How the Fed Plans to Keep Its Big Balance Sheet From Triggering Too Much Inflation

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Conversations with the Fed
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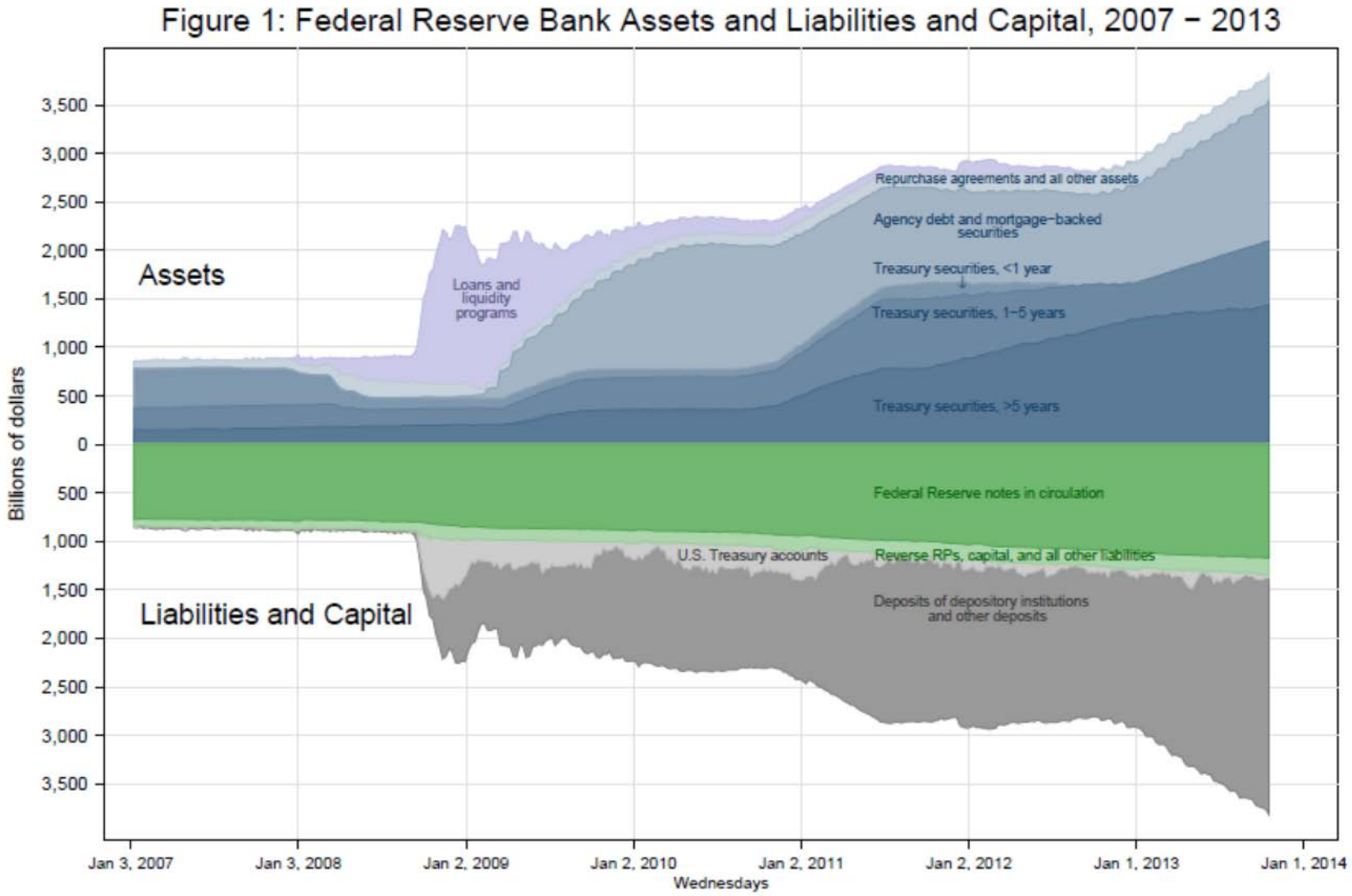
Fed Balance Sheet: Then and Now



Source: H.4.1 Statistical Release (http://www.federalreserve.gov/releases/h41/). Last updated October 22, 2013.

