Nontraditional Monetary Policy and the Federal Reserve's Balance Sheet

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Today's discussion

- Prior to 2008, the target for the federal funds rate was the primary instrument for monetary policy.
- Since then, references have been made to the balance sheet as an instrument or tool for policy.
- Discuss:
  - The evolution of the balance sheet;
  - Nontraditional policy;
  - Changes in the implementation of monetary policy;
    - LSAPs;
    - "Forward guidance";
  - Conclusions.

The Federal Reserve's balance sheet

- The Federal Reserve publishes its balance sheet each week.
- The H.4.1 statistical release comes out Thursday afternoon.
- http://www.federalreserve.gov/releases/h41/

What is monetary policy?

- More accurately called "interest rate policy."
  - Money is not of particular importance to the way the Federal Reserve does monetary policy;
  - The primary instrument of the Federal Reserve historically was the target for the federal funds rate.

- This perspective is important for recent monetary policy actions, as well as the challenges coming up.

During the crisis

- During the financial crisis, the Federal Reserve engaged in a great deal of lending.
  - Before the crisis, discount window lending was minimal;
  - Lending was extended to other types of institutions.
- By the end of 2008, the Federal Reserve's balance sheet had more than doubled as a result of the lending.

Both crisis and recession

- The recession proved to be very deep and protracted.
- The target for the federal funds rate was set to zero in December 2008.
- The unemployment rate rose and inflation was low.

- The FOMC decided to provide additional monetary policy stimulus in the form of asset purchases.

Six Federal Reserve asset programs

- Large scale asset purchases – LSAP1 (2008-2010), LSAP2 (2010-2011).
  - Expanded balance sheet size, changed security types, extended maturity.
- Maturity extension program (2011-2012)
  - Kept size and security types roughly the same, extended maturity.
- Flow-based program (2012 to present)
  - Expand balance sheet size, extend maturity.
- Reinvestment programs
  - MBS into Treasury: Changed security types (2010-2011).
  - MBS and agency debt into MBS: Changed security type and extended maturity (2011 to present).

What is the point of the LSAPs?

- Prior to 2008, reductions in the federal funds rate would reduce longer-term interest rates.
- Longer-term interest rates are important for economic activity.
- LSAPs are intended to reduce longer-term interest rates when the federal funds rate is at zero.

- *The basic model of the transmission mechanism is unchanged.*
  - *Nontraditional versus traditional monetary policy?*
  - *LSAPs are not "quantitative easing" as previously understood.*

Some estimates of the effects of LSAPs

- Chung, Hess, Jean-Philippe Laforte, David Reifschneider, and John C.Williams (2012). "Have We Underestimated the Likelihood and Severity of Zero Lower Bound Events?," *Journal of Money, Credit and Banking, Vol. 44(S1), 47–82.*
- Stefania D'Amico, William English, David López-Salido, and Edward Nelson "The Federal Reserve's Large-Scale Asset Purchase Programs: Rationale and Effects" FEDS working paper 2012-85
- Gagnon, Joseph, MatthewRaskin, Julie Remache, and Brian Sack (2011). "Large-Scale Asset Purchases by the Federal Reserve: Did TheyWork?," *Federal Reserve Bank of New York Economic Policy Review, Vol. 17(1), 41–59.*
- D'Amico, Stefania, and Thomas B. King (2012). "Flow and Stock Effects of Large-Scale Treasury Purchases: Evidence on the Importance of Local Supply," *Journal of Financial Economics, forthcoming.*
- Chen, Han, Vasco Cúrdia, and Andrea Ferrero (2012). "The Macroeconomic Effects of Large-Scale Asset Purchase Programs," *Economic Journal, Vol. 122(564), F289–F315.*
- Bauer, Michael D., and Glenn D. Rudebusch (2011). "The Signaling Channel for Federal Reserve Bond Purchases." Federal Reserve Bank of San FranciscoWorking Paper 2011–21.
- Joyce, Michael, Ana Lasaosa, IbrahimStevens, and Matthew Tong (2011). "The Financial Market Impact of Quantitative Easing," *International Journal of Central Banking, Vol. 6(3), 113–161.*
- 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, Vol. 42(2), 215–265.*
- Swanson, Eric T. (2011). "Let's Twist Again: A High Frequency Event-Study Analysis of Operation Twist and Its Implications for QE2," *Brookings Papers on Economic Activity, Vol.* 42(1), 151–188.

