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***“Perspectives on Quantitative Easing
in the United States”***

Eric S. Rosengren
President & Chief Executive Officer
Federal Reserve Bank of Boston

*Global Interdependence Center
Central Banking Series*

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Good morning. I would like to thank our hosts, the Bank of Finland and the Global Interdependence Center, for inviting me to speak as part of this forum.

In addition to discussing the main topic of the panel, the experience in the United States and Europe with quantitative easing, I will provide a few comments on the current outlook for the U.S. economy. The U.S. experience is an important part of the discussion, as we are in the process of gradually normalizing interest rates, and a key consideration with quantitative easing

and nontraditional monetary policy tools more generally is the strategy for exiting when that becomes appropriate.

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).

In the United States, the central bank has taken the first step toward more normalized monetary conditions with the 25 basis point increase in the target range for the federal funds rate in December. It is my expectation that economic conditions will continue to gradually improve, which in turn would justify further actions to normalize policy, continuing a gradual return to a more normal interest rate environment.

Lately the economic data have been choppy. In the first quarter, employment growth was strong but spending data showed weakness. To date in the second quarter, we have had a reversal of that pattern, with economic data consistent with a pick-up in growth, but weaker employment growth. However, I still expect sufficient economic growth to justify a gradual removal of accommodation.

I would note that the move toward policy normalization has been much slower than in previous U.S. recoveries, because of economic conditions characterized by a very gradual return to full employment and to the Federal Reserve's 2 percent inflation target. I expect the normalization process will continue to be gradual, compared with previous episodes of U.S. interest rate tightening.

The most comprehensive and complete evaluation of monetary policy tools can take place only after a return to more normal economic conditions and monetary policy. Still, with that caveat, my overall assessment of quantitative easing is that it was quite successfully utilized in the United States. One reason the U.S. is now relatively close to achieving both aspects of the Federal Reserve's dual mandate from Congress – full employment and price stability (which the Federal Reserve targets at 2 percent inflation) – is the early and forceful use of quantitative easing in the aftermath of the financial crisis. Real rates that are relevant to households and firms have been quite low, in part as a result of the accommodative monetary policy. This has stimulated the U.S. economy despite forceful headwinds stemming from the financial crisis and from economic struggles confronting our trading partners.

With regard to the use of negative interest rates, I would say the experience in Japan and parts of Europe seems mixed. It will take some time before one can fully assess the overall impact on the Japanese and European economies. But my assessment so far of the effectiveness of the transmission mechanism of negative-rate policy, and of behavioral responses to negative interest rates, make this a tool to use only after other nontraditional monetary policy tools – the “more-conventional unconventional” tools – have been exhausted.

A Few Comments on the U.S. Economic Outlook

The minutes of the April FOMC meeting indicated the conditions that would make it appropriate to further raise interest rates include a rebound in spending (that is, growth from the first quarter level), continued strengthening of labor markets, and additional progress toward reaching the Federal Reserve's 2 percent inflation target.¹

Figure 1 provides the forecasts for second quarter real GDP from two groups of private sector forecasters, as well as the Federal Reserve Bank of Atlanta’s GDPNow “Nowcast.”² All three indicate an expectation that real GDP growth will pick up in the second quarter of this year. The Federal Reserve Bank of Boston’s forecast similarly expects growth in the second quarter to be somewhat above 2 percent.

One reason for the widespread optimism that the second quarter will include something of a “snap back” from the weak growth of the first quarter is the strong retail sales report for April, as shown in **Figure 2**. The April increase was large, relative to sales over the past year and was fairly widely distributed across retail categories. Because consumption is approximately two-thirds of U.S. GDP, strong consumption provides a significant boost to the overall economy.

In terms of labor markets, the employment situation report for May was disappointing. Nonfarm payroll employment grew by only 38,000 jobs; however, we should note that this number was held down by about 35,000 jobs as a result of a significant strike which has since ended.³ In addition, the previous two months of payroll employment were revised down by 59,000 jobs. The unemployment rate fell to 4.7 percent, in part due to a 0.2 percentage point decline in the civilian labor force participation rate.

Given that the labor market contrasts with the pattern in the first quarter, and the pick-up in spending observed so far from other data, it will be important to see whether the weakness in this report is an anomaly or reflects a broader slowing in labor markets.

Despite the weakness in the recent employment report, at 4.7 percent unemployment we are now at my estimate of full employment. On **Figure 3**, the shaded band shows the central tendency⁴ of the forecasts of the longer-run unemployment rate that Federal Reserve presidents

and governors submitted in the March Summary of Economic Projections (the SEP). Note that 4.7 percent is at the bottom of the central tendency and is also the median unemployment projection for year-end 2016 by Federal Reserve's policymakers.

