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# Understanding Monetary Policy Trends in World Markets

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# This Talk Has Its Roots in My Book on Emerging Markets Central Banks

- Central Banking and Monetary Policy in Emerging Markets Nations, The Research Foundation of the CFA Institute, 2009.
- I finished writing this book just before the onset of the 2008 recession. If I were writing a second volume today, what new topics would I include or enlarge?
  - The general topics of capital flows and “global imbalances” now appear to be even more complex topics –in particular, as we learned with the dollar funding shortages after the Lehman failure.
  - 2008 Dollar Squeeze and the Fed’s dollar swap lines. The swap lines were one of many crisis-related measure that the Fed undertook.
  - Quantitative Easing (“QE”).

# More on David DeRosa's Books

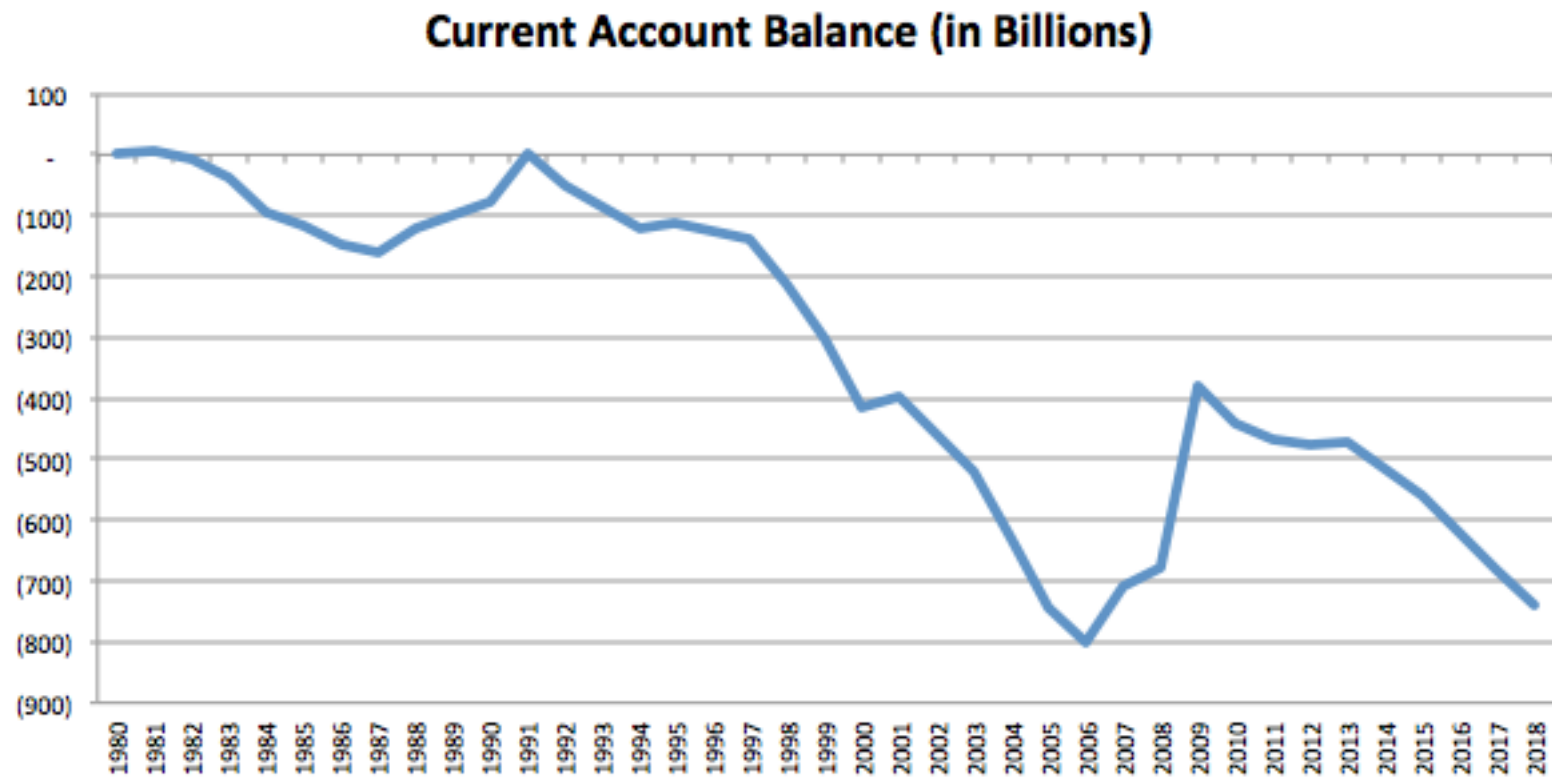
- In Defense of Free Capital Markets: The Case Against a New International Financial Architecture, 2001 – Now available on Kindle for a nominal fee.
- Options on Foreign Exchange, Third Edition, John Wiley & Sons, 2011.
- Foreign Exchange Operations, John Wiley & Sons 2013 (expected to be released in the Autumn).