Modeling the effect on longer-term interest rates

- There are many estimates of the effect, but fewer models that can be used for simulations.
- Li and Wei (2012) TPE model.
  - TPE is a function of both current and expected future deviations of net private supply from a scenario without the asset purchases.
    - Evaluate current TPE.
    - Evaluate decay of TPE.
- Changes in private supply reflect Federal Reserve holdings.
- Use Carpenter et al. (2012) methodology to derive balance sheet projections.

Model Setup and Estimation (Li and Wei)

- Key assumptions:
  - Supply factors don't affect interest rate expectations;
  - No signaling channel effect of Bauer and Rudebusch 2011;
  - Supply factors only have interest rate risk premium or term premium effect;

- Two-step estimation
  - Estimate the factor dynamics equation in the first step;
  - Estimate other parameters by minimizing differences between the model-implied yields and term premiums and observed yields and Kim-Wright term premiums.

The term premium effect

- At any point in time, the effect is a function of
  - Asset programs to date;
  - Expectations about path of the balance sheet;
  - Assumptions about the “exit strategy” matter.

Marginal and total TPE (Li and Wei)

FOMC Policy	New program	Existing programs	Total
LSAP I	-38		-38
Reinvestment: Treasury	-8	-22	-30
LSAP II	-13	-27	-40
Reinvestment: Agency MBS	-3	-45	-48
MEP	-17	-47	-64
Extended MEP	-11	-53	-64
Current estimated LSAP III	-22	-63	-85

Basis points

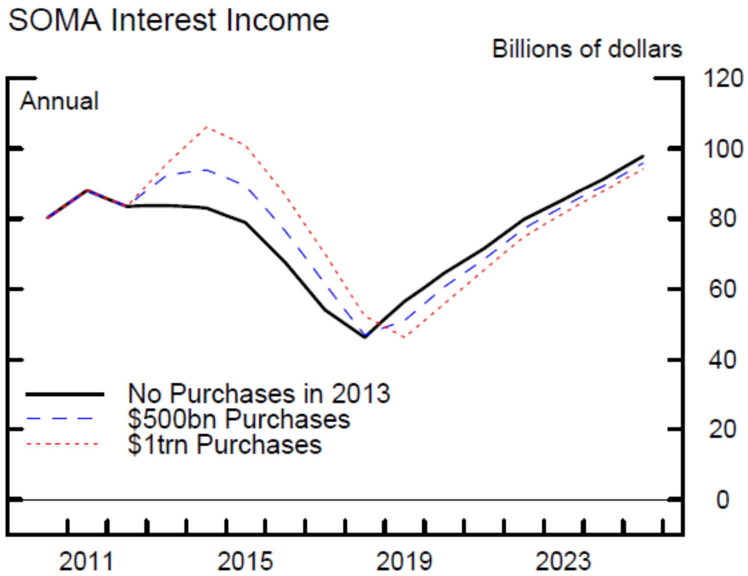
December 2012 FOMC Minutes

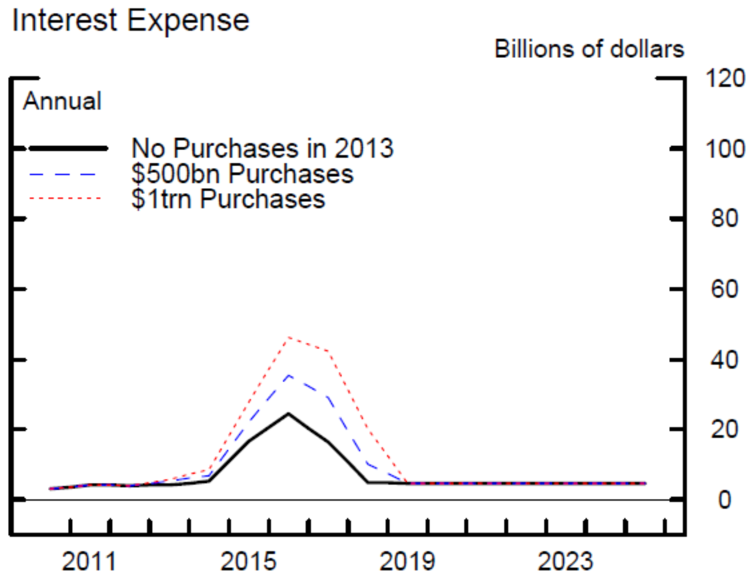
"Depending on the path for the balance sheet and interest rates, the Federal Reserve's net income and its remittances to the Treasury could be significantly affected during the period of policy normalization."

Interest rate risk?

