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SECTION THREE

The Size of the Fed's Balance Sheet

Arvind Krishnamurthy

My comments are focused on the size of the Fed's balance sheet. For this discussion, I assume that the Fed holds only Treasuries. I will argue in favor of a large balance sheet. There is a related but separate discussion about the composition of the balance sheet. In the interest of time, I do not discuss composition, although it is obviously also an important issue.

The question is, How large should a Treasuries-only balance sheet be?

I will make the case for a large balance sheet, around $2.5 trillion. I offer two sets of arguments, the first related to monetary policy pass-through and the second to financial stability.

Before the crisis, the Fed held reserve balances in the neighborhood of $50 billion and steered money market rates by altering the scarcity of reserves. Since the crisis, banks have had large excess reserves. Reserve balances are currently in excess of $2 trillion, and

the Fed has steered money market rates by altering the interest it pays on reserve balances as well as the interest it pays in the reverse repo program (RRP).

We know in theory that to set a given fed funds rate on average, the Fed could set the quantity of reserves or the interest it pays on excess reserves. But the quantity approach will lead to much more volatility. Before the crisis, banks traded a small amount of reserves to settle an often large quantity of payments. This led to an elaborate game of musical chairs that often produced considerable volatility in interbank interest rates.

There is ample evidence that the excess reserve regime has reduced this volatility. There are fewer delays in settling interbank payments. There is less use of intraday credit from the Fed. All in all, settlement occurs with less friction and less musical chairs.

With currency of around $1.5 trillion in circulation and reserve requirements of around $100 billion, this calls for a balance sheet of at least $1.6 trillion, or somewhat larger to limit the money market volatility.

I think the balance sheet should be even larger. This is because of the RRP.

Traditionally, the Fed has focused on steering the federal funds rate and thereby steering other money market rates. In a theoretically frictionless benchmark, arbitrage should ensure that all money market rates, adjusted for economic risks such as credit risk, are the same.

In practice, the world is not at the frictionless benchmark. The connection between federal funds and other money market rates involves slippage. This is apparently empirical. There is dispersion in money market rates, caused by real-world frictions: imperfect competition, segmentation, institutional constraints, and regulatory frictions.

Darrell Duffie and I wrote a paper for last summer's Jackson Hole conference documenting dispersion and identifying some of the factors that drive dispersion. Figure 1.3.1 (Duffie and Krishnamurthy 2016) tracks a number of important money market

