

# General Discussion: Reassessing Constraints on Policy: Central Bank Balance Sheets

---

*Chair: Kristin J. Forbes*

**Ms. Forbes:** Thank you very much. I'll particularly nudge, if there are any central bank governors who are further ahead of the U.S. and unwinding their balance sheet, to jump right in.

**Mr. Bailey:** Well, thanks for the fascinating presentations of what is a very important issue. I think the question that for me runs through the presentations, and I thought it came out very well in Chart 13 of Wenxin (Du)'s presentation, is that we are not going to unwind all of the QE (quantitative easing) for the reason that the equilibrium level of reserves has risen post-financial crisis. So another way of putting that is that I think in retrospect, some of the early round of QE actually doubled up as the increase in the level of reserves that we needed for financial stability reasons. And so that gets us to the question that I think many of us are trying to work out at the moment, and it's a very hard question, which is, what's the equilibrium level of reserves today? And how do you think about it, because it won't be constant either. And how does that therefore influence the passage of QT (quantitative tightening)?

Because just to finish off, I thought one of the interesting slides in Viral (Acharya)'s presentation was, of course, to look at the relationship between credit advancement and reserve levels. And it's no sur-

prise. It struck me in your slide that in March 2020, what we saw was the demand for credit changing that relationship between reserves and credit advancement, and putting strain on the system, such that you would expect some form of central bank intervention.

And the question is, in the future, what is that form of intervention going to look like? Because I think, if I can finish off, there is a very challenging question in a tightening monetary policy world, if we need to intervene for financial stability reasons, because doing central bank asset purchases in a world where you're tightening monetary policy is a very difficult message to get across to the outside world. Thanks.

**Mr. Kohn:** So I thought this was very valuable, interesting contribution to understanding QE and the effects of QE, and then raising questions about QT, the effect of the quantity of reserves on the bank's willingness to supply liquidity insurance to the non-bank sector. And I think one point that occurred to me is that the paper says because the banks are supplying so much liquidity, they're not willing to make term loans and that's not a mark of success for QE, but they are supplying all this liquidity insurance to the private sector and that must be making the private sector more willing to spend, particularly in the circumstances under which this thing is happening.

And that was my second point. I wonder whether some of the observations of behavior of deposit rates and credit lines is more related to the circumstances in which QE happens than to the fact of QE, the quantity of reserve deposits. I'm thinking of two things. One is the zero lower bound and the inability of banks, or the unwillingness of banks, to lower their demand deposit rates to below zero by having a lot of charges; the equilibrium might be below zero, but they can't get there or they don't want to get there.

And then the second thing is, of course, this occurs after a crisis or in a difficult situation. And a demand for credit lines is very, very high in the unwind part. And I wasn't entirely convinced by your cross-section analysis, because although the quantity of reserves is exogenous to the system, it's not exogenous to individual banks. The reserves get traded around the system and the way banks end up with the amount that they want to hold, given that total exogenous amount.

And then thinking about the unwind, maybe the unwind is slow and not symmetrical, because of some of these other issues; that is, it takes a while for deposit rates to adjust back to an equilibrium relative to the zero on demand deposits, and it takes a while for the credit line demands to die down, given the circumstance in which that happened. So in QT, the banks continue to supply those, because they're really in a disequilibrium, or the economy was in disequilibrium and it's just slowly adjusting. Getting back to that, we have an interesting experiment right now, because the market interest rates are rising so rapidly, you would expect some of these deposit spreads to return to more normal soon. So we'll see what happens.

**Ms. Forbes:** "We'll see what happens," if it's worse instead of guidance.

**Mr. Prasad:** So I'd like to pick up on what Andrew (Bailey) and Don (Kohn) said, and think somewhat simplistically, perhaps, about the macro implications, about the liquidity and who is getting the liquidity from these operations, because you spoke about shorter-term runnable, but most importantly, uninsured deposits and given where the FDIC deposit limits are right now.