# Capital Flows And Global Imbalances

# On Capital Flows

- This was most difficult part of my book to write.
  - General Issues:
    - The reciprocal nature of the current account and capital account.
    - Does capital flow to the right places? The Lucas paradox.
  - Imbalances: Many economists (including some at the IMF) worry that capital flows may be susceptible to sudden stops and/or reversals. The experiences of many EM countries comes to mind.
  - But, do global imbalances really exist on their own? Or are they created by domestic financial policies, such as unstable exchange rate regimes?
  - Specifically:
    - Was the dollar in an “imbalanced state” over the last two decades?

# Migration to Dollar Assets



Data Source: IMF WEO Database

# What Are the Possible Causes?

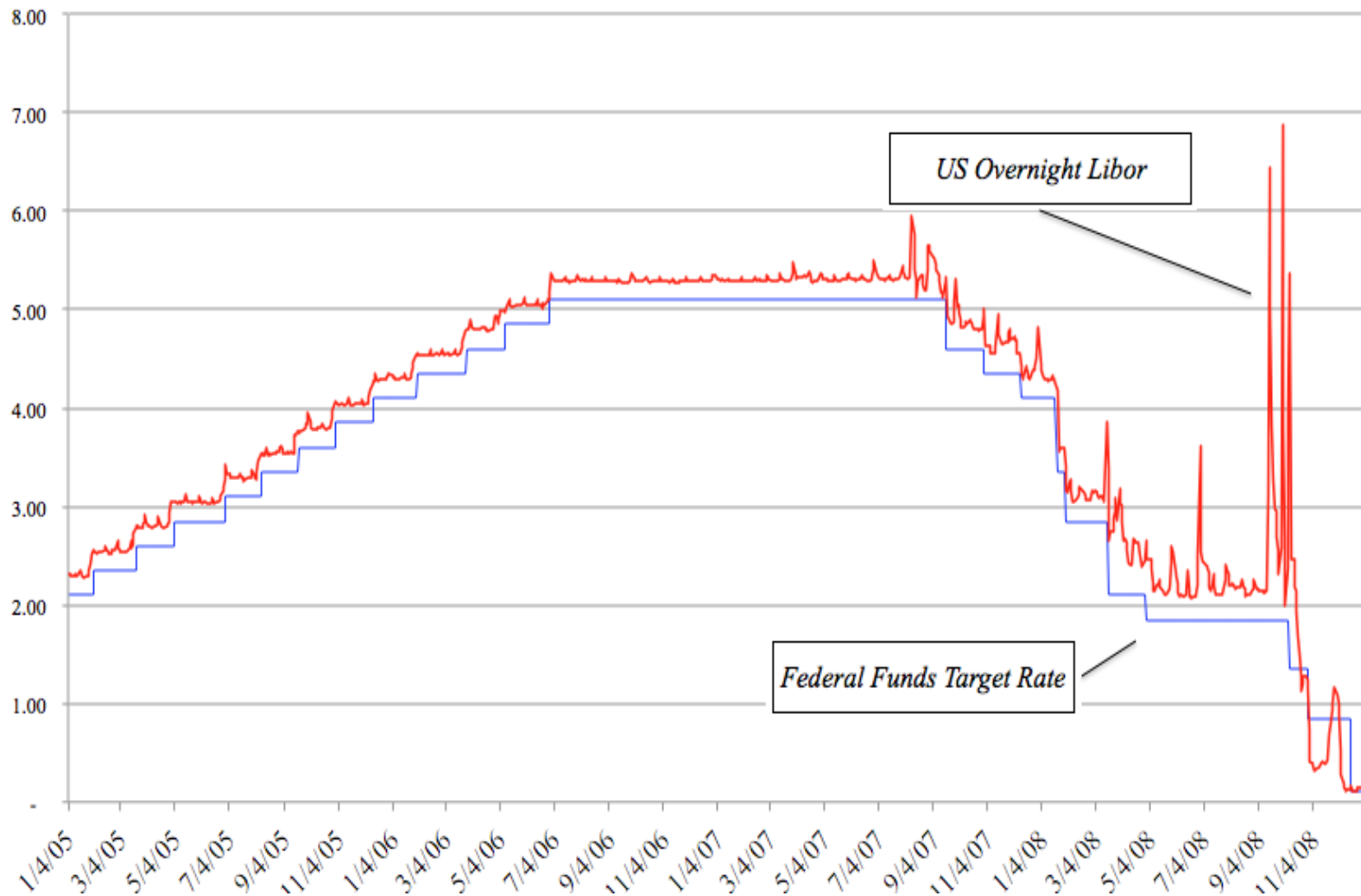
- Accumulation of Central bank “dollar war chests”
- Aging populations imply strong savings motive
- Bernanke’s hypothesis: Global Savings Glut
- More importantly, a significant part of the dollar assets accumulated were being financed on a short-term basis:
  - Dollar assets on the balance sheets of euro-area, UK, and Swiss banks were \$8 trillion in 2008. Of this, \$1.1-1.3 trillion were backed by short-term financing (Goldberg, Kennedy, and Miu (2011)).

