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12:30 P.M. U.S. Eastern Time on
Wednesday, April 19, 2017 OR UPON DELIVERY***



***“The Federal Reserve Balance Sheet
and Monetary Policy”***

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President & Chief Executive Officer
Federal Reserve Bank of Boston

*26th Annual Hyman P. Minsky Conference
Levy Economics Institute of Bard College*

Annandale-On-Hudson, New York
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Good afternoon. I would like to thank the Levy Economics Institute of Bard College for inviting me to share my perspectives today. At the outset, let me note as I always do that the views I express today are my own, not necessarily those of my colleagues at the Federal Reserve’s Board of Governors or on the Federal Open Market Committee (the FOMC).

Introduction and Overview

The economy has continued to improve – and with the labor market achieving measures associated with full employment, and inflation now fluctuating around¹ the Federal Reserve’s 2

percent inflation target, some observers of the macroeconomy and monetary policy have turned their attention to a policy tool actively deployed in the United States during the financial crisis: the Federal Reserve's balance sheet.

As short-term interest rates approached zero in 2008, it became difficult for monetary policy to further stimulate the economy through short-term rates alone. Policymakers were largely constrained from further reductions by the zero boundary. However, by purchasing long-term Treasury securities and agency mortgage-backed securities – and thereby increasing the size of the Fed's balance sheet – long-term rates could be reduced. Lower rates provided additional needed stimulus, encouraging firms and individuals to incur more long-term funding and spur economic activity that was desperately needed in the Great Recession and the long, slow recovery that followed.

While asset purchases were deployed during a period of extraordinary economic distress, now that the gradual normalization of monetary policy is underway it is a good time to re-evaluate the costs and benefits of a large balance sheet. I would note that the FOMC has published a statement on its policy normalization principles and plans.²

Many observers suggest that central banks' use of their balance sheets should be limited solely as a response to the type of severe economic conditions that occurred during the financial crisis and in its aftermath. Others suggest – as I will today – that structural changes in the macroeconomy may necessitate more frequent use of large scale asset purchases during recessions.

This latter view hinges on the argument that the combination of low inflation, low rates of productivity growth, and slow population growth may imply an economy where normal or

equilibrium short-term interest rates remain relatively low by historical standards, even once the economy has fully normalized. This notion of lower equilibrium rates has in fact been reflected by the policymakers participating in the Federal Reserve's Summary of Economic Projections (SEP). The median forecast of Fed policymakers in March was that in the longer run, the federal funds rate was likely to be only 3 percent, down more than a percentage point from assessments by Fed policymakers from a few years ago.

Low equilibrium rates would have noteworthy implications in a downturn. Consider the fact that during most of the previous economic downturns, the Federal Reserve has reduced interest rates by substantially more than 300 basis points. So a 3 percent federal funds rate would imply a high probability that short-term interest rates would have to be lowered again to zero in response to future recessions. As a result, the central bank may need to again deploy its balance sheet to augment traditional policy, spur economic activity, and achieve its mandates from Congress associated with employment and price stability.

One important implication, then, is that the exit from a large balance sheet may not prove to be a one-time event. So if done appropriately, the exit from the current large balance sheet can serve as an important "playbook" for future recovery periods should it prove necessary.

In contrast to balance sheet use of this sort, central banks have significant historical experience with moving short-term interest rates to achieve macroeconomic objectives. As a consequence, it makes sense to continue to use short-term interest rates as the primary tool for monetary policy. If central bank balance sheet activity is to be a secondary tool, then the exit from a large balance sheet should be conducted in ways that maintain the primacy of using short-term interest rates to either slow down or stimulate the economy.

To preview my argument a bit, while the FOMC is still carefully considering its balance sheet exit strategy, in my own view an ideal policy would take a very gradual approach to balance-sheet reduction. In my view that process could begin relatively soon and should not significantly alter the FOMC's continuing gradual normalization of short-term interest rates. That is, by initially retiring only a small percentage of maturing securities, and then very gradually shrinking the volume of the securities being reinvested, the tightening of short-term interest rates should not need to be much different than it would be in the absence of shrinking the balance sheet.

Today, I will cover a bit of background and analysis on the use of the balance sheet as a monetary policy tool. I will then discuss why I believe balance-sheet activity will likely continue to be deployed as a monetary policy tool in recessions, as long as short-term interest rates normalize at relatively low levels. Low inflation and low growth in both the working-age population and in productivity seem likely for many developed economies in the future, so balance sheet expansions – and exits – are likely to become more standard monetary policy tools around the world.