These are presumably not deposits created by households or small businesses. It's largely other financial institutions. So I wondered if there is a link here to some of the literature suggesting that the real effect QE had was not so much on the real economy as on financial markets and, flipping that around, as you think about QT, one wonders, whether one should take some comfort from the fact that if you have QT, it's really going to have an effect perhaps on the financial market, and it could create financial market disruptions, but in terms of the real activity and the support that is provided by the banking system to real activity, perhaps the effects will be quite mitigated.

**Ms. Liang:** Thank you. I think it is very interesting to highlight the liability side of the effects of QE and QT, and the greater liability dependence in the commercial banking system. One fact on the recent expansion of the credit lines is that they have been, in fact, credit lines to non-bank financial firms, so that actually reinforces your point that the liquidity dependence of the whole financial system is moving into the banking system. That point is very important. A question for you and a suggestion for further work is, are we better

off from a financial stability perspective, for having brought more liquidity dependence into the banking system? Is that a downside risk to QT to consider?

I think that if more liability dependence is in the bank versus the non-bank financial system, which has difficulty getting access to backup liquidity, this situation is better from a financial stability perspective. It also raises one other question, which is what should be the long-run level of reserves in the banking system, given the large increase over time in non-bank financial intermediation, which relies on market liquidity for intermediation. That consideration might suggest the size of the Fed's (Federal Reserve) balance sheet in the long run is different, greater than it has been in the past when non-banks were a smaller part of aggregate financial intermediation.

**Mr. Yaron:** Again, very interesting and timely paper. The explanation to the simple fact that deposits do not fall with reserves might just be that tighter conditions induce a shift to bank loans, which causes a mechanical increase in deposits. Darmouni and Siani showed that in the first couple of months of COVID, it was the opposite, many firms issued bonds instead of taking bank loans, and this is just the reverse action.

The other argument is just revealed actions, or revealed preferences of the banks. Assuming there is no moral hazard or other issues, there are abundant reserves. Banks are not reversing course during QT at this rate, simply because they don't need to.

If they felt they need to, we would've seen some of these adjustments of deposit rates and time rate deposits, just getting higher at much faster—obviously this gap and what it does is something that's in the media. And so if they needed to manage this liquidity, they will increase that.

Time consistency is a major issue for policy. It was true in the previous paper as well as here. And that's the important issue that I take from the paper—that maybe a priori you don't want to do as much QE. That is, you don't want to do as much QE for time consistency, as we all are facing shocks that are arriving at higher rates and for the

next QE to be effective, you want to make sure either not to do as much upfront or to let some of it dissolve over time farther out

And finally, a comment on the instrument used, which seems to be reserve intensive and is highly connected to size, which goes back to what people talked about, that maybe this is reflecting the ongoing relationship between financial institutions and the very large banks.

**Mr. Acharya:** Thank you so much, Wenxin, for such an interesting discussion. I think your point about foreign banks is super interesting. It's a very neat observation that you had there. It's something we should definitely look into. I want to make a couple of points that connect to a variety of the points that were made. One, my understanding of shadow banks over time is that to be somewhat poetic, that the shadow always touches the feet. It's always connected to banks. Shadow banking is always connected to banks in the end. It's always selling liquidity claims on the back of insurances from the banking system.

If you look at asset-backed commercial paper vehicles in 2006, '07, '08, they all had liquidity credit lines from banks. And we are seeing something very similar happening right now, as Nellie (Liang) pointed out, asset managers, central counterparties, they've all increased their take up of credit lines from banks, and then they go and sell liquidity to the rest of the financial system.

And our key point is that it's important to keep track of this selling of liquidity claims. And why is this important? It's for three reasons. One, these claims come due in times of aggregate risk. Shadow bank freezes up during aggregate risk times. Central counterparties will demand liquidity at time of aggregate risk. And that can put tremendous pressure on the banking system to honor these credit lines. If you look at March 2020, until the stabilization policies were introduced, banks were bleeding very, very badly.