- The Federal Reserve is buying longer-term, fixed-income securities.
- Fixed-income securities decline in value when interest rates rise.
- Is the Federal Reserve taking on a lot of interest rate risk?
- Carpenter, Ihrig, Klee, Quinn, and Boote.
  - FEDS Working Paper #2013-01
  - http://www.federalreserve.gov/pubs/feds/2013/201301/201301pap.pdf

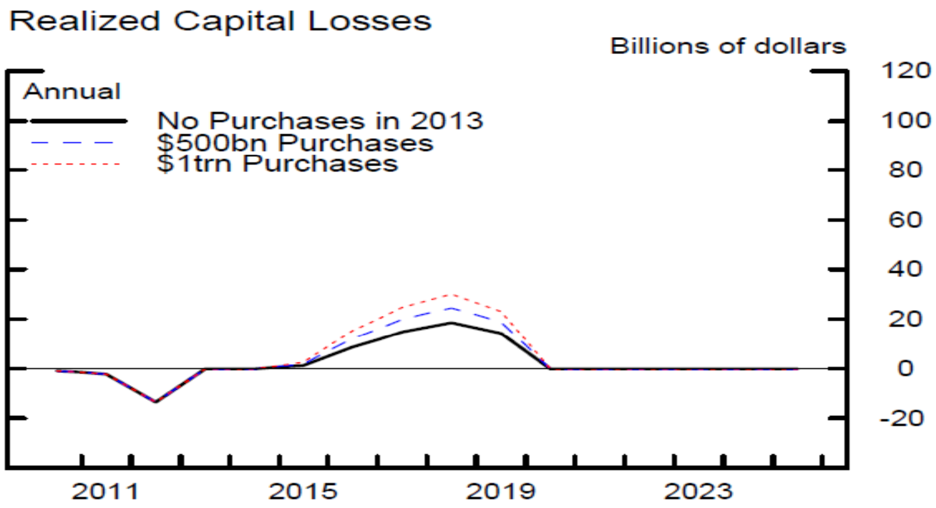
Income and expense projection





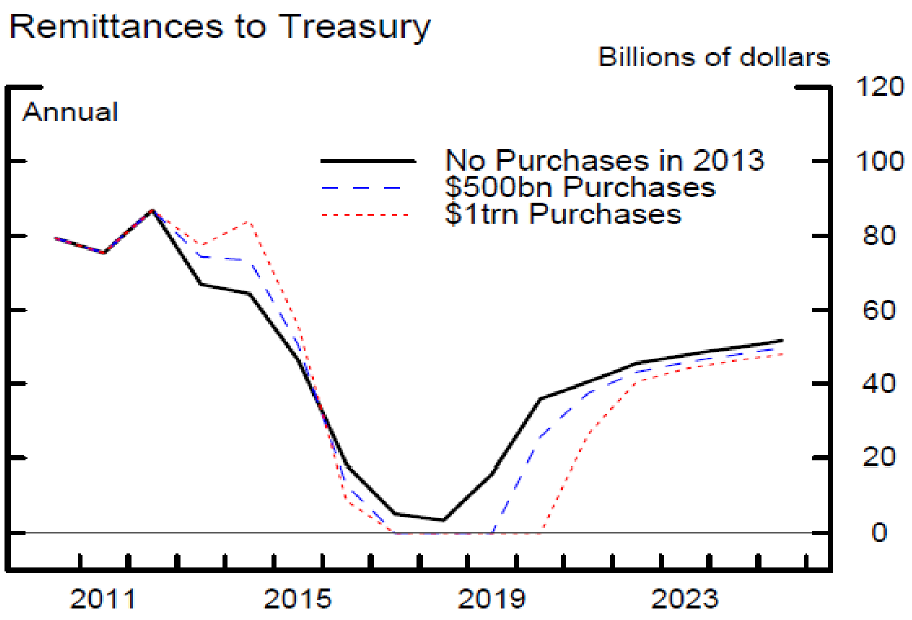
- SOMA interest income roughly follows contours of SOMA projection.
- Interest expense picks up after the federal funds rate lifts off due to elevated reserve balances, but declines as reserve balances are drained reflecting securities holdings rolling off and MBS sales.