# What happened in 2008?

- Capital flows to the USA diminished for a while (but it did not suddenly stop or reverse).
- HOWEVER,
  - The risk was not of a reversal or sudden stop but rather in what amounts to a the term funding squeeze.
  - Cost of rolling dollar loans/repos became exorbitant. Sometimes funding became simply unavailable.
  - This was felt as early as late 2007 but it became acute after Lehman Day (September 15, 2008). In one economist's words, turmoil (before Lehman) became chaos (because of Lehman).



# Overnight \$LIBOR vs. Fed Funds Target

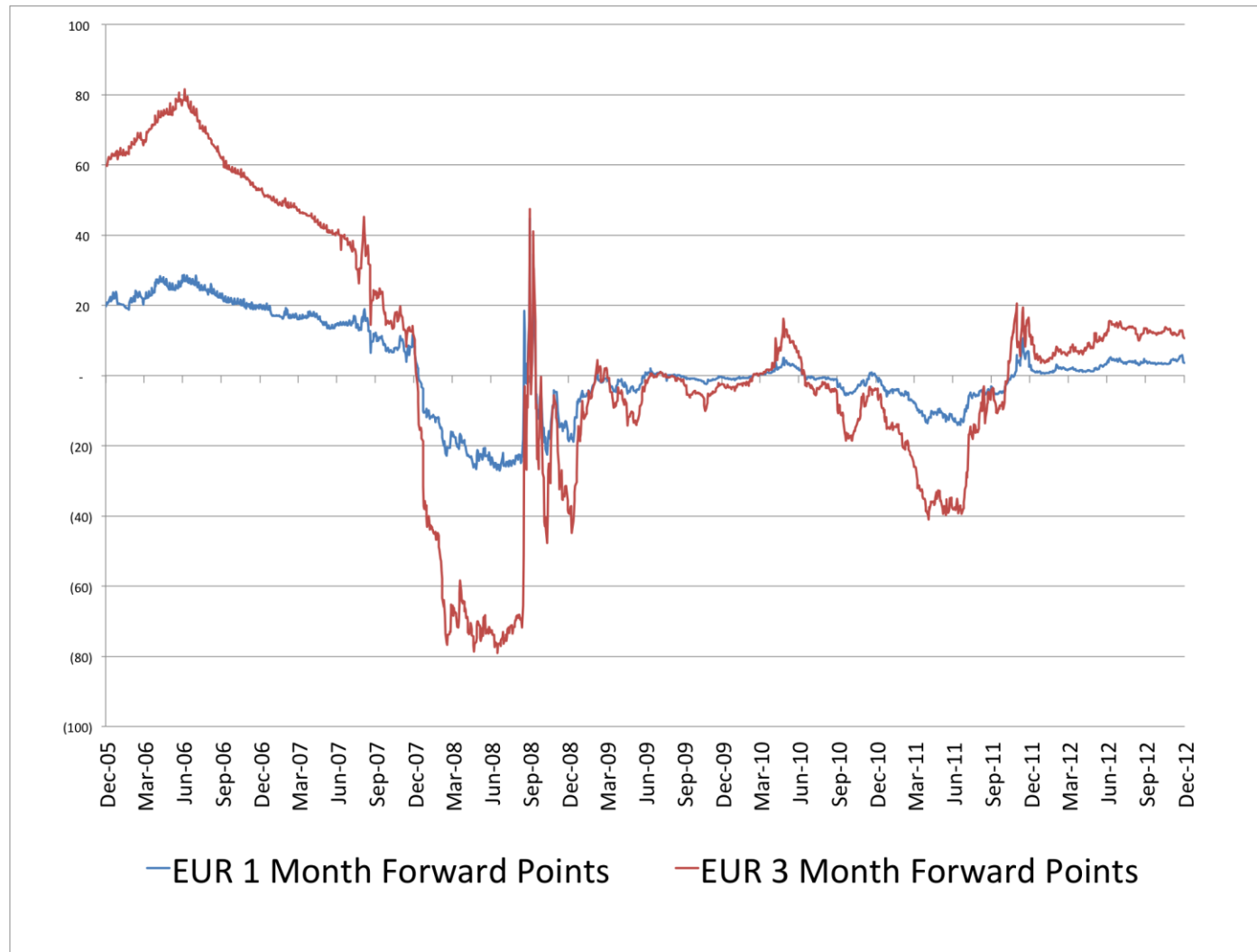


# 2007 - 2010 Dollar Squeeze and The Fed's Dollar Swap Lines

# Impact on the FX Market

- Interesting spillovers to FX market occurred
  - Local institutions resorted to borrowing in their own local currency
    - They sold this local currency spot to get dollars
    - Simultaneously bought local/ sold dollars forward short-term
      - » In total, a quasi forward swap -- both legs done at spot.
      - » Forward swap points for USD/anything went through the roof.
- The situation was remedied when the FED and 14 other central banks arranged dollar swap lines.

# 1M and 3M EURUSD Forward Points



# The Fed's Dollar Swaps

- These measures were undertaken by the Fed and other central banks to alleviate what it called “pressures in the U.S. dollar funding markets.”
- December 12, 2007 – October 29, 2008
  - Authorized dollar swap lines with 14 foreign central banks that would expire on February 1, 2010.
- May 2010
  - Authorized dollar swap lines with 5 foreign central banks that would expire in January 2011. These have been extended several times and now run through February 1, 2014

## ALSO

- As a precaution, the Fed has at various times in this period entered into reverse swap and bilateral swap lines with 4 or 5 foreign central banks.
  - To date the Fed has not drawn down currency on any of these lines.