Even in terms of stock market performance, banks were actually the worst part of the financial system. They did the worst as a temporary shock, and then it persisted for the longest time relative to the non-banking system. It kind of shows that ultimately you have to

settle claims with reserves—where does all that come to? It comes to the banking system.

And so we have to keep track of liquidity claims on the banking system. The second reason why keeping track of the claims is important is because it's now claims from everyone. It's non-banks, corporations, anyone who's essentially demanding liquidity is going to come to the banking system to do this. So shocks can emanate from anywhere. It can come from the corporate sector. It can come from the Treasury market dislocation. It can come from a corporate bond market dislocation. And so that's the second reason why tracking these claims would be important.

And the third reason why it's important is because if this selling of liquidity claims is a function of the stock of reserves in the system, then a part of QE may be irreversible, because you are actually increasing the demand for liquidity to settle these claims at future points of time. And so to respond to Governor Bailey, Governor Yaron's points, and I think this goes a little back to Don's point as well, which is that, if you don't keep the stock of claims in a limited supply, when you inject reserves, you have ensured that a part of the reserves are now not reversible.

You have just shifted the balance sheet of the central bank to a higher point. If that is the case, the only option to run it off is to let these debts mature, but that can take a very long time to do so. And so I agree with Governor Yaron that one of the policy implications, which is less about QT, but more about QE, is that we may have to rethink the scale, scope and duration of QE, taking into account this time-inconsistency problem that a stock of reserves may simply not be reversible from a financial stability standpoint, because it creates its own multiplier of liquidity claims in the system.

*Ms. Du:* I just guess comment quickly on Governor Bailey's points about what is the right equilibrium level of reserves. So I think the current situation is quite different from the September 2019 situation, in the sense we have a large take up on the overnight reverse repo facility, and that makes the overall supply of reserve indulgence

outcome between banks demand for reserves, and also non-bank sort of demand for cash to target overnight RP.

So this makes it interesting, but also maybe a little less of headache, at least in the near term, when you have these large deep vaults of cash to dip into. But once that's become smaller or exhausted, if one day, then we go back to the same dynamic. It is very important to keep a close eye, to monitor the spreads between private money market rates and IOR, and I think President John Williams and coauthors have written a very interesting paper. You can actually estimate the demand for reserve on a very high frequency day-to-day basis as a monitoring tool.

**Mr. Macklem:** Thank you for a very interesting and timely paper and also very insightful discussion. And look, I think it's a point well taken. As we embark on QT, we are doing something we, at least in Canada, we've never done before. And we do want to watch those liquidity conditions very carefully. On this asymmetric response you have, one thing that strikes me is that even the way central banks think about this QE and QT is somewhat asymmetric. QE, we go into, when we're at the effective lower bound. We can't lower our interest rate anymore, so it becomes a really important instrument for us.

And of course it is a big surprise to the market. On QT, we've been very clear. Our policy interest rate is our primary instrument. It's not QT and we've really gone out of our way to make QT very mechanical, or very predictable would maybe be a better word. In our case, we've embarked on full roll off. Our balance sheet is published on our website. The treasurers of banks can see every maturity that's coming and going forward. So there shouldn't be any surprises. So the idea that this has an asymmetric response, doesn't seem to me to be entirely surprising.

**Mr. Malpass:** So I liked Viral's recommendations with whatever the finding of this dependence. It would be good to reduce the dependence through mobility of reserves. For example, we've lost the interbank market. The repo market is now dominated by the Fed. And so it's good to think about ways that there can be less dependence, but it seems to me, the market is quite robust at arbitraging

away this dependence. So I'm skeptical of the idea that it's a restraint on QT. As we see some of the banks are saying they have a fortress balance sheet and we saw from Wenxin, the robustness of the arbitrage among the various markets. So that should be the dominant takeaway from this that, it's very interest rate or spread dependent kind of response of the banking system, which is looking at...and it has some clarity into the future.