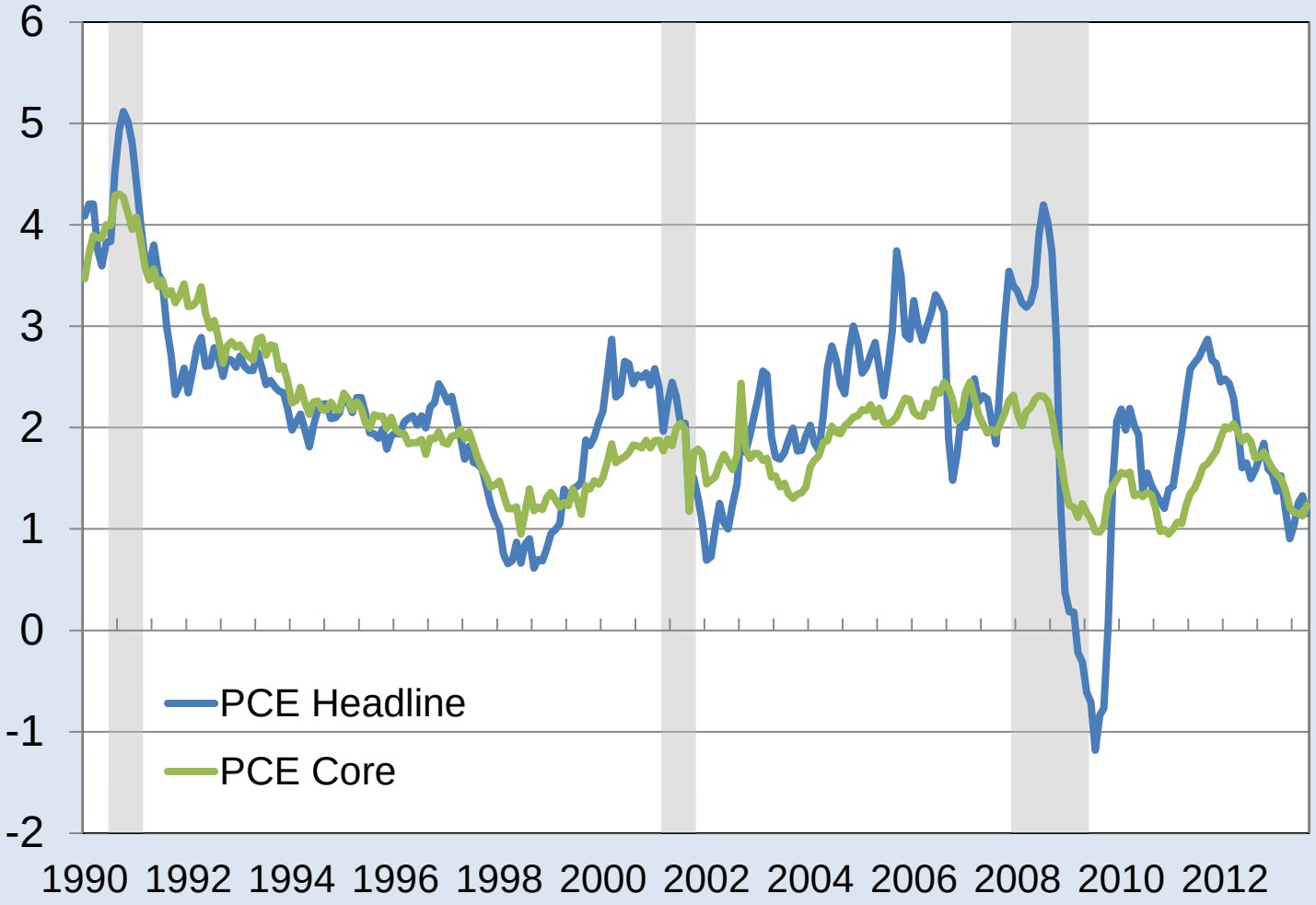
Concerns about Fed's Policy Actions

"The planned asset purchases risk currency debasement and inflation…" *–Open letter to Ben Bernanke signed by economists and investors, Nov. 15, 2010*

"So inflation is a risk, even if it is not inevitable. The large volume of reserves, together with the liquidity created by quantitative easing and Operation Twist, makes that risk greater." *–Martin Feldstein, Project Syndicate, March 2012*

"That kind of monetary expansion would normally be a harbinger of inflation." *–Phil Gramm and John Taylor, Wall Street Journal, Sept. 11, 2012*