# Response to Lehman Crisis- 1

- Lehman's declaration of bankruptcy on September 15<sup>th</sup> 2008 was a major shock to the world financial system. The Fed and the foreign central banks were pro-active in alleviating strains in dollar funding markets.
- September 18, 2008
  - The Fed (FOMC) expanded and created new \$ swap lines in the amount of \$180 billion:
    - ECB \$110 billion (expanded by +\$55)
    - Swiss National Bank \$27 billion (expanded by +\$15)
    - Bank of Japan \$60 billion (new line)
    - Bank of England \$40 billion (new line)
    - Bank of Canada \$10 billion (new line)
- Peak drawdown at the end of 2008 was \$600 Billion (Goldberg, Kennedy and Mui (2011)).

# Response to Lehman Crisis - 2

- By the end of October 2008 the Fed has swap lines with 14 foreign central banks:
  - Australia, Brazil, Canada, Denmark, ECB, England, Japan, Korea, New Zealand, Mexico, Norway, Singapore, Sweden, and Switzerland.
- The IMF also established a short-term liquidity facility for its member countries.
- (And of course, the Fed and other central banks were taking many other measures – my topic now is restricted to the dollar swaps).
- The swaps line paid approximately 3% on 9 September 2008 BUT then jumped to 11% on 30 September 2008. Within a few days the rate came down to old levels.
  - 30 Sept 2008 was the quarterly roll date for dollar funding.

# The Mechanics of the Fed's Dollar Swaps

- The Fed and the foreign central bank exchanged sums of dollars and foreign currency at the spot exchange rate with an agreement to reverse the exchange at the end of the swap at the same exchange rate. Neither the Fed nor the foreign central bank had exchange rate risk.
- The term of the swaps ranged from overnight to 3 months.
- The foreign central bank used the dollars to supply local institutions
  - Presumably this was timed back-to-back w.r.t. the Fed swap
  - All of the credit risk resided with the foreign central bank
    - They were free to take collateral from the local institutions.
    - Many swaps were offered with a minimum of 50 or 100 bp over the OIS rate.
- The foreign central bank paid the Fed whatever it received in the way of interest from the local swap. The Fed did not pay interest on foreign currency it received because it did not invest these sums.



# Appearances Can Count for a Lot

Mesquita and Toros (2010) write about Brazil and the Fed Swaps:

“Another innovation was the agreement, announced on 29 October 2009, of a currency swap arrangement with the Federal Reserve.<sup>7</sup> The arrangement was essentially seen from the beginning as a signaling device, despite the absence of a pre-commitment to use the available funds, which could reach \$ 30 billion. Its goals were, on the one hand, to level the playing field for Brazilian banks in their foreign issuance, as the Federal Reserve had already announced swap arrangements with other central banks and, on the other hand, to signal the importance of the Brazilian financial system to global market participants, in a context of heightened differentiation among emerging economies. The swap announcement seems to have been effective in boosting confidence and thereby in reining in expectations of further foreign exchange volatility, even though the BCB did not tap the facility.<sup>8</sup>”

7 The agreement was made legally possible in Brazil thanks to Medida Provisória 443 of 21 October 2008.

8 Stone, Walker and Yasui (2009).

# The Story Does Not End There

- The provision of dollar swap lines proved to be an effective policy, especially in 2008 after Lehman.
- However, think of the risk managers' problems in terms of forward FX and FX options
  - Forward points soared after Lehman
  - But then crashed back to earth when the FED created the swaps
    - This had to have had huge implications for deltas of derivatives positions and hedging programs.
- Note that the Fed reestablished the swap lines in 2010 in a second (but less extreme) period of dollar funding stress.
- The lesson: CBs can rescue the market but not without creating collateral risks.

