



EMBARGOED UNTIL WEDNESDAY, JANUARY 13, 2016 AT 8:20 A.M. EASTERN TIME OR UPON DELIVERY

# Early Observations on Gradual Monetary Policy Normalization

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## Improvements in the U.S. Economy

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- ▶ Recent employment report
    - ▶ 292,000 jobs added in December
    - ▶ 284,000 jobs added per month over the past quarter
  - ▶ Unemployment rate remained at 5 percent
    - ▶ People previously not in the labor force are entering the labor force
    - ▶ Tighter labor markets have helped reduce unemployment in some segments that still have elevated unemployment rates
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## Not All Good News

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- ▶ Weakness since the New Year
    - ▶ Stock markets in much of the world began the year on a decidedly weak note – particularly China
    - ▶ Weak oil and commodity prices
    - ▶ Analyst estimates of Q4 real GDP have been declining
  - ▶ Monetary policy should not overreact to short-term, temporary fluctuations in financial markets
  - ▶ But we do need to take seriously potential downside risks to economic forecasts and manage those risks as we think about the appropriate path for monetary policy
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## Overview of My Comments Today

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- ▶ The Fed raised short-term rates last month, reflecting the significant progress of the U.S. economy over the last year
  - ▶ The initial monetary policy tightening was rather uneventful
    - ▶ The effective federal funds rate has largely traded within the new target range
    - ▶ Other short-term rates in the marketplace have moved up as expected
  - ▶ The future path of the federal funds rate will depend on incoming economic data and likely be gradual
  - ▶ I hope the improvement continues, so further normalization is appropriate – but it is important to carefully manage risks
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## The Beginning of Monetary Policy Normalization

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- ▶ Unemployment rate started 2015 at 5.7 percent and fell to 5.0 percent – 2.65 million jobs created in 2015
  - ▶ In December the FOMC raised the federal funds target range: set a new target range of 0.25 to 0.50 percent
  - ▶ The federal funds rate has tended to trade in the market around 0.36 percent, about the middle of the new target range
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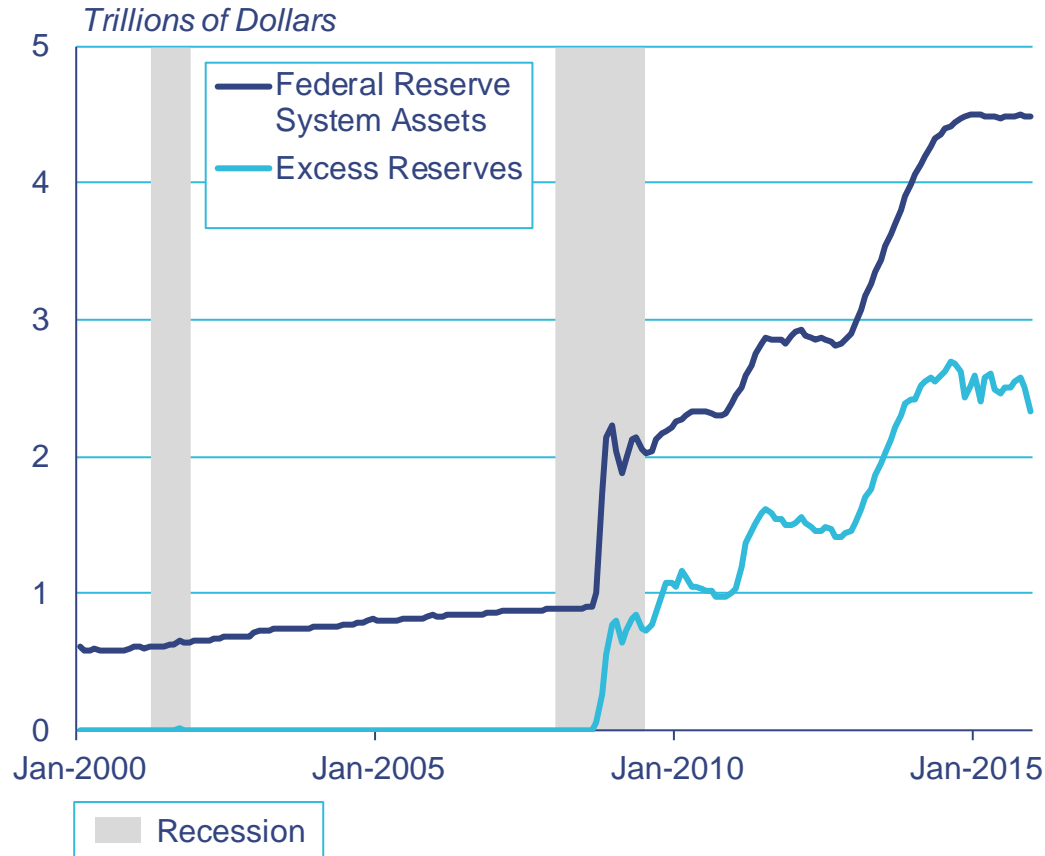


## This Time is Somewhat Different

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- ▶ Very high level of reserves in the banking system (resulting from the Fed's necessary, effective, but extraordinary accommodation post-crisis)
  - ▶ Core inflation has yet to show a clear movement towards the Federal Reserve's 2 percent target – lack of significant inflationary pressures in the U.S. and weakness in many parts of the world
  - ▶ Real GDP is projected to grow only somewhat faster than potential
  - ▶ Monetary policy will likely move more gradually than in past tightening cycles
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Figure 1: Federal Reserve System Assets and Excess Reserves of Depository Institutions in the U.S.  
January 2000 - December 2015