Recent inflation has been subdued



12-month percent change, Personal Consumption Expenditures Price Index

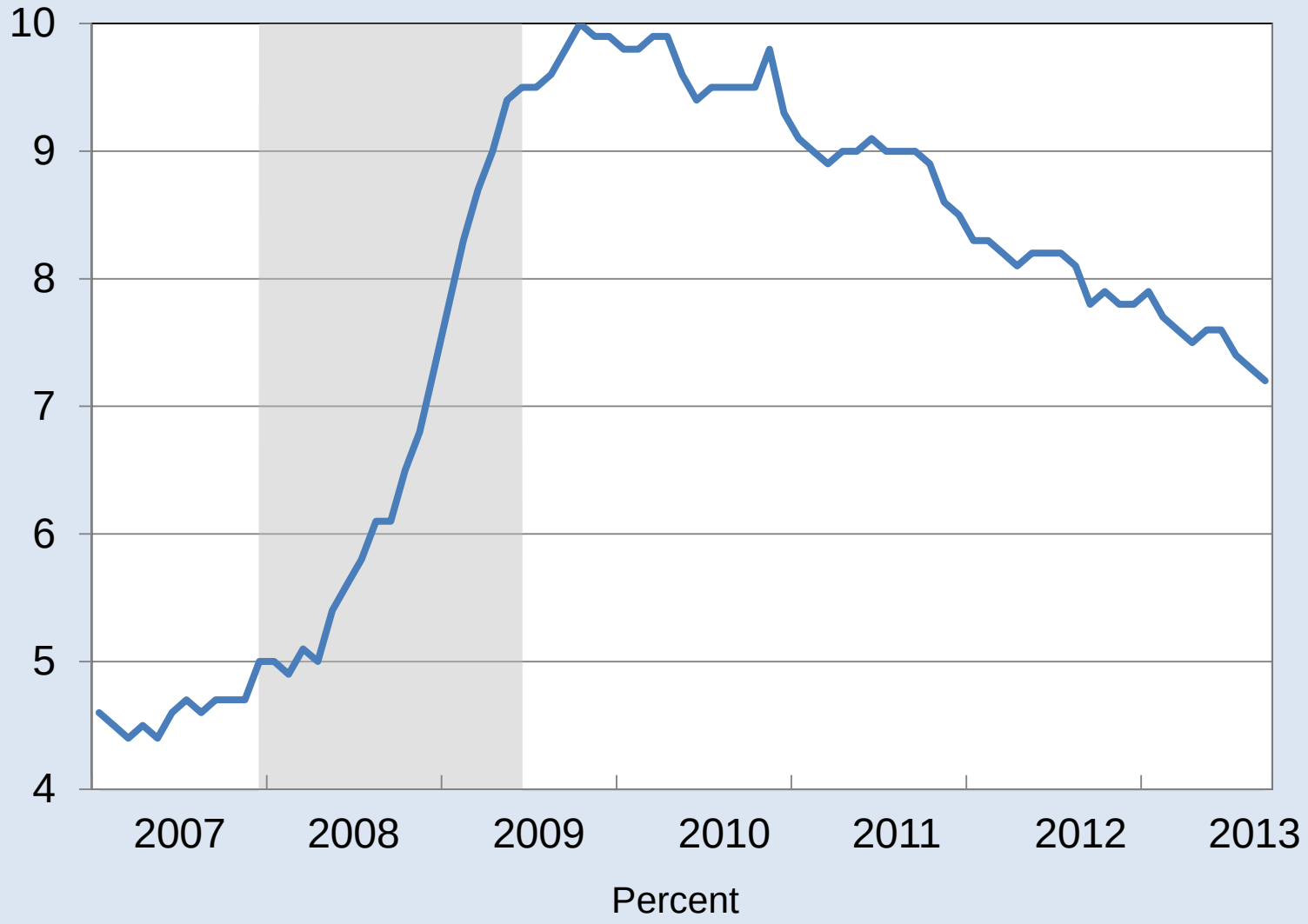
Source: Bureau of Economic Analysis

Outline

1. Review Fed's policy actions during Great Recession and subsequent (slow) recovery
2. Present logic and evidence on traditional links between growth of bank reserves and inflation
3. Discuss Fed's new inflation fighting tool and how it works

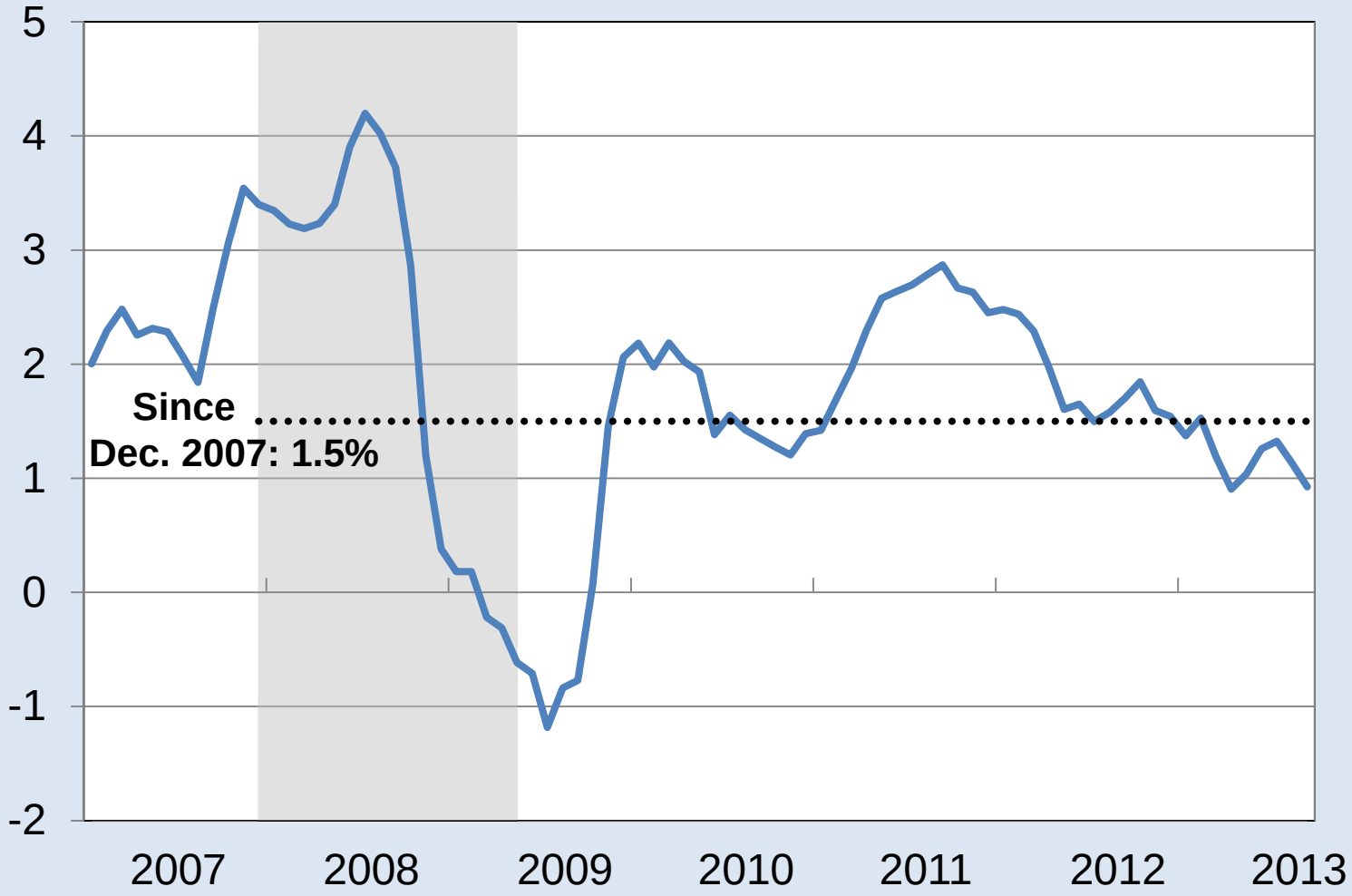
Fed’s Policy Actions During Great Recession and Subsequent Slow Recovery