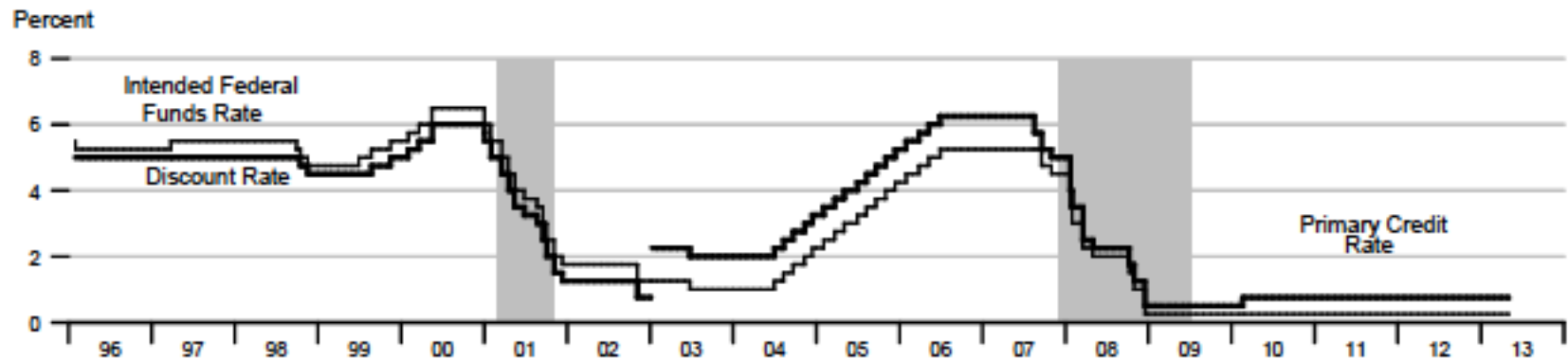
# Quantitative Easing

# What Does the Fed Normally Do?

- The Fed used to target the overnight federal funds rate – the interest that banks pay each other to borrow reserve deposits.
- If the market level of the fed funds rate deviated too far from the target the Fed would act:
  - Jawboning
  - Open market operations
  - Repo or reverse repo operations
- Taylor Rules are a historical descriptor but can be used as an operational rule.
  - Indeed, the idea of using Taylor rules in combination with floating exchange rates and open capital accounts has broad support.