Realized losses projection



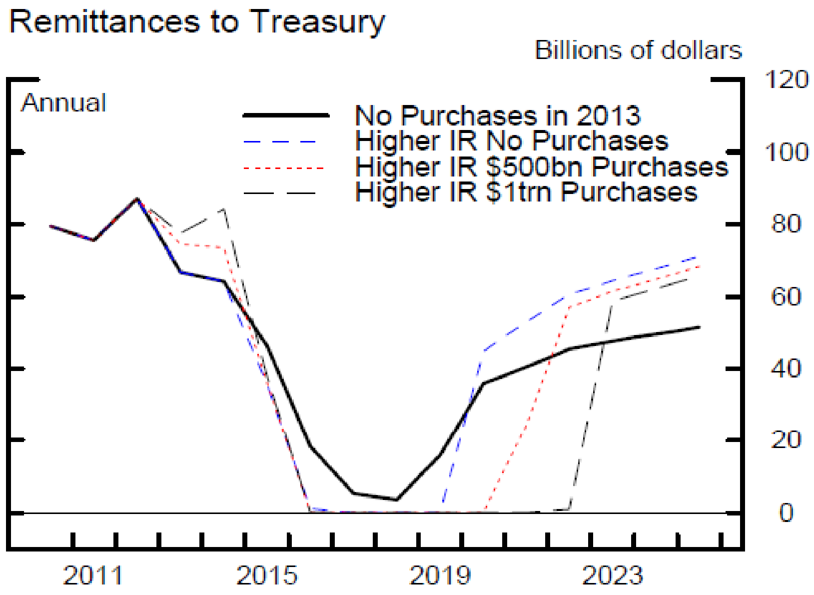
- Near-term realized capital gains on MEP Treasury securities sales.
- Realized capital losses on MBS sales.
  - Interest rates are higher and prepayments are lower at the end of the sales period, generating greater losses.

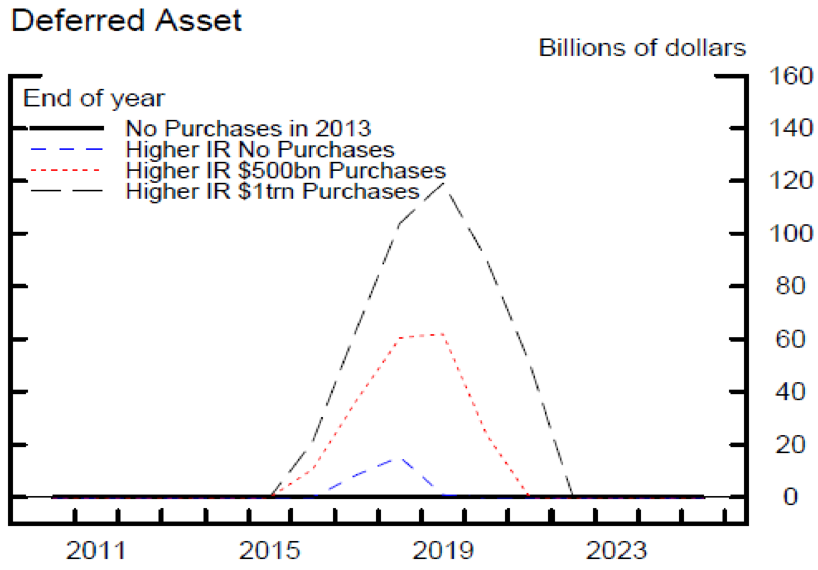
Remittances projection



- Remittances are elevated in the early years of the projection, because of high interest income and low interest expense.
- Remittances fall as MBS are sold and the IOER rate rises.
- Remittances return to normal levels at the end of the projection.
- A few years of zero remittances with additional purchases in 2013.

Sensitivity analysis: Higher rates





- Higher rates, larger deferred asset;
- Cumulatively, remittances are still higher than pre-crisis;
- Lower rates have no associated deferred asset, regardless of program size.

The Future: Back to Traditional Monetary Policy

- In exit principles, the FOMC noted that they plan to return to using the federal funds rate as the primary tool.
- Recent FOMC Statements:

  "In particular, the Committee decided to keep the target range for the federal funds rate at 0 to 1/4 percent … at least as long as the unemployment rate remains above 6-1/2 percent, inflation between one and two years ahead is projected to be no more than a half percentage point above the Committee's 2 percent longer-run goal …"

So-called "forward guidance"

- The expectations hypothesis of the term structure.
- Term interest rates equal the expected future short rate plus a term premium.

- LSAPs are intended to reduce the term premium.
- Forward guidance is intended to affect the expected short rate.

Conclusion

- From one perspective, monetary policy has changed dramatically since 2007.
  - Lending during the financial crisis;
  - LSAPs;
  - Zero lower bound and thresholds.

- From a different perspective, the logic remains the same. Monetary policy is really interest rate policy.

- Federal Reserve communication continues to evolve.

Thank you