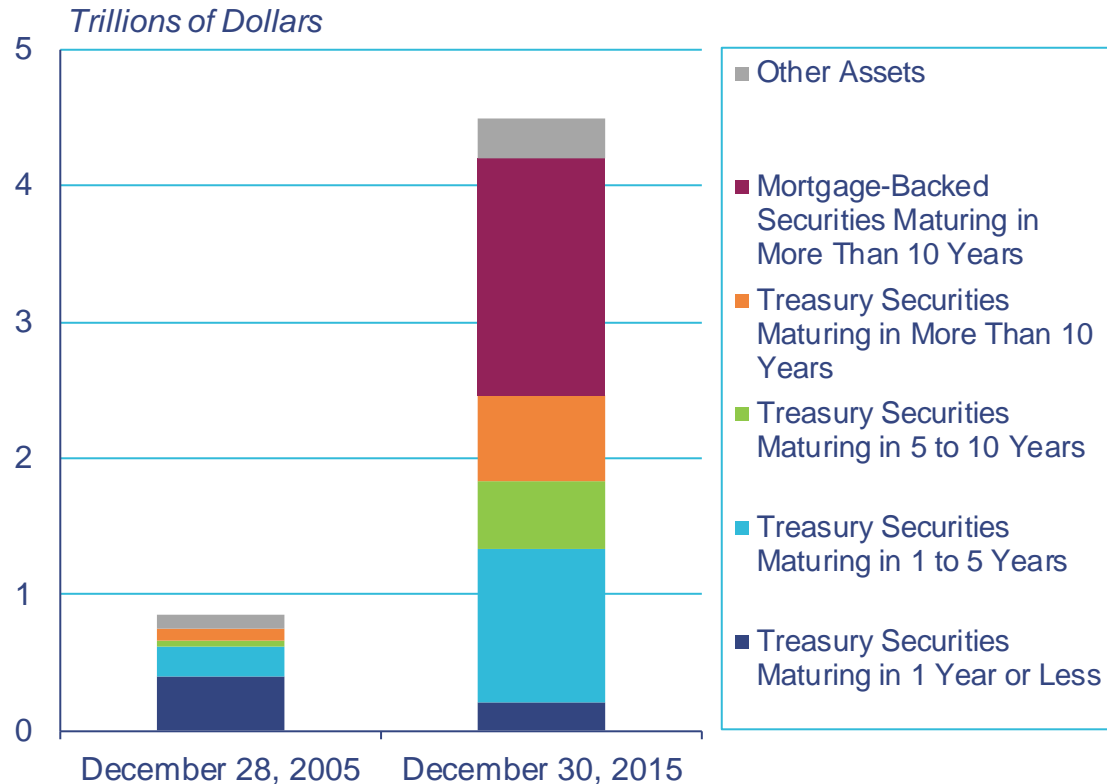
## Changes in Monetary Policy Implementation

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- ▶ Pre-crisis:
    - ▶ Monetary policy set the federal funds rate, a short-term interest rate on overnight loans between banks
    - ▶ Because the amount of reserves in the system was relatively modest, small purchases and sales by the Fed's open market desk were sufficient to alter the target (and actual) federal funds rate
  - ▶ In response to the crisis:
    - ▶ Fed lowered the federal funds rate to effectively zero
    - ▶ Deployed new policy tools – purchasing securities
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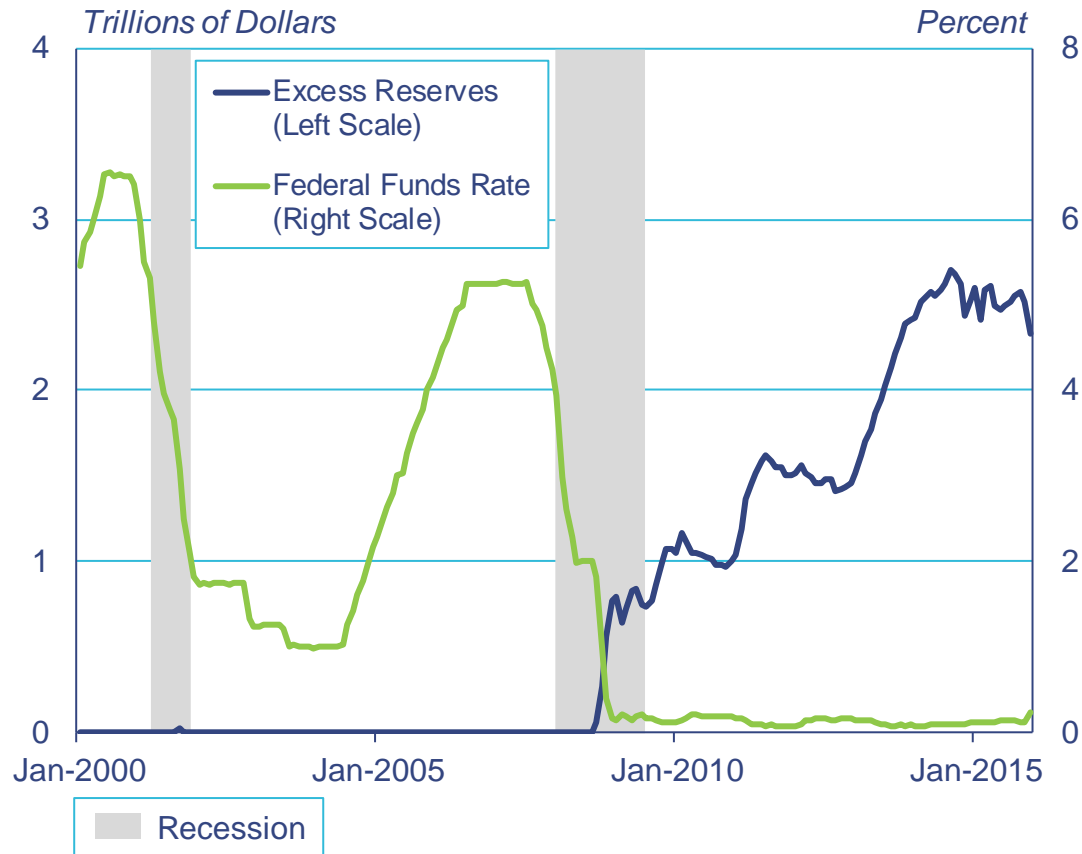