Background on Balance Sheet Activity

By way of background, **Figure 1** shows the overnight policy rates for the United States, Europe, and Japan. During the financial crisis, the Federal Reserve reduced short-term interest rates rapidly in the U.S., as the economy slowed during the recession. Interest rates were pushed eventually to zero as the financial problems associated with the Lehman failure led the central bank to deploy a large increase in reserves to counteract significant disruptions in short-term

financial markets, bringing short-term rates to the effective lower bound. The European Central Bank kept short-term rates somewhat higher for longer, but eventually also pushed their refinancing rate to zero. And the Bank of Japan, which had set rates very low even prior to the Great Recession, has maintained their call rate close to zero or slightly negative.

The United States has been the first country to begin the process of exiting from extraordinary monetary accommodation, raising short-term interest rates as a first step in the normalization process. The Federal Reserve made an initial increase in short-term interest rates in December 2015, followed by additional 25 basis point increases in December 2016 and in March 2017. In contrast, both Europe and Japan have yet to reach the point of raising their historically low short-term interest rates.

Figure 2 highlights the use of central bank balance sheet expansion in the United States, Europe, and Japan. As you can see, all three central banks significantly increased their balance sheets, as they all found lowering short-term interest rates insufficient to rekindle economic growth and slow disinflation. The Federal Reserve's balance sheet first began to increase as the financial crisis spread to a severe macroeconomic crisis. By indexing the changes in the three balance sheets to their levels in 2000, the figure shows that the balance-sheet expansion in the U.S. was much more aggressive than the other central banks' in the fall of 2008. However, when viewed relative to GDP, **Figure 3** shows that Japan especially needed to do more, relative to the size of its economy.

Importantly, perhaps because it was more aggressive with monetary easing initially, the United States has recovered more quickly. The Fed's balance sheet expansion stopped in 2014. In contrast, both Japan and Europe have not yet stopped expanding their balance sheets.

Figure 4 shows 10-year government bond yields in the United States, France, Germany, and Japan since 2000. Long-term rates have fallen, for a variety of reasons. One factor was that the balance sheets of central banks expanded – with purchases of longer-term Treasury securities and agency mortgage-backed securities in the U.S., and with purchases of a wider set of assets in Europe and Japan. In the U.S., rates on 10-year Treasury securities have generally remained above 2 percent once the Federal Reserve stopped expanding its balance sheet, while 10-year rates continued to fall in Japan, Germany and France, as Europe and Japan continued to purchase assets.

The Balance Sheet as a Monetary Policy Tool

As I noted in my introduction, some observers consider balance-sheet use as an extraordinary tool, deployed as an emergency response to the severity of the financial crisis. However, other observers suggest that if low, short-term interest rates are likely a feature of the economy even when monetary policy is normalized, it is possible that expanding the balance sheets of central banks will become a tool more commonly utilized during recessions.

Figure 5 shows how the participants at FOMC meetings have viewed the likely longer-run value of the federal funds rate. On a quarterly basis, FOMC participants are asked to forecast a variety of economic variables, including the federal funds rate they expect in the longer run. As the figure shows, policymakers' median view of the longer-run federal funds rate as recently as 2012 was that it was expected to be over 4 percent. However, that view has evolved significantly, with the median view in March of this year being for a federal funds rate of only 3 percent in the longer run.

The shaded band on the figure represents the central tendency, which provides the range of views of the participants omitting the top three and bottom three estimates. It is notable that in the March projections, while the median was 3 percent, many participants viewed the federal funds rate as likely to be below 3 percent in the longer run. Assuming that the Federal Reserve is successful in achieving 2 percent inflation in the longer run, a nominal rate of 3 percent implies a *real* federal funds rate of only 1 percent.

Figure 6 provides some perspective on a longer-run federal funds rate of 3 percent. During recessions, it is not unusual for the federal funds rate target to be cut by more than 3 percentage points; in fact, in many recessions, the federal funds rate target was reduced by more than 5 percentage points. However, going into most recessions the federal funds rate was higher than 5 percent, and as a result, despite the sharp declines the rate did not approach zero.

Figure 7 provides similar information in tabular form. It emphasizes that other than during the 1960 recession, all of the decreases in nominal federal funds rates have exceeded 3 percentage points. On average, from the peak to the trough of interest rates, the declines average roughly 7 percentage points.

Figure 8 shows the real federal funds rate, which is simply calculated by subtracting the core PCE inflation rate from the nominal federal funds effective rate. While there are periods of negative real federal funds rates – particularly after severe recessions – the most recent period has featured negative real federal funds rates for an extended period of time. If the SEP median forecast is correct about the possibility of a real federal funds rate of only 1 percent in the long-run, it will be much more common for short-term real interest rates to become negative during

recessions, when the Federal Reserve normally reacts by lowering short-term nominal interest rates.