Unemployment rate more than doubled to 10% in late 2009; has taken almost 4 years for it to fall to 7.2%



Source: Bureau of Labor Statistics

Inflation has averaged about 1.5% since start of recession



12-month percent change in Personal Consumption Expenditures Price Index

Source: Bureau of Economic Analysis

Fed's Goals and Policy Actions

1. Fed has a dual mandate: Maximize employment and maintain stable prices.
   - Fed has interpreted "stable prices" as a 2% inflation rate.
2. To achieve dual mandate during the Great Recession, Fed initially used its conventional tool, the federal funds rate (FFR).
   - Fed lowered FFR to zero by late 2008.
3. However, Fed decided more stimulus needed.
4. Since late 2008, Fed has pursued two types of unconventional monetary policy.

Fed's Unconventional Policy Actions

Forward Guidance

1. One set of unconventional policies has focused on communicating conditions under which and for how long the fed funds rate will stay at zero:
    a. " … 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, and longer-term inflation expectations continue to be well anchored."

Fed's Unconventional Policy Actions (cont.)

LSAPs

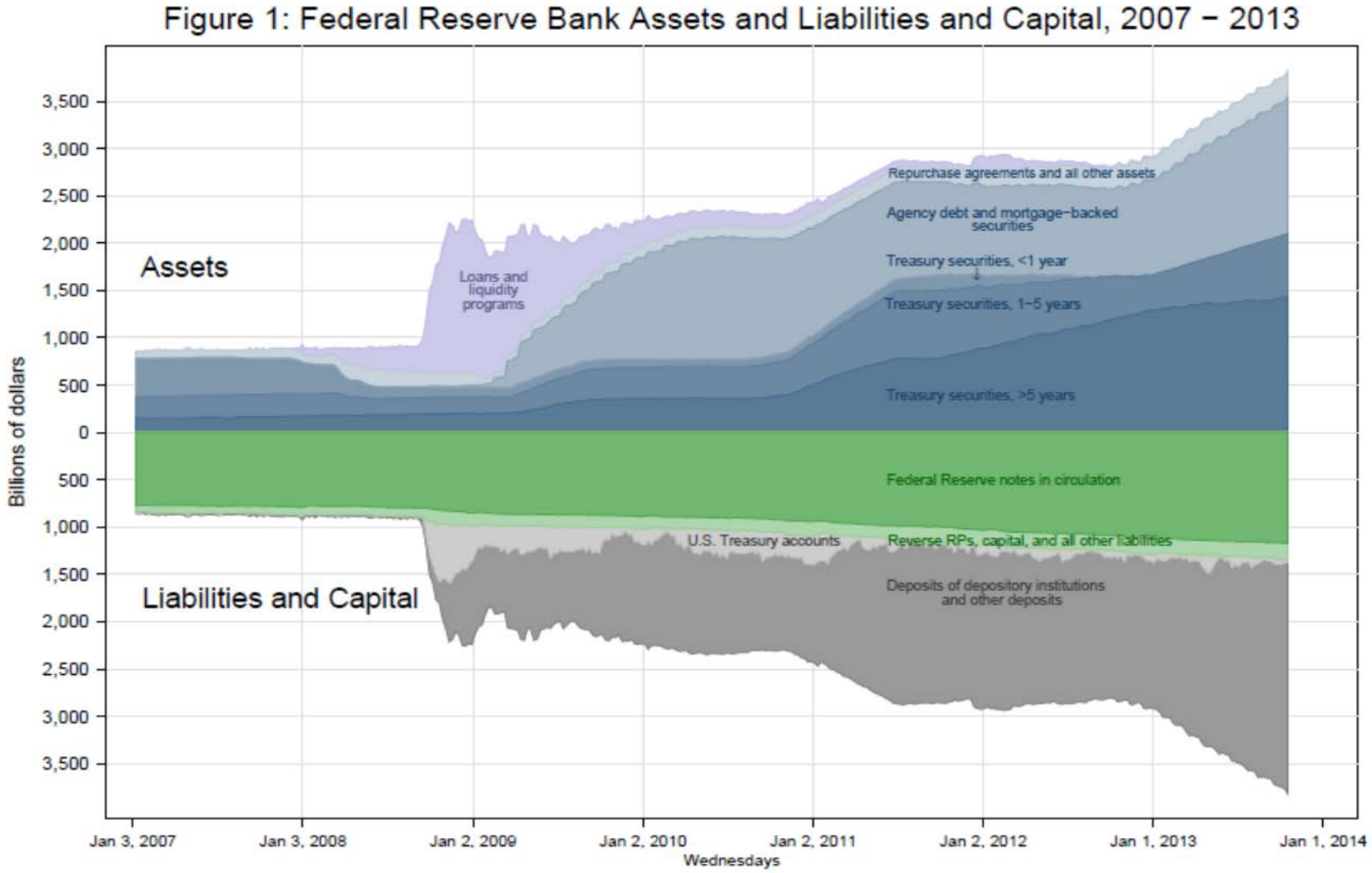
2. Second set of unconventional policies involved Fed conducting large scale asset purchases (LSAPs):
   - Fed purchased long-term Treasury securities and government guaranteed mortgage-backed securities (MBSs)
   - Goal was to drive down long-term interest rates, which would then stimulate capital investment, purchases of autos and homes, and economic activity more broadly.
   - It paid for these assets by creating bank reserves, i.e., credited banks' accounts at Fed.
     - Fed is banks' bank
   - As a result, Fed's balance sheet has more than quadrupled in size since late 2007.