# Traditional Monetary Policy: Management of the Fed Funds Target

**FOMC Intended Federal Funds Rate, Discount Rate, and Primary Credit Rate**

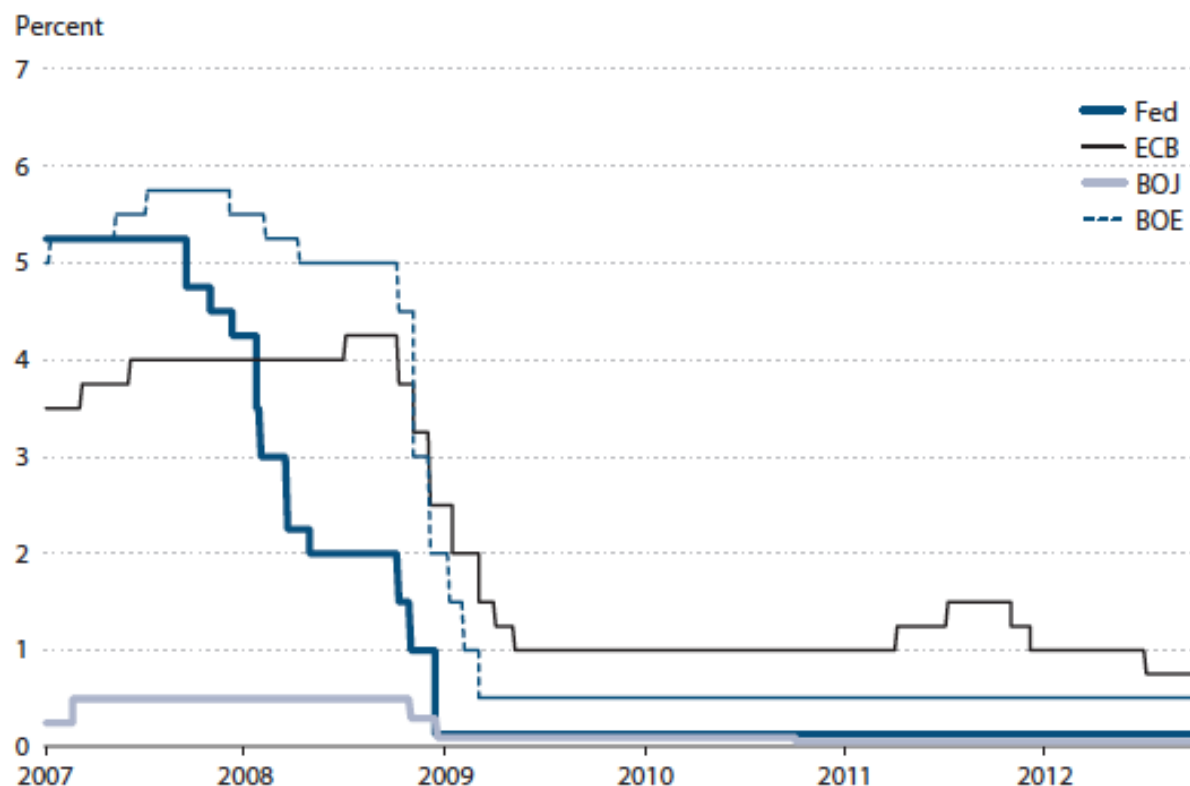


Source: Federal Reserve Bank of St. Louis Monetary Trends April 2013

# Quantitative Easing

- QE is when a central bank conducts monetary policy by expanding the monetary base through purchases of assets in the open market or through repo operations.
