OIS will trade in the 10-20 bps range by July.

Let the swap line maturities begin.

Figure 1: The Use of the Fed's Dollar Swap Lines (1)

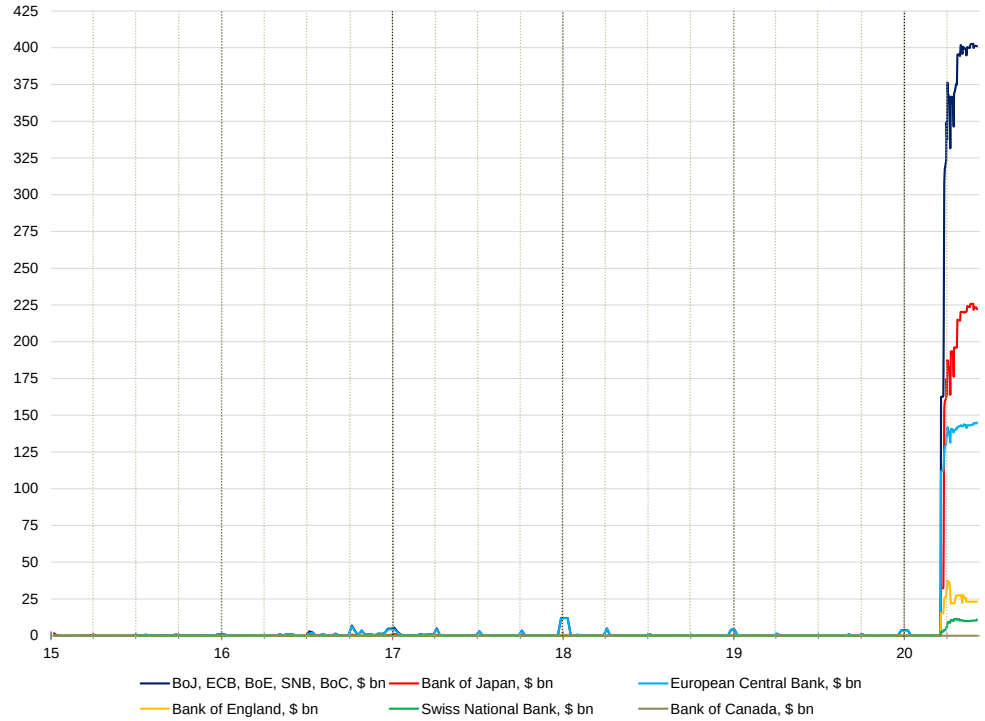
$ billions



Source: FRBNY, Credit Suisse

Figure 2: The Use of the Fed's Dollar Swap Lines (2)