Fed's LSAP Programs

"QE1": Jan 2009 - Jun 2010; Treasuries and mortgage-backed securities (MBS)	$1.725 trillion
"QE2": Nov 2010 – Jun 2011;Treasuries only	$600 billion
"Operation Twist" (MEP): Sep 2011 – Dec 2012; Long-term Treasury purchases financed by short-term Treasury sales	$670 billion*
"Open-ended QE": Sep 2012 – Present; Treasuries and MBS at $85bil. per month until sustained improvement in labor market outlook	$1 trillion (so far…)
Total	**$3.325 trillion**

*Purchases financed by sales of short-term Treasury holdings, therefore didn't expand balance sheet.

Fed Large Scale Asset Purchase programs have increased balance sheet



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Logic and Evidence on Traditional Links Between the Growth of Bank Reserves and Inflation

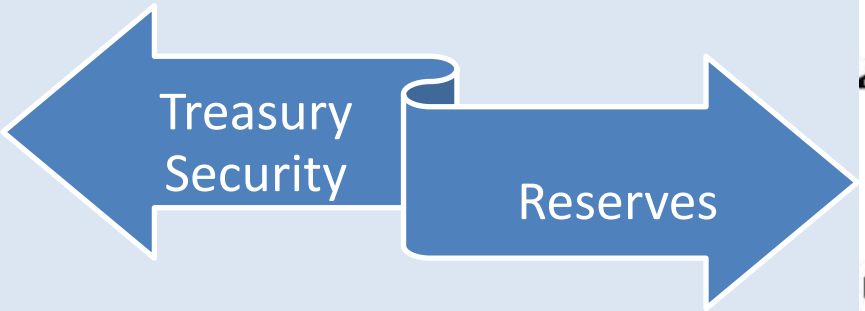
Simple Logic

1. Think of money as currency, cash.
2. The government creates this currency.
3. Growth in currency leads to growth in prices (inflation), because more money is chasing the same amount of goods, and eventually the prices of goods must rise.
    - Too much money growth leads to too much inflation.

Logic Involves 3 Steps

1. Fed does an “Open Market Purchase” (with a goal of lowering interest rates):
   - Fed buys Treasuries from banks and pays for them by crediting banks’ accounts (“reserves”) at the Fed.
   - Bank reserves held at Fed increase.

Federal Reserve



Seller’s Bank

Logic Involves 3 Steps

2. **Prior to 2008, bank reserves earned zero interest.**
   a. Banks required to hold reserves to back deposits at their institutions.
   b. If banks have excess reserves, incentive to deploy them to increase loans and credit.
      - Banks now have “license” to expand loans and credit.
   c. Loans and credit expand further via the “money multiplier” mechanism.

3. Increase in credit shows up partly as expanded economic activity and partly as higher inflation.

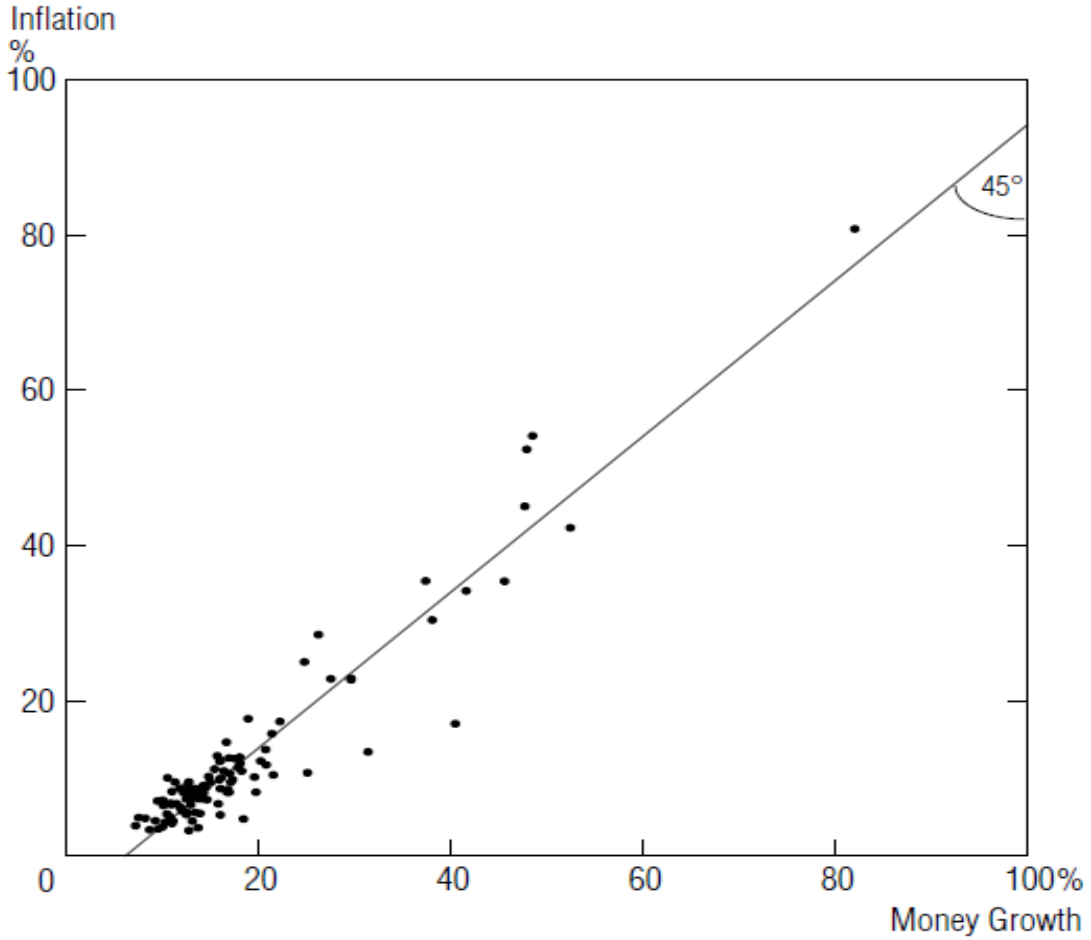
Review of Evidence Linking Money Growth to Inflation