- This has come up in situations where the short-term policy interest rate is at or near zero.
- QE affords the central bank extended policy options.
- QE has been adopted by four major central banks: the BOJ, the Fed, the BOE, and the ECB.

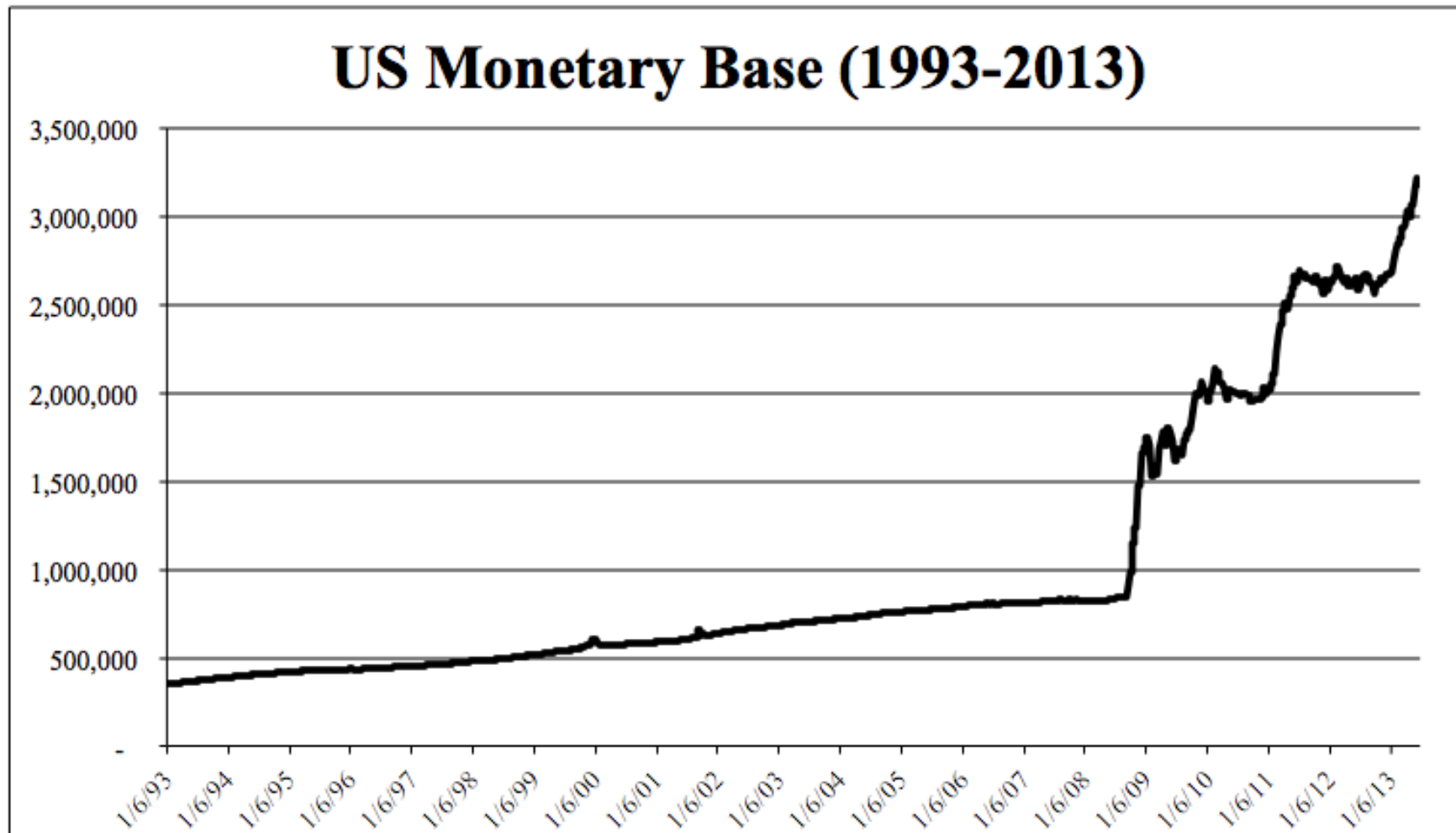
# Central Bank Rates: Fed, BOE, BOJ, ECB