## Figure 2: Federal Reserve System Asset Composition December 28, 2005 and December 30, 2015



# Figure 3: Excess Reserves of Depository Institutions in the U.S. and the Federal Funds Rate

January 2000 - December 2015





## Post-Crisis:

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- ▶ Large balance sheet, large supply of bank reserves
  - ▶ Usual way of raising the federal funds rate is not available: no modest sale of securities will remove enough excess reserves from the system to tighten borrowing conditions in the overnight federal funds market
  - ▶ Need new tools to set the top and the bottom of the federal funds target range
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## New Tool – Interest on Reserves

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- ▶ Congress gave the Federal Reserve the authorization to pay interest on reserves, effective October of 2008
    - ▶ Banks receive interest on reserves held overnight with the Federal Reserve
    - ▶ An important tool as the Fed works to raise rates, because banks will not want to lend at a rate below what they can get from holding funds with the Fed
  - ▶ Only banks hold reserves and can receive interest on reserves
  - ▶ Arbitrage plays a role – if overnight rates fall too far below the interest on reserves, banks can make money by buying overnight funds below the interest on reserves and holding those funds at the Federal Reserve where they earn the interest on reserves
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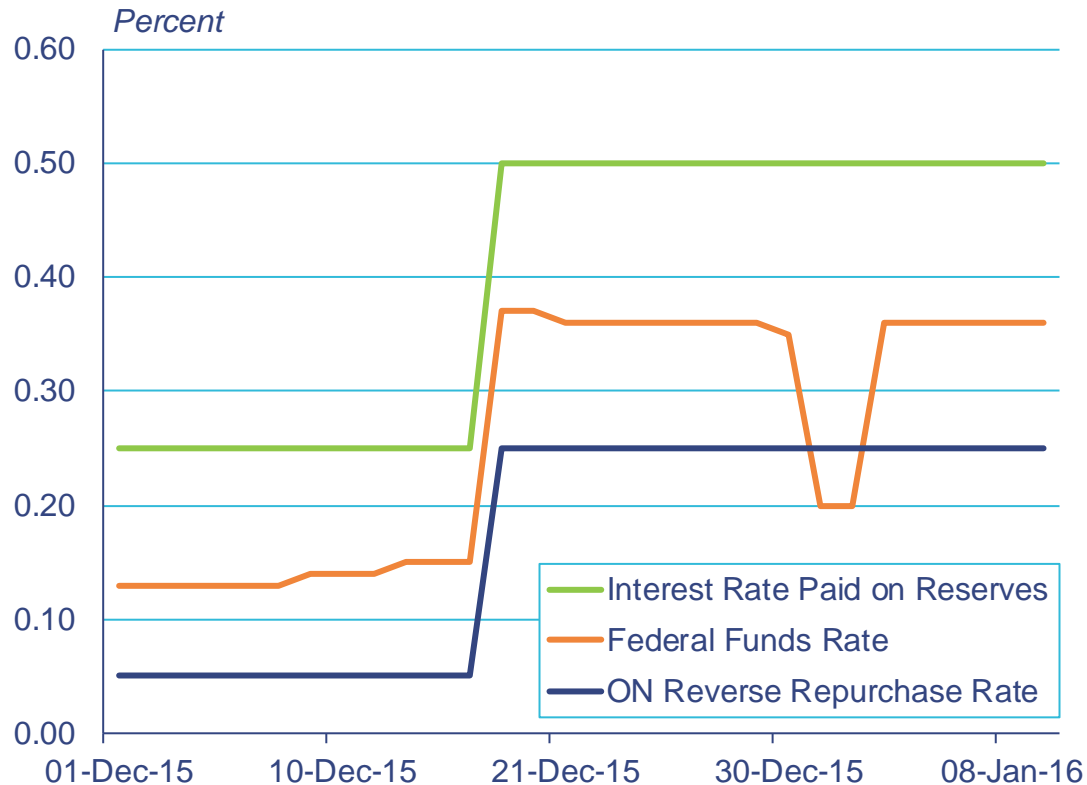
## New Tool – Reverse Repurchase Agreement Rate

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- ▶ Purchase funds from non-banks at a rate slightly below interest on reserves
  - ▶ Currently at a rate of 0.25 percent
  - ▶ Collateralized, and transacted with the central bank, so investors should be unwilling to lend at a lesser rate
  - ▶ Federal funds should trade in the range between interest on reserves and the reverse repurchase rate
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# Figure 4: Interest on Reserves, the FRB Overnight Reverse Repurchase Rate, and the Federal Funds Rate