In terms of inflation, the rise in energy prices and the depreciation of the dollar relative to January highs reverses some of the factors that had been contributing to low inflation readings in the U.S. The core inflation rate, shown in **Figure 4**, has been 1.6 percent over the past year, somewhat higher than in 2015. So, while it is only gradual progress, we are seeing some evidence of inflation moving toward the 2 percent inflation target.

The normalization process has been very gradual – appropriately so, given the very gradual return to full employment and to the Federal Reserve's 2 percent inflation target – but this also means that a truly comprehensive evaluation of quantitative easing in the United States will not be possible for some time. Still, evidence to date allows me to share my current assessment of the quantitative easing experience in the United States.

Quantitative Easing in the United States

I was a strong supporter of pursuing quantitative easing in the United States during the aftermath of the financial crisis and in light of the very slow recovery. My reasoning was quite straightforward. With short-term interest rates at the zero lower bound, an unemployment rate well above the level associated with full employment, and inflation too low – well below the Federal Reserve's target of 2 percent – I was convinced the U.S. economy needed more stimulus. Ideally, perhaps, more of that stimulus would have been generated by fiscal policy, but when

fiscal stimulus was not forthcoming, monetary policymakers needed to act strongly to ensure attainment of our dual mandate goals.

I would note that the U.S. central bank used other tools in addition to quantitative easing – most notably, forward guidance that highlighted our plan to remain accommodative for some time; and earlier on, liquidity facilities designed to address some of the stresses experienced in financial markets during and after the financial crisis.

However, I view quantitative easing as one of our most important monetary policy tools in this cycle. In the wake of the financial crisis, the recovery to normal levels of activity was painfully slow. Lower long-term rates and higher asset prices generally would help to spur activity, but with the federal funds rate at its effective lower bound, monetary policy makers needed another tool to affect long rates and other asset prices. Purchasing longer-term securities pushes down the interest rates paid by households and firms,⁵ increasing aggregate demand in the economy. I would note that in the United States, the central bank is limited to purchasing Treasury or agency mortgage-backed securities, while many other central banks have far more latitude to purchase assets that may more directly influence the borrowing costs of households and firms.

Numerous studies have examined announcement effects and found that quantitative easing significantly affected rates, although the studies find different impacts depending on the nature and circumstances of the quantitative easing.⁶ Today, I will not try to replicate those studies by focusing on event dates, but rather will simply examine whether financial conditions for households and firms were generally easier after the onset of quantitative easing, with less specific focus on the various programs.⁷ Note that interest rates were impacted not only by the

quantitative easing in the United States, but also the quantitative easing implemented in Japan and Europe, as well as other factors such as relatively weak global economic conditions.

Figure 5 shows the real rates on auto loans in the U.S. Prior to quantitative easing, real auto loan rates had generally been above 4 percent, while over the past several years (after quantitative easing) real auto loan rates in the United States have been below 2 percent. More recently, with the increased expectation of rising short-term interest rates in the United States, there has been a very modest upward trend in real auto loan rates. Consumers seem to have responded to the lower real interest rates and more robust economy, as auto sales have been quite strong over the past several years, returning to pre-recession highs.

Figure 6 shows the real rate on 30-year fixed-rate mortgages. Prior to quantitative easing, real mortgage rates had generally been above 4 percent, and afterward real mortgage rates in the United States have generally been fluctuating between 2 and 3 percent. Over the past several years, residential real estate investment has been trending up, though many borrowers still find it difficult to meet the post-crisis credit standards for home mortgages.

Figure 7 shows the real rates on corporate bonds. Prior to quantitative easing, real 10-year rates for AAA and AA corporate borrowers generally fluctuated between 3 and 4 percent, while over the past several years, real rates for AAA and AA borrowers have generally varied between 1 and 2 percent.

In sum, households and firms have seen lower real rates since the first quantitative easing was implemented in the United States. In part because of this monetary stimulus, enacted after the traditional policy rate hit the zero lower bound, the U.S. economy is approaching both

elements of the Federal Reserve's dual mandate. This stimulus led, in part, to conditions appropriate for the initial increase in short-term rates in December 2015.

While the full evaluation of quantitative easing in the United States will need to wait until monetary policy has fully normalized, I expect the results will suggest that the tool was useful during the crisis and therefore will be appropriate in the future, should we once again experience a recession where short-term interest rates hit the zero lower bound.

A Few Observations on Negative Interest Rates

Turning to the issue of negative rates, let me first say that fortunately I do not expect that the United States will need to use negative interest rates given that we are slowly recovering, and on the path to more normalized monetary policy. Also, I will say that for several reasons which I will discuss today, I would only turn to the tool of negative rates as a last resort. While a number of central banks have implemented negative interest rates, I think the Japanese experience is especially informative because the announcement of negative interest rates came as a surprise to many, and the results to date seem so decidedly mixed.