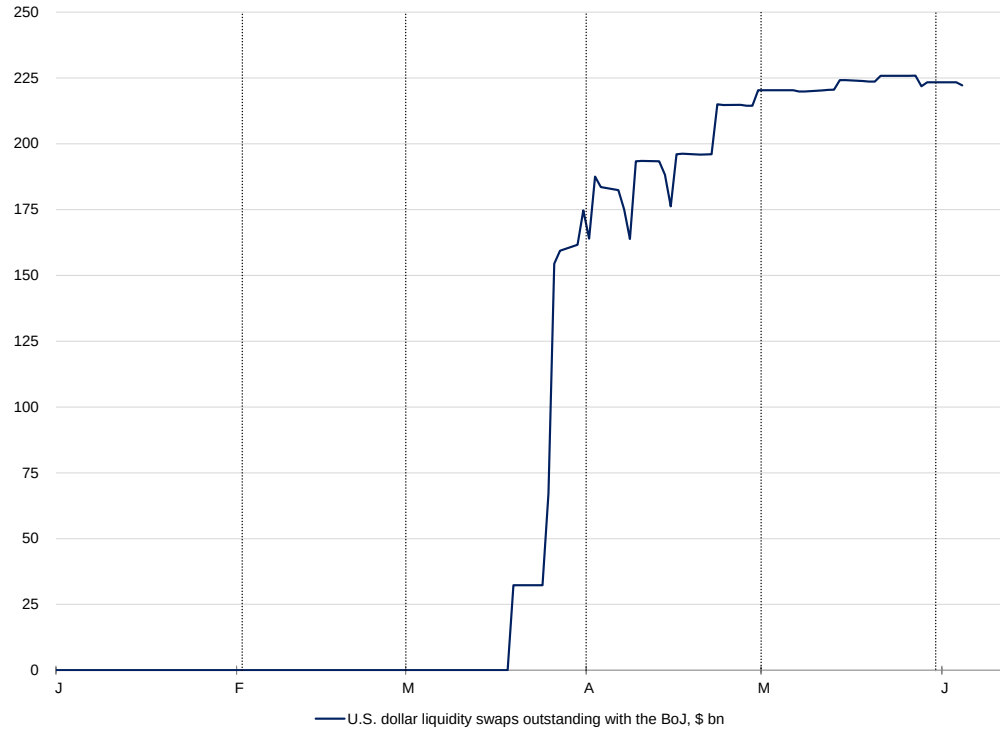
$ billions



Source: FRBNY, Credit Suisse

Figure 3: U.S. Dollar Liquidity Swaps Outstanding with the BoJ

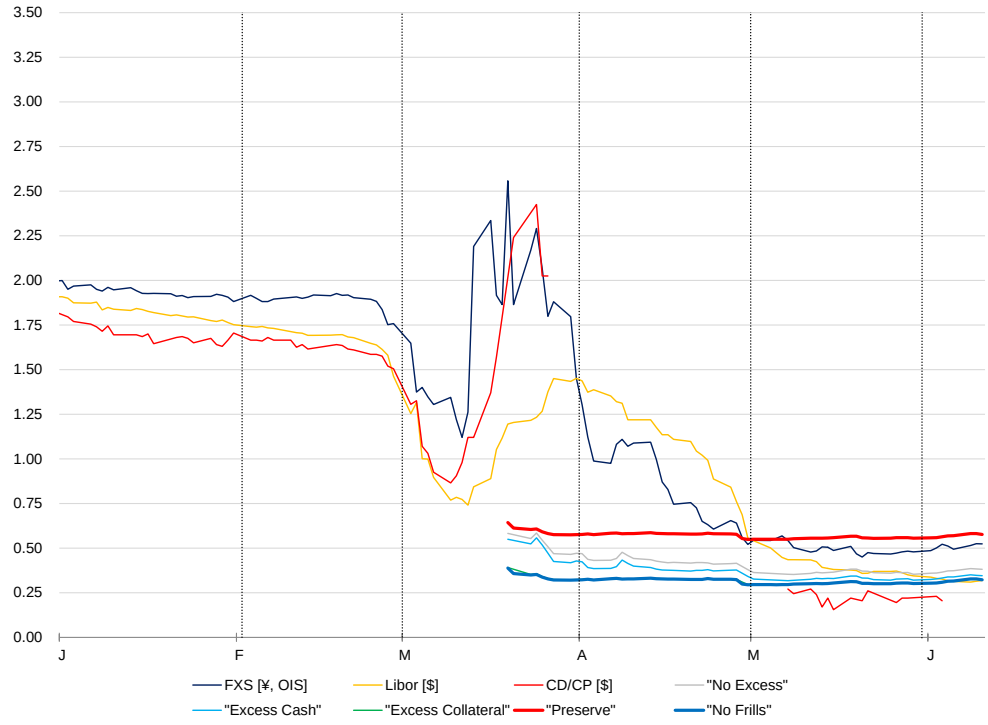
$ billions



Source: FRBNY, Credit Suisse