December 1, 2015 - January 11, 2016

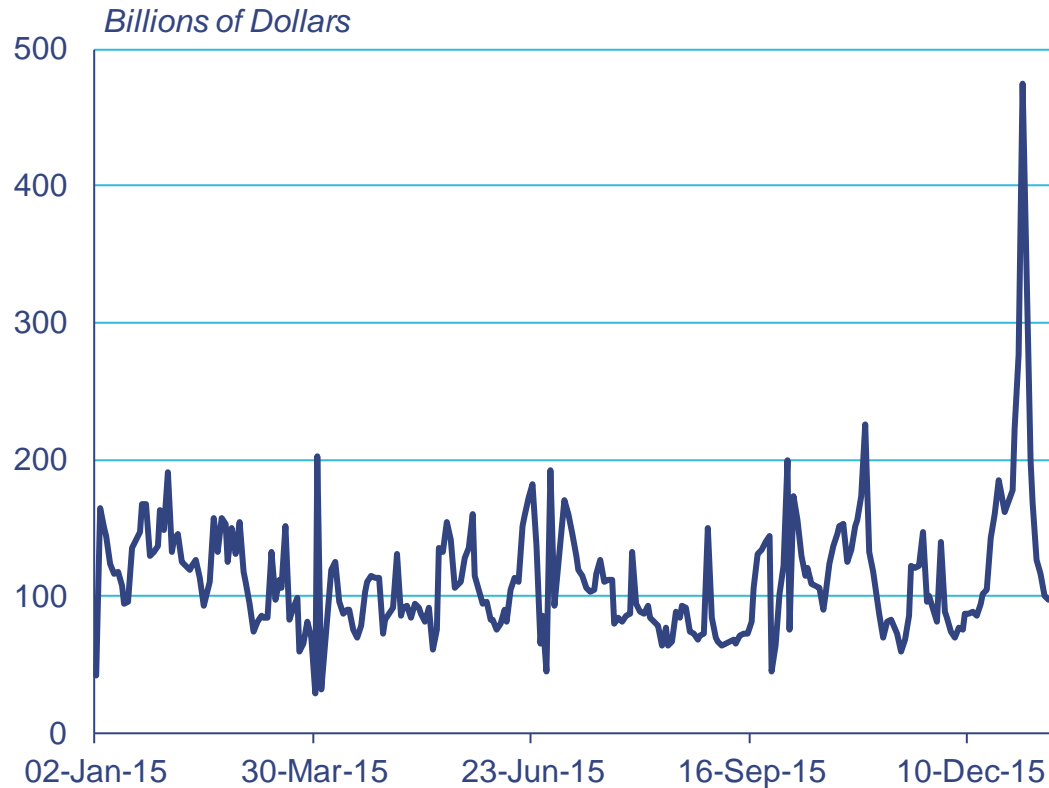


Note: Currently, the interest rate paid on required and excess reserves is the same.

Source: Federal Reserve Bank of New York, Federal Reserve Board, Haver Analytics

## Figure 5: FRB Overnight Reverse Repurchase Agreements: Total Amount Accepted

January 2, 2015 - January 11, 2016



*Note: Includes only fixed-rate, one-day reverse repurchase agreements.*

*Source: Federal Reserve Bank of New York, Haver Analytics*

Figure 6: Selected Short-Term Interest Rates  
December 1, 2015 - January 11, 2016

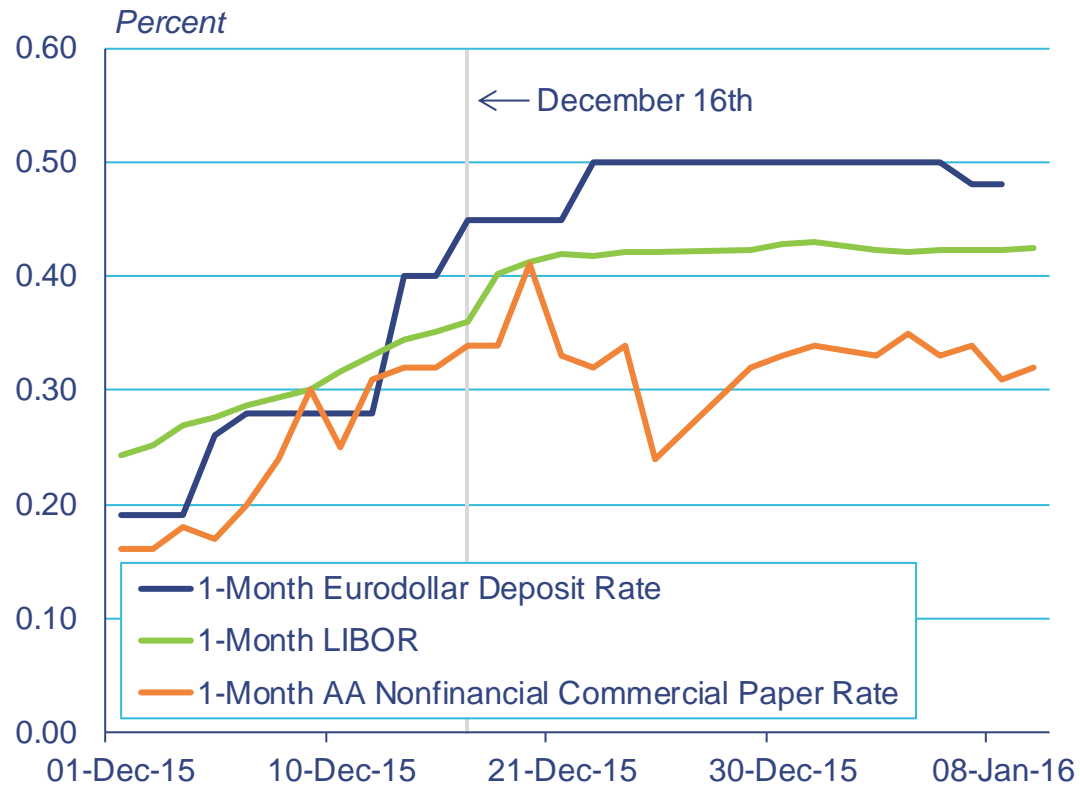




Figure 7: Selected Long-Term Interest Rates  
December 1, 2015 - January 11, 2016