The Fed has said it's going to shrink. It's going to apply QT for a period of years, but then expand the balance sheet in large amounts in order to supply the high reserve levels that are expected into the future. So there's this giant commitment that there's always going to be a lot of reserves and that affects then the arbitrage. So it makes sense that there wouldn't be an immediate response to QT, because there's already the forecast, the projection of a resumption of super high reserve level. And so I wanted to come briefly to the previous paper also, because the overlap between fiscal and monetary, I think should be...we should be working to de-link fiscal from monetary in order to have more independence of the central banks going forward. It's dangerous to allow the linkage. And the overlap comes through this liability management, but also through the bond buying, that's a direct overlap of fiscal and monetary policy. There's the expectations of future activity by central banks to defend the bond buying and the reserve expansion. So that's an overlap of fiscal and monetary policy. And so as we look at it, my view, or I think we should be looking to allow QT to go further, because only through that shrinkage do we allow the arbitrage among the various forms of liquidity to resume.

**Mr. Shin:** Thanks, Viral, for this very timely paper and others for the very rich discussion. I wanted to follow up on the financial stability consequences of demandable deposits, or rather, their financial system consequences. I think you have in the background the idea that these demandable deposits are runnable, and therefore they pose financial stability risks. But in March 2020, the "dash for cash" was in fact a dash to demandable deposits, not a flight from demandable deposits. That's very clear in your chart. It could have gone either way in theory, and so I think it's an interesting question what sets demandable deposits apart from, say, prime money market funds or stablecoins.

Perhaps one important aspect is the role of banks as money creators. They can create money by writing up both sides of the balance sheet. They are elastic nodes in this sense. Central banks are the best example of these elastic nodes, but commercial banks can be elastic nodes, too. Clearly, there are limits to how much commercial banks can do that, but the limits are much more restrictive for prime money market funds and stablecoins. Stablecoins can't just create money and hope to get away with it. And there's of course, the example of the Bank of Amsterdam, which went too far and went into a death spiral. The kinds of examples that Wenxin has suggested are other cases. So, the key question for me is what sets demandable deposits apart from other instruments that are subject to stress. That seems to me to be the crucial question.

**Mr. Quarles:** So, this is related to a couple of the earlier questions, I think. In March of 2020, at the outset of the COVID event, we relaxed the bank's regulatory balance sheet constraints by lowering the leverage ratio as low as we could to the statutory limit. And the initial reason for that was concern about Treasury market intermediation, but an immediate secondary reason was the banks telling us, we cannot absorb all of the deposits that are coming our way, and they'll be pushed elsewhere, principally into money market funds. Instinctive response, money market funds, bad. So we lowered the leverage ratio as low as we could, and the deposits grew as large as possible. So a possible question: Would it have been better for us not to do that? That is, would QT and subsequent monetary policy have been easier if we hadn't allowed the run up in the bank's balance sheet? Would the non-bank system have been more flexible, even if more fragile? It sounds as though your answer to Nellie was no. But then did we do exactly the wrong thing, given Wenxin's comments, by allowing those leverage ratio exemptions to lapse in a year, and therefore the bank's deposits have grown as large as possible given the temporary leverage ratio relief. And now we are once again, limiting the bank's balance sheet ability to provide liquidity to the system generally, and also have limited or created problems for QT in the future by allowing the bank's deposits to be so large.

**Mr. Ferguson:** Let me add a, I guess I would describe a real-world complexity to the current QT challenge. And this goes to the point about banks as liquidity providers of last resort. So obviously QT is occurring in a period of rising interest rates. There's also eventually going to be QT in the MBS (mortgage-backed securities) market. Banks are quite concerned, I think, about mark to market losses on the MBS portfolios, which don't run through income statements. Generally speaking, we run through tangible equity and share price. And so that creates yet another stress dynamic here, that I think one has to take consideration in the current situation. But I think the challenge ultimately is, in absence of some complete markets in terms of hedging capabilities and for MBS, that may resolve this to some degree but any thought you have on the link between QT and the government market, and QT that's in the mortgage-backed security market might be interesting.