Figure 4: The Cost of Tapping the Swap Lines through the BoJ

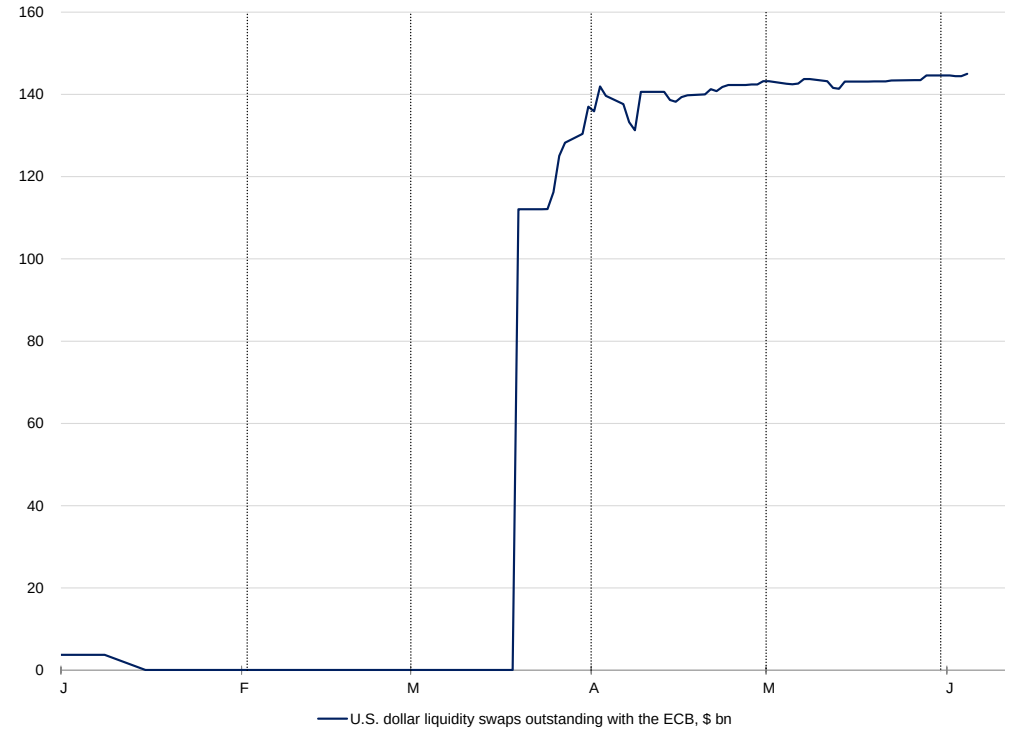
percent, three-month



Source: the BLOOMBERG PROFESSIONAL™ service, Credit Suisse

Figure 5: U.S. Dollar Liquidity Swaps Outstanding with the ECB