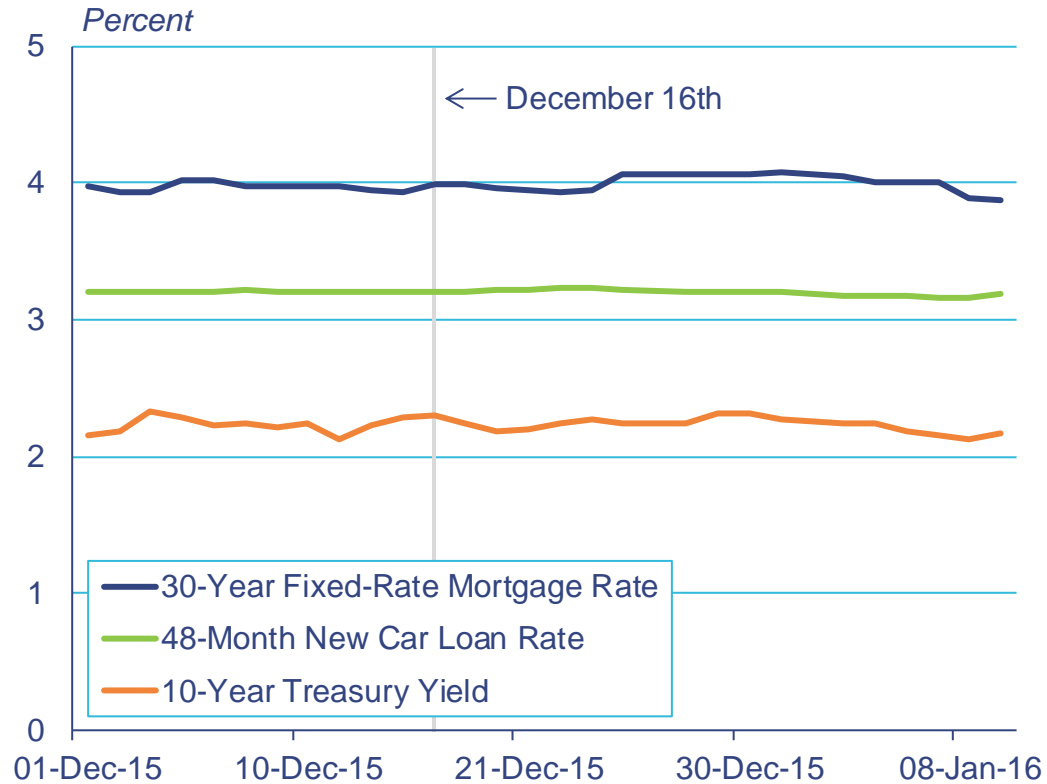
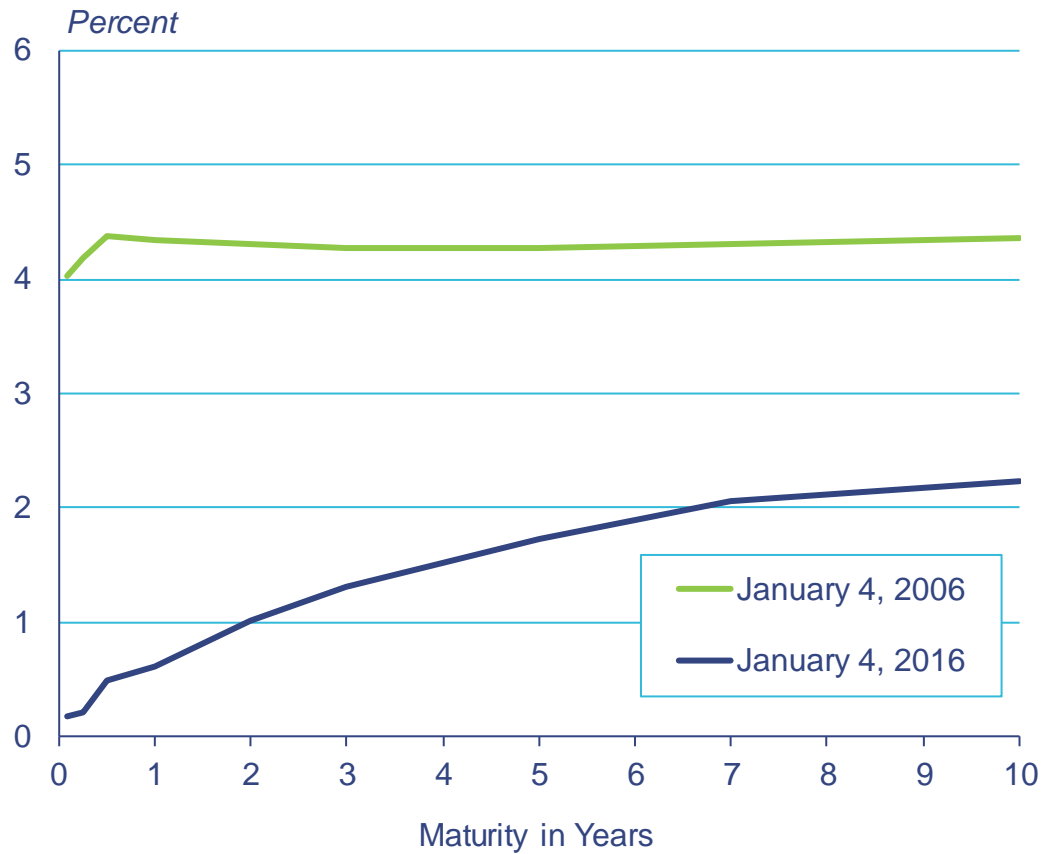