Evidence from McCandless and Weber

Chart 1

Money Growth and Inflation: A High, Positive Correlation

Average Annual Rates of Growth in M2 and in Consumer Prices During 1960–90 in 110 Countries



Source: International Monetary Fund

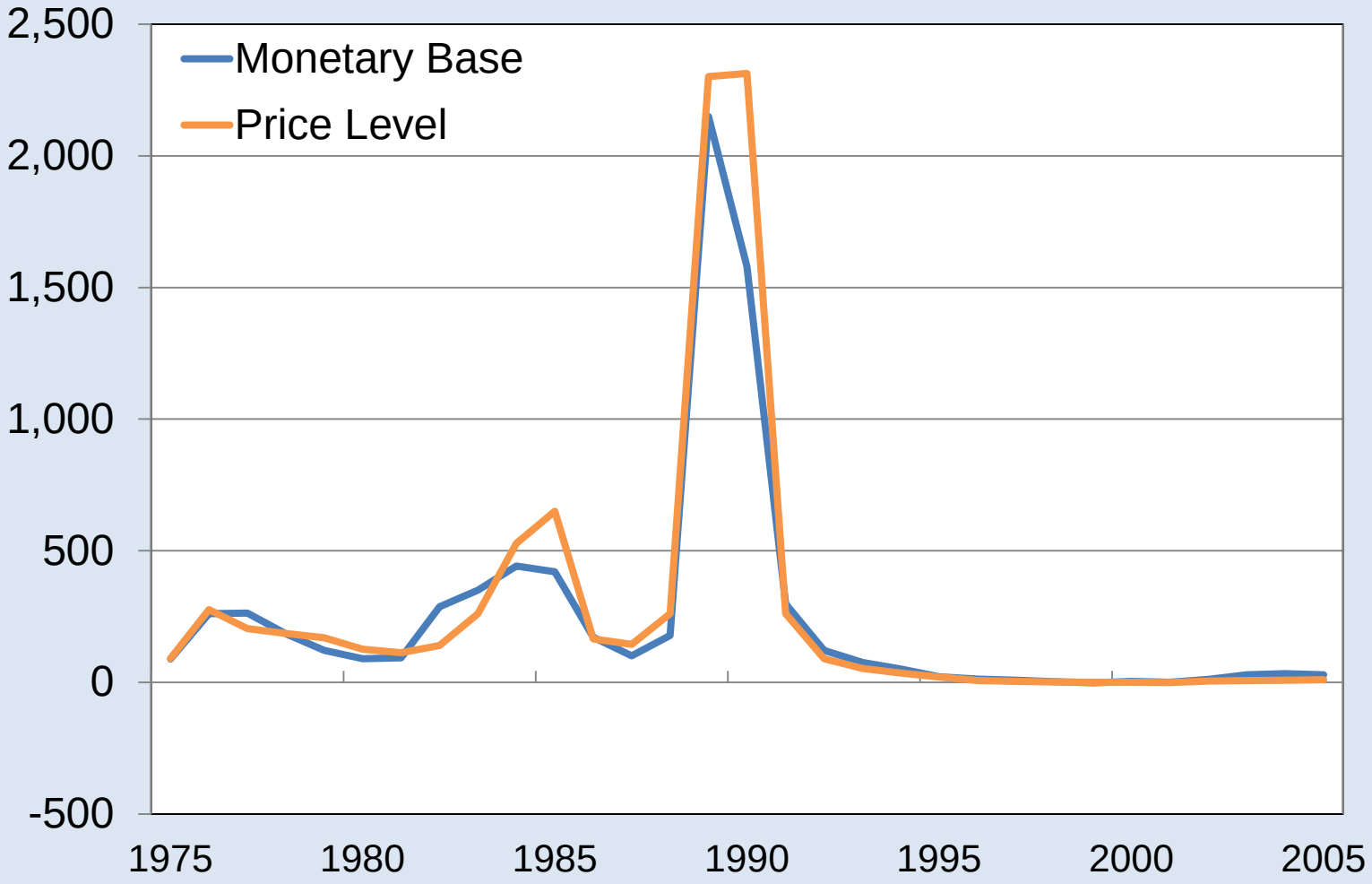
Correlation Coefficients for Money Growth and Inflation:

M0: .925

M2: .950

Recent evidence from Argentina

Inflation in Argentina closely tied to growth in its monetary base

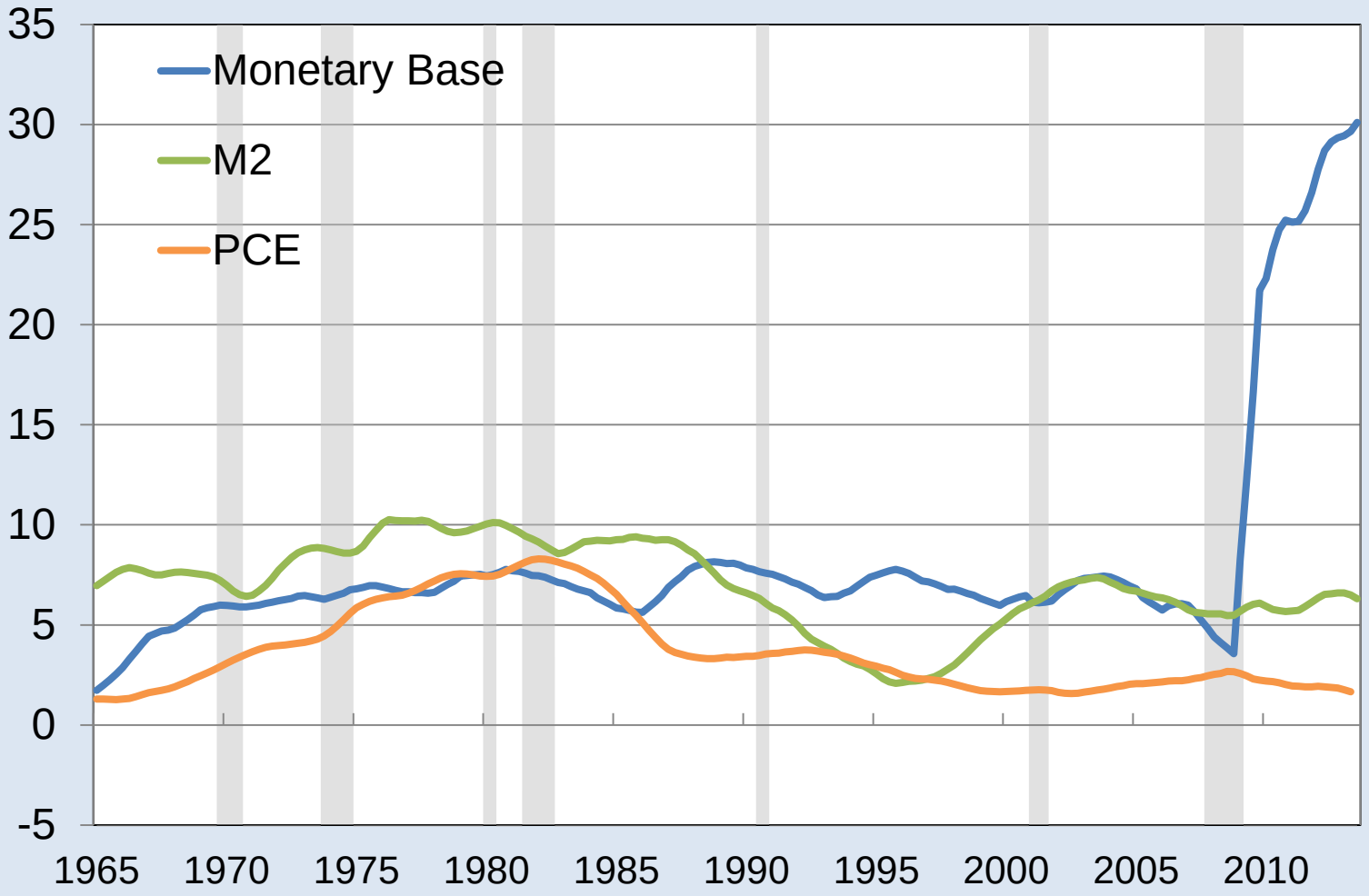


Annual percent change, 5-year moving average.

Source: International Financial Statistics

Recent evidence from U.S.

U.S. inflation moves with growth in the monetary base until 2008



4-quarter percent change, 5-year moving average
PCE: Personal Consumption Expenditures Price Index

Source: Bureau of Economic Analysis and Federal Reserve System

One of the Fed's New Tools and How It Can Prevent Excessive Inflation: Interest on Reserves (IOR)

Interest on Reserves

1. Required reserves: banks must keep a certain fraction of a portion of their deposits on reserve at the Fed.
2. Excess reserves: any extra reserves banks hold at the Fed beyond the required reserves.
3. In October 2008, Congress gave the Fed authority to pay interest on these reserves.
4. Paying interest on required reserves eliminates the implicit tax that banks faced for maintaining these reserves.
5. Paying interest on excess reserves helps the Fed manage the federal funds rate.
6. Since October 2008, the IOR has been 0.25%.