**Ms. Mann:** This paper was written in the context of the U.S., but when I was reading it before the conference, my immediately question was, "Well, where are the foreigners? Where are the foreigners?" Foreign institutions and flows are important even in the U.S. And of course that was brought in the comments from Wenxin Du. My question is what might be the role for cross-institutional regulatory arbitrage, which sometimes we think of is good but maybe sometimes isn't necessarily good.

A narrower point focuses on QT in the context of a small open economy that has a very large global financial center. One has to think about the role of foreign exposures and cross-institutional regulatory arbitrage. U.S. QT will not just affect the U.S. but also small open economies, such as where I am currently based. The foreign institutional role and spillovers from QT—QE before and QT now—becomes particularly important. A call for additional research that would incorporate the foreign elements to a greater degree, not just for the U.S. but for other countries, such as for my current position.

**Mr. Holzmann:** Thank you for this very timely paper, and also the discussion with us. As you may know, in Europe we haven't started QT yet and so the discussion here, but also the experiences by the national banks, are very interesting for us. But, of course, the problem

is that we have a heterogeneous situation in Europe. So I'm wondering what this will do at the level of individual countries. And if it's already there in the U.S. or has specific effects or includes heterogeneity, this requires to be much more cautious in Europe when moving ahead. So we are looking forward when you share your experiences.

A question I would have is, what has happened before a QT is started in Europe and all the other parts of the world, as in the U.S., as some markets had dried up. The interbank market, and also the reluctance of central bank to deal with money markets. Has this had an influence on the asymmetric reaction that some of the private markets are not there anymore, which has an influence besides the time consistency?

**Mr. Acharya:** So I think the key point is that these short-term liabilities are a source of fragility. It might seem that demandable deposits on banks are not a risk because at time of COVID they were okay. But of course, they were a source of risk at the time of the global financial crisis. And why was that? Because we also had a concern about bank assets at that point of time. So in a future scenario, are we always going to be sure that mortgages are always perfectly safe? I think point was mentioned about market losses on mortgages. I think that's one area where the transmission of QT and rate hikes seems to be the strongest in the U.S. economy right now it's on the mortgage rates and the housing markets. That's one area where the slowdown is actually visible. And so I think there could be a commingling interaction, which is a balance sheet that a short-term liabilities and then you have asset concerns, I think that's a potential stress point from a financial stability consideration. I think the two last points, if I could make very quickly, so I think the key observation is that there is here an inherent conflict with monetary policy. Because you have used expansion of the balance sheet to stimulate activity. It could be through relaxation of balance sheet constraints as Wenxin mentioned. But the important point is that it's created a multiplier through the banking sector's demandable liabilities.

Now, when you want to unwind, ideally you would want this to happen symmetrically and smoothly. But with short-term liabilities, even if it shrinks, it's not guaranteed to be smooth necessarily, be-

cause it could intersect with some other shocks and it can lead to financial stability considerations.

But the main point is that even the fear of this can prevent you from actually scaling down at the pace you want. And then it means there's a conflict in your monetary policy and financial stability objectives. And you have to factor this in while deciding the scope of QE, because otherwise you've just ratcheting up the central bank balance sheet size to higher and higher levels. And you may not necessarily want to do that because then it starts interacting with fiscal policy at some point, as David Malpass mentioned, and so on. Let me stop here.

**Ms. Du:** Super quickly just echo on Catherine's comments on focusing on international dimension. Like one area I didn't touch upon is the dollar-funding condition offshore in the euro-dollar markets. So in addition to every problem we've talked about, the problem in that market is actually much more multiplied because of inherent limit access to U.S. dollar deposit base. So in addition to the spreads we talked about, I've also put CIP deviations on our monitoring radar.

**Ms Forbes:** Thank you both very much. And Viral, I will admit when I saw the title of your paper about being an uphill task, I was worried you were going to end with an analogy to Sisyphus. However, as you've seen this if you're successful, the rock comes crashing down on you, I'm delighted you've left us a bit more positive than that.