Figure 8: Treasury Yield Curves  
January 4, 2006 and January 4, 2016





## FOMC Statement, December 16, 2015

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- ▶ “The Committee expects that economic conditions will evolve in a manner that will warrant only gradual increases in the federal funds rate.”
  - ▶ “The Committee is maintaining its existing policy of reinvesting principal payments from its holdings... and it anticipates doing so until normalization of the level of the federal funds rate is well under way.”
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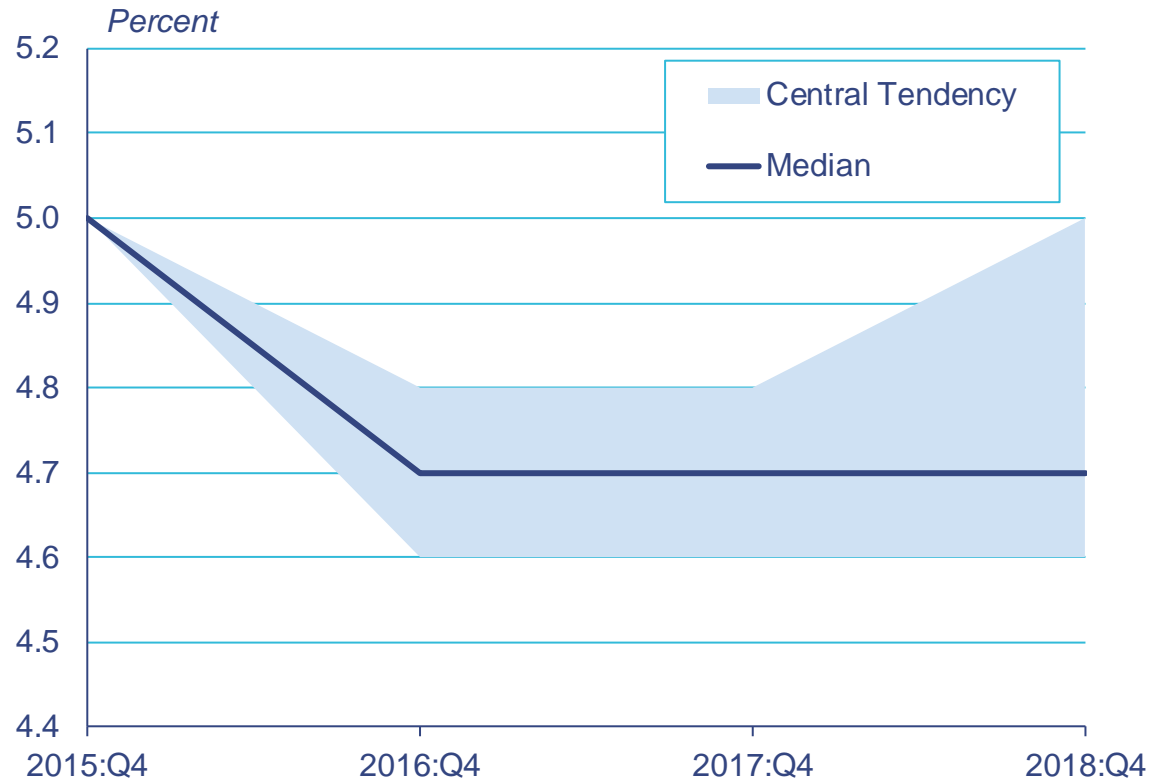
## Reinvestment Strategy

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- ▶ Move short-term interest rates first, because we have greater confidence in the likely effects of such a move on the economy
  - ▶ Desirable to have the flexibility to respond if necessary to a large unexpected negative shock by reducing short-term rates
  - ▶ Reducing the size of our balance sheet would be a form of tightening, with more impact on longer-term rates
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## Figure 9: Unemployment Rate Projections of Federal Reserve Governors and Federal Reserve Bank Presidents, December 16, 2015

2015:Q4 - 2018:Q4



Note: The central tendency excludes the three highest and three lowest projections in each period.

Source: FOMC, Summary of Economic Projections (SEP), December 16, 2015

Figure 10: Civilian Unemployment Rate and the Natural Rate of Long-Term Unemployment  
1960:Q1 - 2015:Q4