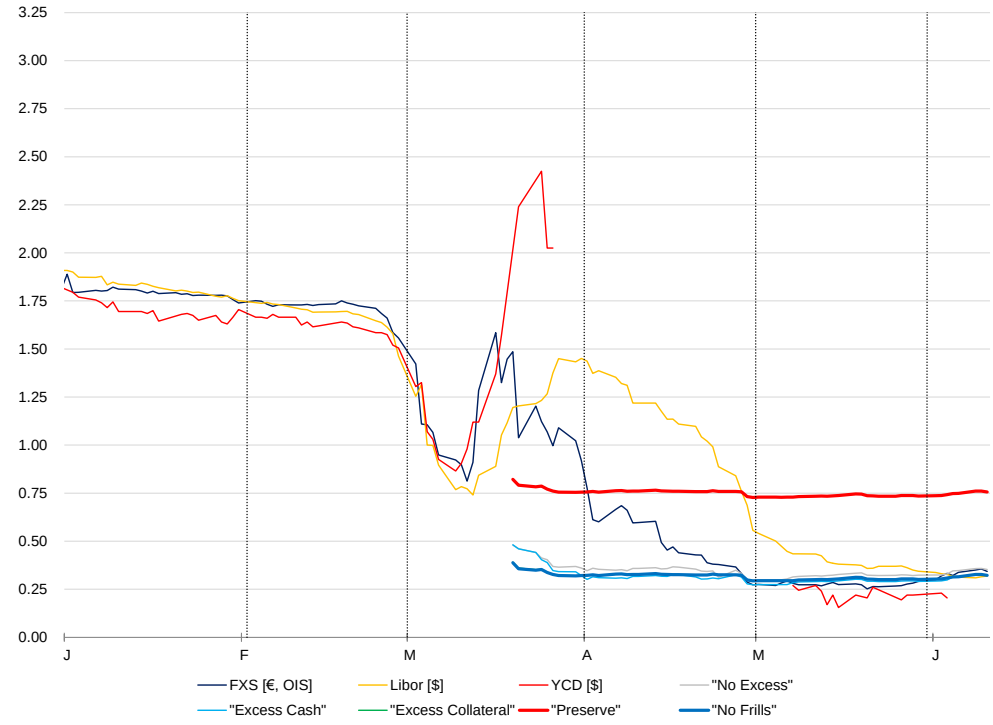
$ billions



Source: FRBNY, Credit Suisse

Figure 6: The Cost of Tapping the Swap Lines through the ECB

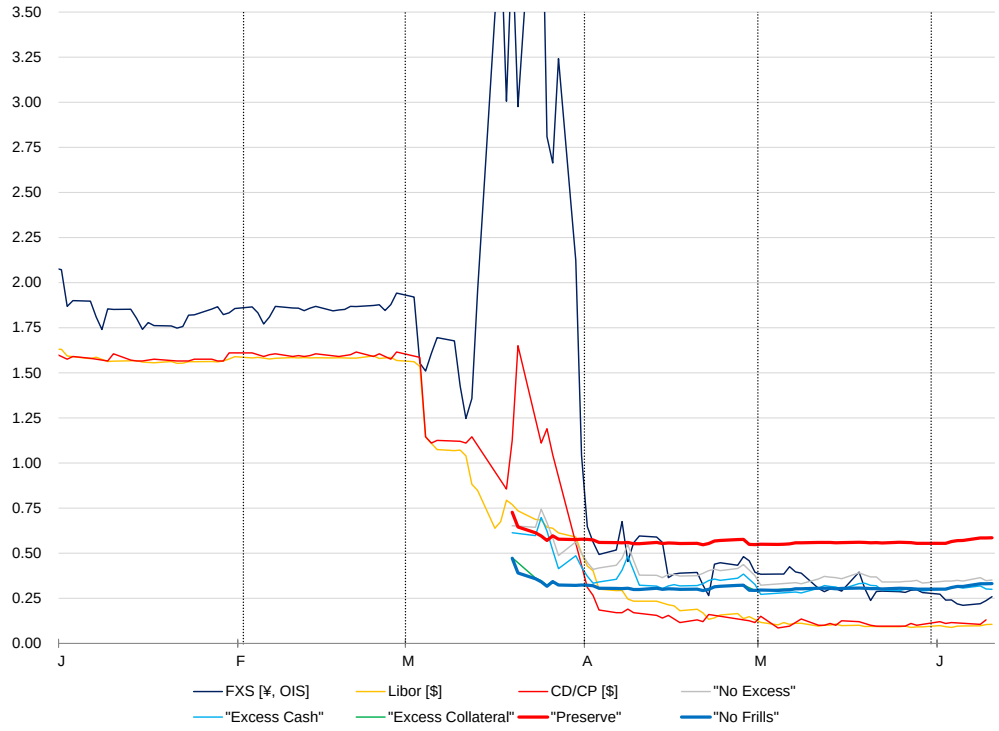
percent, three-month, using OATs as collateral