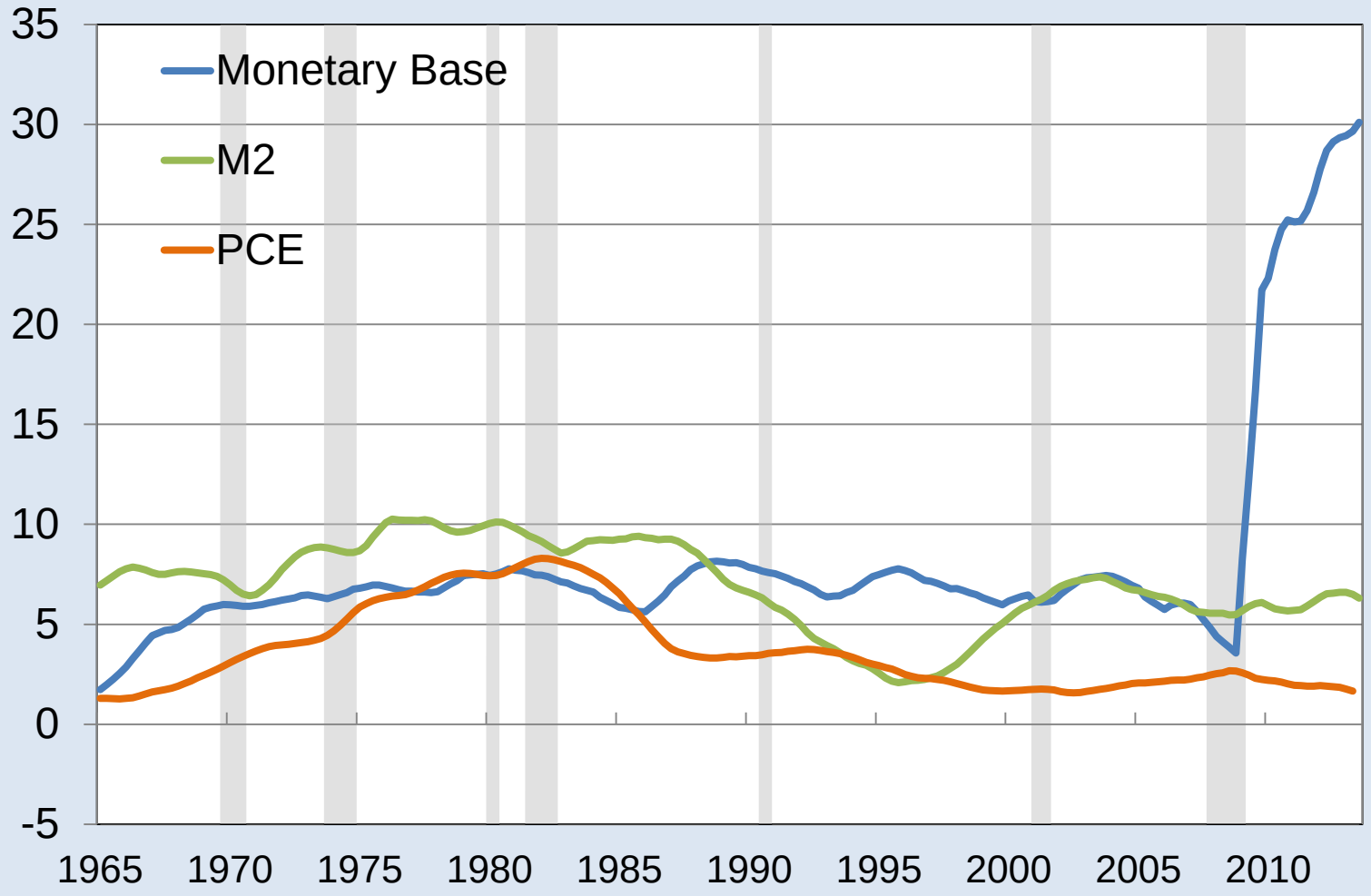
How IOR Can Prevent Inflation

1. Remember, money multiplier process discussed earlier is a key force contributing to inflation.
   a. Key part of that process is conversion of excess reserves into additional loans and credit.
2. By appropriately adjusting the IOR, the Fed can ensure that that conversion is not too high to induce significant inflation.
   a. Suppose economic recovery picks up steam, so lending opportunities increase, and banks decide they want to extend more loans and credit to potential borrowers.
   b. To ward off too much inflation, the Fed can raise the IOR. This will reduce the incentives of banks to make loans – because the return to keeping bank funds in reserve at the Fed has risen – and this will ultimately put a braking effect on inflation.

How IOR Can Prevent Inflation (cont.)

3. Because of IOR, increases in Fed's balance sheet need not trigger inflation.
   a. The money multiplier mechanism is broken.

U.S. inflation moves with growth in the monetary base until 2008



4-quarter percent change, 5-year moving average
PCE: Personal Consumption Expenditures Price Index

Source: Bureau of Economic Analysis and Federal Reserve System

Challenges

1. FOMC may raise IOR “too” aggressively to cut off inflation; this may hurt the recovery.
   a. This challenge existed in the “old days,” as well.
2. FOMC may not raise IOR aggressively enough, for fear of hurting the recovery; this may lead to excessively high inflation.
   a. This challenge existed in the “old days,” as well.
3. Households’ and businesses’ expectations of inflation matter. If everyone decides that the balance sheet is inflationary, they will raise their wage demands and raise prices of the goods and services they sell.
   a. This could generate a self-fulfilling inflationary outcome. Then, see (1) above.

Summary and Conclusions

1. The interest on reserves (IOR) is Fed's main tool to ensure that excessive inflation does not occur.
   a. As the recovery proceeds, and interest rates begin to normalize, raising the IOR will give banks incentive not to lend "too much."
2. Other tools:
   a. Term Deposit Facility and "reverse repos" will also help.
   b. Of course, Fed can always sell assets.

References

1. http://www.federalreserve.gov/monetarypolicy/bst_fedsbalancesheet.htm (Fed's balance sheet)
2. http://www.federalreserve.gov/monetarypolicy/bst_openmarketops.htm
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5. http://www.newyorkfed.org/research/current_issues/ci15-8.pdf (Why banks are holding so many excess reserves)
6. http://www.newyorkfed.org/research/publication_annuals/research_topics20130906.html (linked blog posts on balance sheet topics)
7. http://www.minneapolisfed.org/research/qr/QR1931.pdf (McCandless and Weber paper on money and inflation)