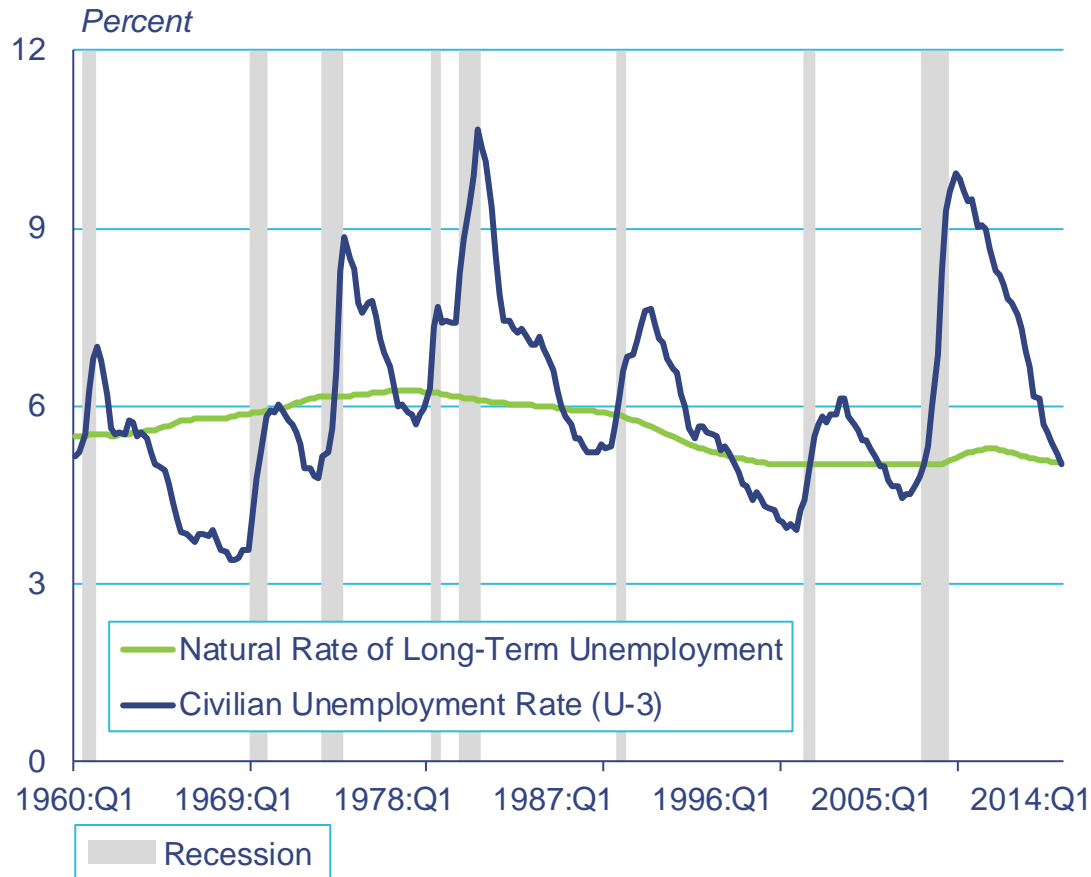
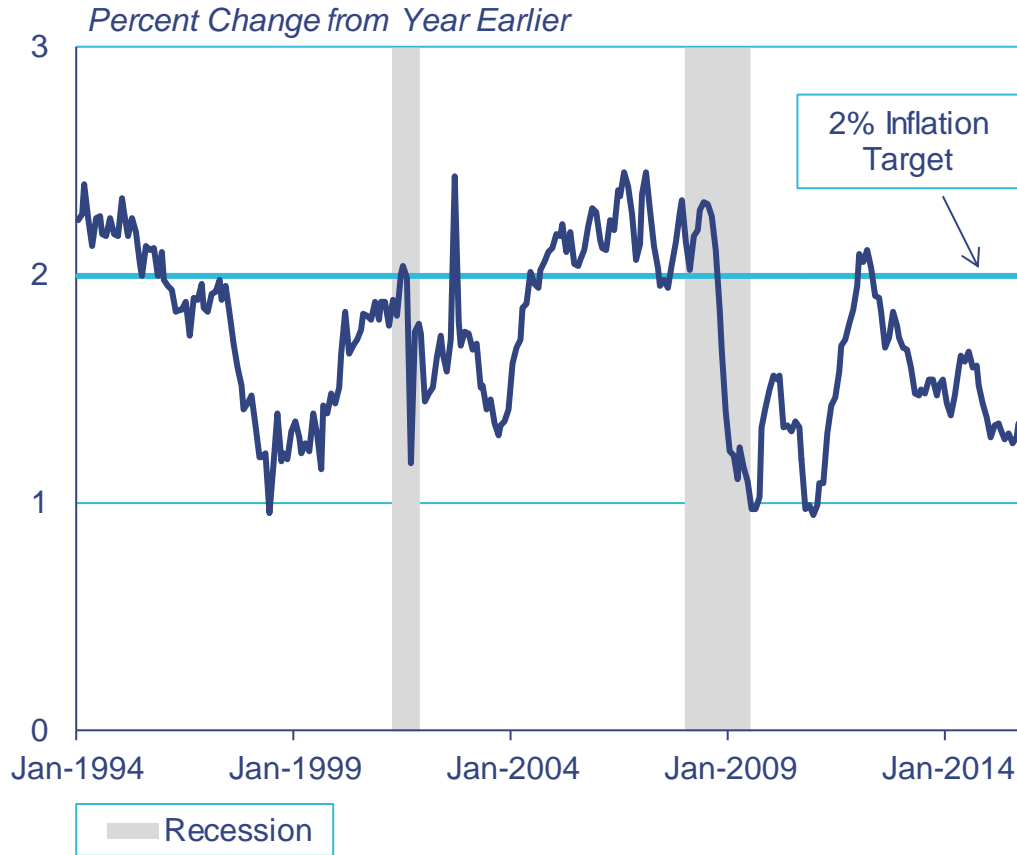
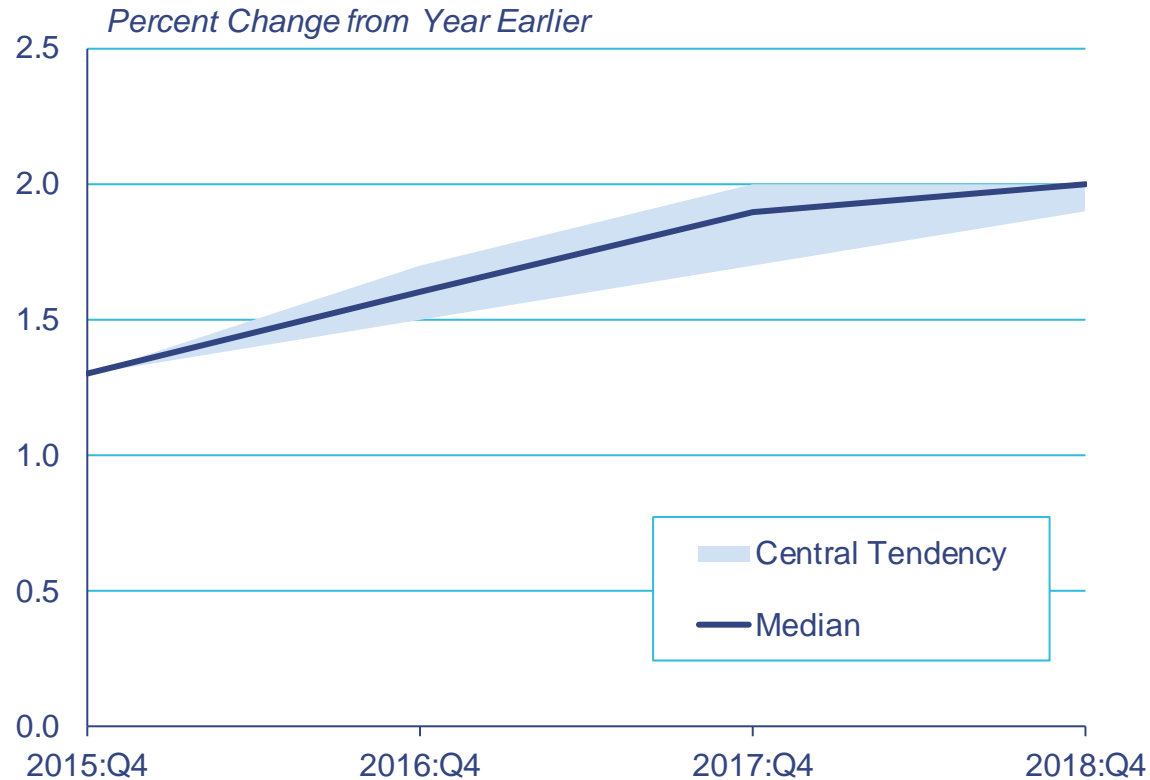