Figure 9 provides similar information as Figure 7, but in tabular form. Parenthetically, it is worth noting that one reason the real rate could become so negative in the 1974 recession is because the inflation rate was so high. During much of the recent recovery, with the nominal interest rate lodged close to zero, the real rate was determined by the value of the inflation rate. But notably, a real short-term rate close to negative 2 percent was not sufficient to generate a rapid recovery.

The clear implication of very low short-term interest rates is that there will be a limited buffer for monetary policy to respond to economic slowdowns. I believe that *real* short-term federal funds rates are likely to be negative more frequently, and the *nominal* federal funds rate is likely to reach zero more frequently. And if policy rates do remain as low as currently expected, it is likely to be more common for central banks to engage in asset purchases to stimulate the economy by reducing longer-term rates.

Reasons for Low Prevailing Rates

Several economic factors have contributed to the widespread expectation of lower short-term rates prevailing in the foreseeable future. The inflation rate, shown in **Figure 10**, has followed a very different pattern since the mid-1990s. For much of the 1970s and 1980s, the inflation rate was above 3 percent. However, since the mid-1990s, inflation has generally fluctuated in a band much closer to 2 percent. And for much of the period since the Great

Recession, the inflation rate has been below the Federal Reserve's 2 percent target. While this low and stable inflation rate has been beneficial in many respects, it has also provided less room for interest rates to fall before hitting zero. Thus, there may be a trade-off with a low inflation target that policymakers may be willing to make, depending on their willingness to manipulate the balance sheet.

Two other factors that lead to lower equilibrium rates involve an important link between the economy's potential growth rate, and real interest rates. Anything that lowers the potential rate of growth in the economy will both lower the incentive to invest (as real returns to investing will fall on average with lower potential growth) and increase the incentive to save (as lower future returns on savings imply a greater need to save today). Lower investment demand and higher savings both engender lower real rates of interest, so a fall in the potential growth rate will generally lead to a fall in equilibrium real interest rates.

Several other recent features have contributed to a lower rate of potential growth in the economy. One such feature is a reduction in productivity growth, highlighted in **Figure 11**. While quarter-to-quarter fluctuations in productivity are quite volatile, the smoothed productivity growth over the last several years has been noticeably lower than has been experienced over much of the previous 50 years. Lower productivity growth implies lower real interest rates, and again this would suggest less of an interest-rate buffer during economic downturns.

Another factor impacting potential growth is the change in demographics in the United States. The robust birth rates, immigration rates, and movement of women into the labor force contributed to significant increases in the U.S. labor force – trends which have become much more muted of late, as shown in **Figure 12**. Slower growth in the labor force lowers the

potential growth rate of the economy and, through the channels I just articulated, implies a lower real interest rate.³ And, given the strong downward trend shown in the figure, slower labor force growth is expected to continue.

These factors are not unique to the United States. Many developed countries are experiencing low inflation rates and demographic trends that have resulted in lower short-term interest rates. This implies that tools other than movements in short-term interest rates, such as balance-sheet tools, are likely to be a more common and necessary feature of monetary policy in combating future recessions in many economies around the world.

Concluding Observations

While the extensive use of central bank balance sheets has been a distinguishing feature of the most recent downturn and slow recovery, I see it as quite likely that this tool will be necessary in future economic downturns. Unless productivity growth and demographic trends change, or monetary policymakers set a higher inflation target, the feasible reductions in short-term rates to combat recessions will not be sufficient. Thus, monetary policymakers are likely to need to use balance-sheet tools.

If monetary policy is to rely primarily on short-term interest rates to normalize policy, as seems prudent given the historical experience, in my view the Federal Reserve should adopt balance sheet exit strategies that reinforce the primacy of interest rate policy. Starting to shrink the balance sheet earlier – and doing so in a very gradual fashion – implies very little reduction in the degree of monetary stimulus coming from the U.S. central bank’s balance sheet. This, in

turn, will allow policymakers to focus on gradual increases in the federal funds rate target as the primary mechanism for normalizing monetary policy and calibrating the economy.

Thank you.

¹ Measured by the *core* Personal Consumption Expenditures Price Index or PCE, inflation is at 1.8 percent, but measured by *total* PCE inflation is just over 2 percent, specifically 2.1 percent.

² See <https://www.federalreserve.gov/newsevents/press/monetary/20140917c.htm>.

³ With a slower growth in the labor force, capital becomes relatively less scarce and therefore the return on capital decreases. Also with an ageing population, there is an extra need of savings for retirement which creates an additional pressure on accumulating savings and capital which in turn reduces the return on capital.