Unlike quantitative easing, which reduces long-term rates and credit spreads, negative short-term policy rates have their most direct effects on short-term market rates. As is the case with low but positive policy rates, negative policy rates generally make holding short-term securities less attractive and, all things equal, are expected to depreciate the currency. Interestingly, after the announcement of negative interest rates in Japan (see **Figure 8**), the exchange rate *appreciated*. This decreased the costs of imports, lowering their contribution to

overall inflation, and made hitting the inflation target more difficult. The real cost of mortgages is modestly lower following the announcement (shown in **Figure 9**) while the real cost of corporate borrowing (in **Figure 10**) actually ends up rising. So the positive effects expected from the announcement are not clearly reflected in the data.

Furthermore, the announcement of negative rates in Japan does seem to have had some adverse consequences. The monetary policy transmission mechanism is more effective when banks are healthy and able to pass on lower interest costs on to borrowers. However, as **Figure 11** shows, Japanese bank stocks declined after the announcement of negative interest rates, perhaps reflecting concern, in part, that negative rates will prove challenging for the profit model of Japanese banks.⁸

An additional concern is that the presence of negative rates could disrupt some short-term credit markets. As an example, the volume of trades in Japan's call market decreased, and concerns have been raised over a lack of market liquidity for short-term maturities (see **Figure 12**).

At this early stage, the behavior of Japanese consumers and firms in response to negative interest rates is as yet unclear. If households view negative interest rates as a tool of last resort, the behavioral response of households and firms may be dominated by risk-averse behavior, resulting in less consumption and investment. Much more time, experience, and empirical observation across countries will be needed to fully assess the impact of negative interest rates as a monetary policy tool. However, in my view the results to date do not seem particularly promising. I believe that for the United States, negative rates would be a tool to be employed only after most other tools had proved insufficient to stimulate the economy.

Concluding Observations

Central banks around the world have tried a variety of new tools to address the severe economic problems experienced since the financial crisis. My view is that the positive response of the U.S. economy to quantitative easing is one of the reasons we are now approaching both elements of the Federal Reserve's dual mandate.

In contrast, I would observe that negative interest rates seem to have much more mixed results. At least that is the early conclusion I would draw, based on initial reactions to the announcement of negative interest rates in Japan.

Fortunately, in the United States I do not expect additional quantitative easing or negative interest rates to be utilized given that we are slowly recovering, and on the path to more normalized monetary policy. I expect that the U.S. central bank will gradually normalize monetary policy as the three conditions set out in the April FOMC minutes are met.

Thank you.

¹ More precisely the minutes said, "Most participants judged that if incoming data were consistent with economic growth picking up in the second quarter, labor market conditions continuing to strengthen, and inflation making progress toward the Committee's 2 percent objective, then it likely would be appropriate for the Committee to increase the target range for the federal funds rate in June."

² See <https://www.frbatlanta.org/cqer/research/gdpnow.aspx?panel=1>.

³ The Labor Department counts striking workers as unemployed.

⁴ The central tendency excludes the three highest and three lowest projections for each variable in each year. See <http://www.federalreserve.gov/monetarypolicy/files/fomcprojtabl20160316.pdf>.

⁵ Purchasing securities represents additional demand that boosts prices. The price paid for the security and its effective yield (effective interest rate) move in opposite directions.

⁶ See for example:

- Gagnon, Joseph, Matthew Raskin, Julie Remache and Brian Sack. 2011. “Large-Scale Asset Purchases by the Federal Reserve: Did They Work?” *Federal Reserve Bank of New York Economic Policy Review*, 17 (1), pp. 41-59.
- Hancock, Diana, and Wayne Passmore. 2011. “Did the Federal Reserve’s MBS Purchase Program Lower Mortgage Rates?” *Journal of Monetary Economics*, 58 (5), pp. 498-514.
- Hamilton, James D., and Jing Wu. 2010. “The Effectiveness of Alternative Monetary Policy Tools in a Zero Lower Bound Environment,” University of California, San Diego, working paper.
- Krishnamurthy, Arvind, and Annette Vissing-Jorgensen. 2011. “The Effects of Quantitative Easing on Interest Rates: Channels and Implications for Policy,” *Brookings Papers on Economic Activity*.
- Fuhrer, Jeffrey and Giovanni Olivei. 2011. “The Estimated Macroeconomic Effects of the Federal Reserve’s Large-Scale Treasury Purchase Program.” Federal Reserve Bank of Boston Public Policy Brief no. 11-2, (2011).

⁷ For more details on the various quantitative easing programs, see “Lessons from the US Experience with Quantitative Easing at [//www.bostonfed.org/news/speeches/rosengren/2015/020515/index.htm](http://www.bostonfed.org/news/speeches/rosengren/2015/020515/index.htm).

⁸ Granted, because the decline in bank stocks was well underway at that time, it is a challenge to know precisely how much to attribute to negative rates.