Source: the BLOOMBERG PROFESSIONAL™ service, Credit Suisse

Figure 7: The Cost of Tapping the Swap Lines through the BoJ

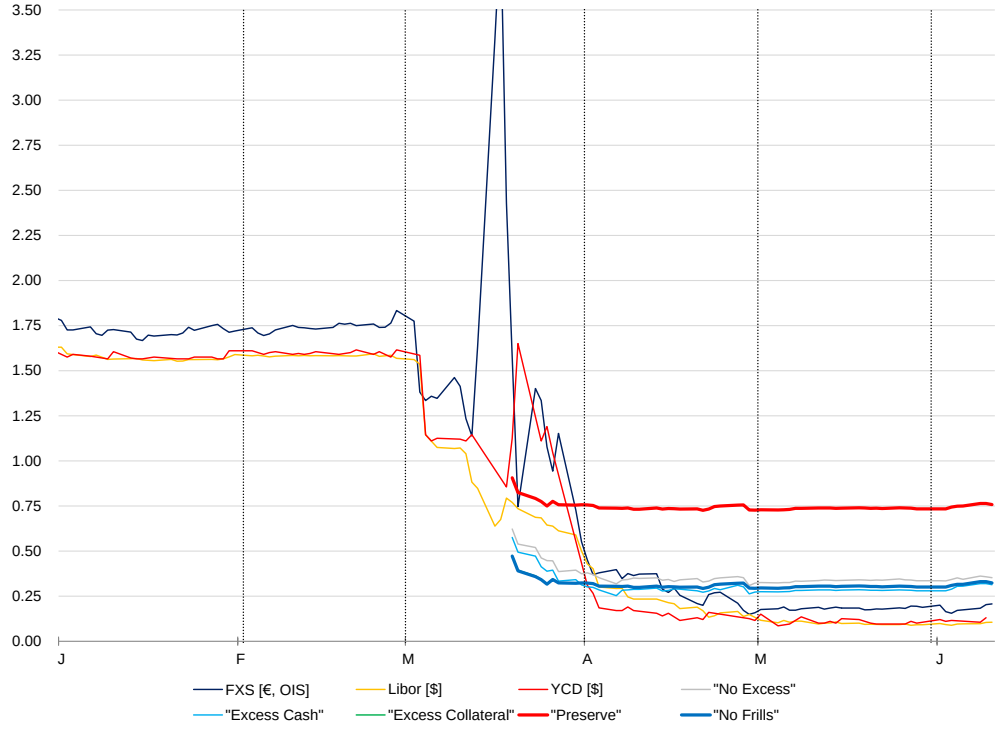
percent, one-week



Source: the BLOOMBERG PROFESSIONAL™ service, Credit Suisse

Figure 8: The Cost of Tapping the Swap Lines through the ECB

percent, one-week, using OATs as collateral



Source: the BLOOMBERG PROFESSIONAL™ service, Credit Suisse

Additional Important Information

This material has been prepared by the Investment Strategy Department personnel of Credit Suisse identified in this material as "Contributors" and not by Credit Suisse's Research Department. The information contained in this document has been provided as general market commentary only and does not constitute any form of personal advice, legal, tax or other regulated financial service. It is intended only to provide observations and views of the Investment Strategy Department, which may be different from, or inconsistent with, the observations and views of Credit Suisse Research Department analysts, other Credit Suisse departments, or the proprietary positions of Credit Suisse. Observations and views expressed herein may be changed by the Investment Strategy Department at any time without notice. Credit Suisse accepts no liability for losses arising from the use of this material.

This material does not purport to contain all of the information that an interested party may desire and, in fact, provides only a limited view of a particular market. It is not investment research, or a research recommendation for regulatory purposes, as it does not constitute substantive research or analysis. The information provided is not intended to provide a sufficient basis on which to make an investment decision and is not a personal recommendation or investment advice. While it has been obtained from or based upon sources believed by the trader or sales personnel to be reliable, each of the trader or sales personnel and Credit Suisse does not represent or warrant its accuracy or completeness and is not responsible for losses or damages arising from the use of this material.

This communication is marketing material and/or trader commentary. It is not a product of the research department. This material constitutes an invitation to consider entering into a derivatives transaction under U.S. CFTC Regulations §§ 1.71 and 23.605, where applicable, but is not a binding offer to buy/sell any financial instrument. The views of the author may differ from others at Credit Suisse Group (including Credit Suisse Research).

This material is issued and distributed in the U.S. by CSSU, a member of NYSE, FINRA, SIPC and the NFA, and CSSU accepts responsibility for its contents. Clients should contact analysts and execute transactions through a Credit Suisse subsidiary or affiliate in their home jurisdiction unless governing law permits otherwise.

This material is provided for informational purposes and does not constitute an invitation or offer to subscribe for or purchase any of the products or services mentioned.

Credit Suisse Securities (Europe) Limited ("CSSEL") and Credit Suisse International ("CSI") are authorised by the Prudential Regulation Authority and regulated by the Financial Conduct Authority ("FCA") and the Prudential Regulation Authority under UK laws, which differ from Australian Laws. CSSEL and CSI do not hold an Australian Financial Services Licence ("AFSL") and are exempt from the requirement to hold an AFSL under the Corporations Act (Cth) 2001 ("Corporations Act") in respect of the financial services provided to Australian wholesale clients (within the meaning of section 761G of the Corporations Act) (hereinafter referred to as “Financial Services”). This material is not for distribution to retail clients and is directed exclusively at Credit Suisse's professional clients and eligible counterparties as defined by the FCA, and wholesale clients as defined under section 761G of the Corporations Act. Credit Suisse (Hong Kong) Limited ("CSHK") is licensed and regulated by the Securities and Futures Commission of Hong Kong under the laws of Hong Kong, which differ from Australian laws. CSHKL does not hold an AFSL and is exempt from the requirement to hold an AFSL under the Corporations Act in respect of providing Financial Services. Investment banking services in the United States are provided by Credit Suisse Securities (USA) LLC, an affiliate of Credit Suisse Group. CSSU is regulated by the United States Securities and Exchange Commission under United States laws, which differ from Australian laws. CSSU does not hold an AFSL and is exempt from the requirement to hold an AFSL under the Corporations Act in respect of providing Financial Services. Credit Suisse Asset Management LLC (CSAM) is authorised by the Securities and Exchange Commission under US laws, which differ from Australian laws. CSAM does not hold an AFSL and is exempt from the requirement to hold an AFSL under the Corporations Act in respect of providing Financial Services. Credit Suisse Equities (Australia) Limited (ABN 35 068 232 708) ("CSEAL") is an AFSL holder in Australia (AFSL 237237). In Australia, this material may only be distributed to Wholesale investors as defined in the Corporations Act. CSEAL is not an authorised deposit taking institution and products described herein do not represent deposits or other liabilities of Credit Suisse AG, Sydney Branch. Credit Suisse AG, Sydney Branch does not guarantee any particular rate of return on, or the performance of any products described.