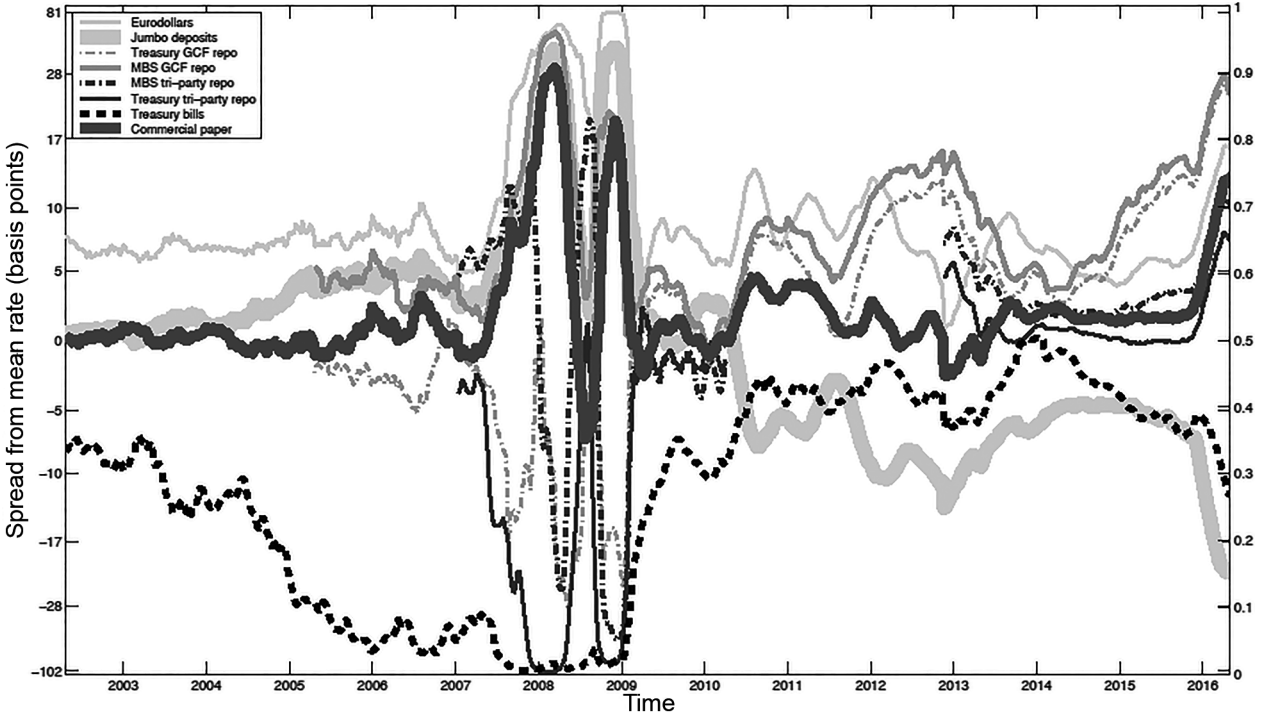

FIGURE 1.3.1. Cross-sectional distribution of a selection of overnight-equivalent money market rates, shown as rolling 120-day lagging averages. Source: Duffie and Krishnamurthy 2016.

rates, plotted as a spread from the mean rate at any given time, over a period from 2003 to 2016. These rates have been adjusted for credit and maturity differences. In theory, the spreads should all be zero, but they are not.

To give one example, we observe in the data that when the Fed increases its target for fed funds, short-term T-bill rates move up only slowly. This can be seen at the end of the sample. We ascribe this slow movement of T-bill rates to the fact that deposit rates move slowly because of imperfect competition across banks on the deposit side. Further, since T-bills and deposits are liquidity substitutes in investor portfolios, T-bill rates track the slow movements of deposit rates. This type of dispersion is the slippage in the monetary transmission mechanism.

Darrell and I show that the RRP can reduce dispersion. One can readily see why. The RRP effectively allows the nonbank public to deposit with the Fed, bypassing banks and leading to stickiness in deposit rates. RRP is a substitute for T-bills, so T-bill rates move more in line with the Fed's target rate.

In my paper with Darrell, we argue that some of the changes in the world over the last few years, including money market reform and the general rise in demand for safe assets, increase dispersion. The RRP is all the more valuable in today's world.

Let me link this back to balance sheet size. To offer an RRP, the Fed needs a large cushion of bank reserves in excess of reserve requirements. If the cushion is too small, sudden shifts in the demand for the RRP will drain reserves from the banking system, creating a liquidity squeeze. Thus, the framework needs sufficient excess reserves. How large? I am not sure, but for the sake of argument, let us say $1 trillion, which gives a balance sheet of about $2.5 trillion. That's large, but the current balance sheet is about twice that size.

These latter two arguments in favor of a large Treasuries-only balance sheet are arguments that IOER plus RRP aid in the efficacy of the monetary transmission mechanism.

I turn next to financial stability considerations. A growing literature in finance shows that investors have a special demand for safe short-term securities, such as bank debt, repo, and Treasury bills. In the finance term-structure literature, it is well understood that term structure models to fit the Treasury yield curve fail to price the shortest-term Treasury bills. To give an example, Greenwood, Hanson, and Stein (2015) document that investors accept low yields for holding one-week Treasury bills compared to alternatives such as six-month Treasury bills. My work with Annette Vissing-Jorgensen shows that this demand is satisfied by both government securities and private securities.