Figure 11: U.S. Inflation Rate: Change in Core Personal Consumption Expenditures Price Index  
January 1994 - November 2015



# Figure 12: Core Inflation Rate Projections of Federal Reserve Governors and Federal Reserve Bank Presidents, December 16, 2015

2015:Q4 - 2018:Q4



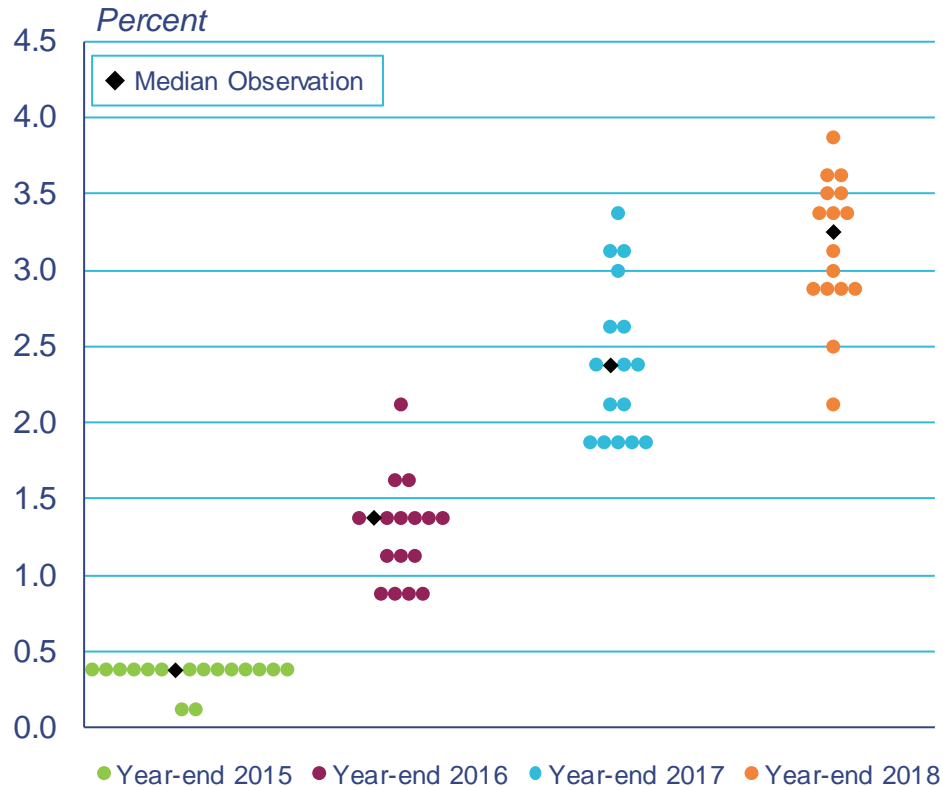
Note: The central tendency excludes the three highest and three lowest projections in each period.

Source: FOMC, Summary of Economic Projections (SEP), December 16, 2015



# Figure 13: U.S. Federal Funds Rate Projections of Federal Reserve Governors and Federal Reserve Bank Presidents, December 16, 2015

December 31, 2015 - December 31, 2018





## Concluding Observations

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- ▶ The initial increase in short-term rates was rather uneventful
    - ▶ The Federal Reserve's target rate moved as expected
    - ▶ Other short-term rates have moved as expected
  - ▶ Further increases in rates are in my view likely to be gradual
    - ▶ I remain highly attentive to foreign economic conditions, any weakening of the domestic economic situation, and the path of U.S. inflation
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