Figure 1.3.2 (Krishnamurthy and Vissing-Jorgensen 2015) plots the supply of government assets against the financial sector's short-term debt (net short-term debt), annually from 1875 to 2014. Both series are normalized by GDP and de-trended. The figure shows

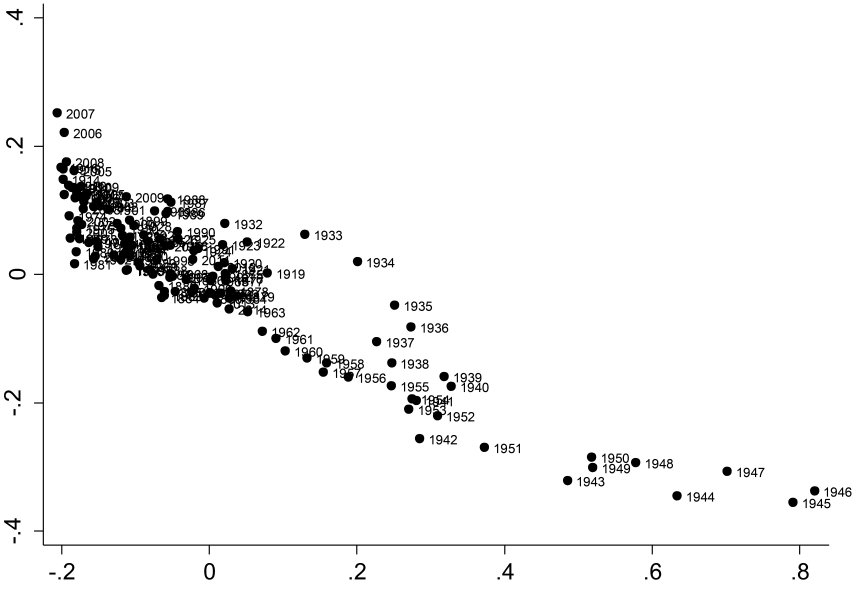

FIGURE 1.3.2. Government supply/GDP, de-trended. Source: Krishnamurthy and Vissing-Jorgensen 2015.

the strong substitution pattern between government securities and private securities. If the demand for safe assets is not satisfied by government securities, it will be satisfied by private securities. Annette and I show that shifts in safe asset demand are a significant factor driving the leverage of the banking system, and hence its fragility.

But private short-term financially engineered securities are a source of systemic risk, as we learned in the crisis. A financial system that has more equity and long-term debt, and less short-term runnable debt, is a safer system.

From this standpoint, operating a large Fed balance sheet, especially via the RRP, can satisfy investors' demand for safe assets and crowd out private financially engineered debt.

I do not have a target for balance sheet size but have suggested $2.5 trillion as a possibility. I think this should be on the agenda for the Fed to research. For example, the Fed could monitor safe asset premiums as a way to understand the private sector's incentives for financial engineering and size the balance sheet to counteract such premiums.

I have provided an argument grounded in monetary economics in favor of a large balance sheet. John Taylor acknowledges these points but views them as unimportant relative to the institutional design and mandate issues of the Fed. Charles Plosser is similarly concerned that opening the door to the types of concerns I have raised untethers the Fed's balance sheet.

These concerns can be addressed. Take the safe asset stability concern I mentioned. One way to tether the size of the balance sheet is to link the balance sheet to the size of safe asset premiums. That is, as noted, the Fed could systematically monitor safe asset premiums and link balance sheet size to these premiums, in the spirit of the Taylor rule. When safe asset premiums are high, the Fed would expand its balance sheet size to counteract the private sector's incentives for expansion, and the reverse. Right now, these

premiums are relatively small, which indicates that currently we should have a relatively small balance sheet. As I have noted, something like $2.5 trillion may be appropriate. But in the period prior to the 2007–9 crisis, when safe asset premiums were high, my approach would have indicated that the Fed should have a much larger balance sheet to counteract the private sector's debt buildup.

Similarly, consider the mandate question: Should the provision of safe assets fall under the mandate of the Fed or the Treasury? I would argue that it should fall to the Fed. Why? Because such policy is fundamentally about financial stability, which is within the mandate of the Fed. It is about monitoring things like liquidity premiums and safe asset premiums, which is squarely within the Fed's expertise.

Thus, I conclude that the Fed operating a large balance sheet can deliver improvements in monetary policy pass-through and enhance financial stability. This can be done in a manner that tethers the Fed's balance sheet, allaying some of the concerns raised by John and Charlie.

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