NOTE: The main policy rates for the Fed, ECB, BOJ, and BOE are, respectively, the federal funds target rate, the main refinancing operations fixed/minimum bid rate, the uncollateralized overnight call rate, and the official Bank rate.

SOURCE: Fed, ECB, BOJ, and BOE.

# A Dramatic Chart



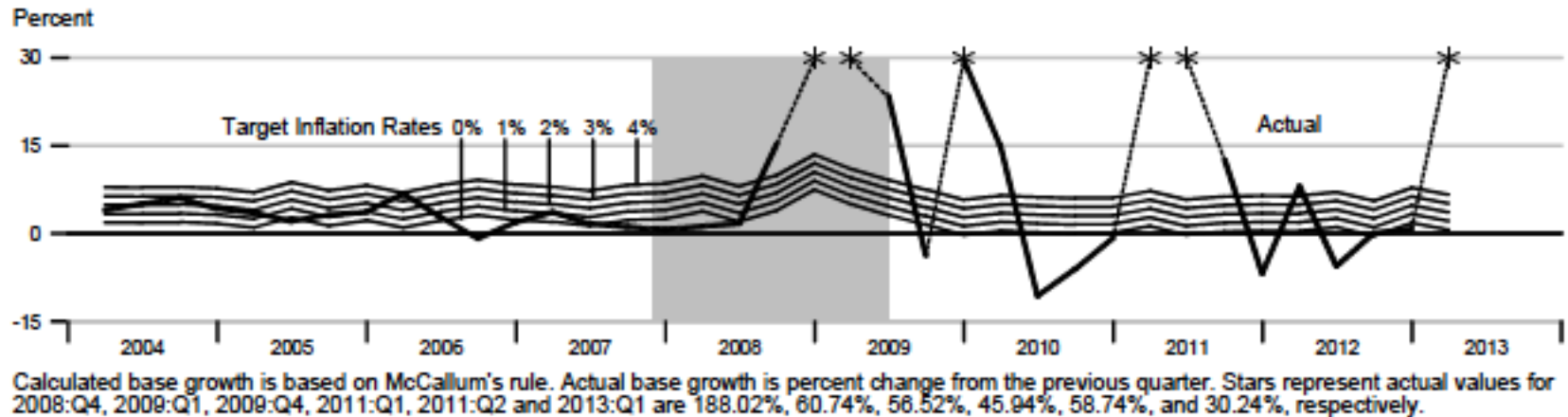
*Source: Bloomberg Finance L.P.*

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# Quantitative Easing: A Different Breed of Cat

## Monetary Base Growth and Inflation Targets



Source: Federal Reserve Bank of St. Louis Monetary Trends April 2013

# QE: The Fed

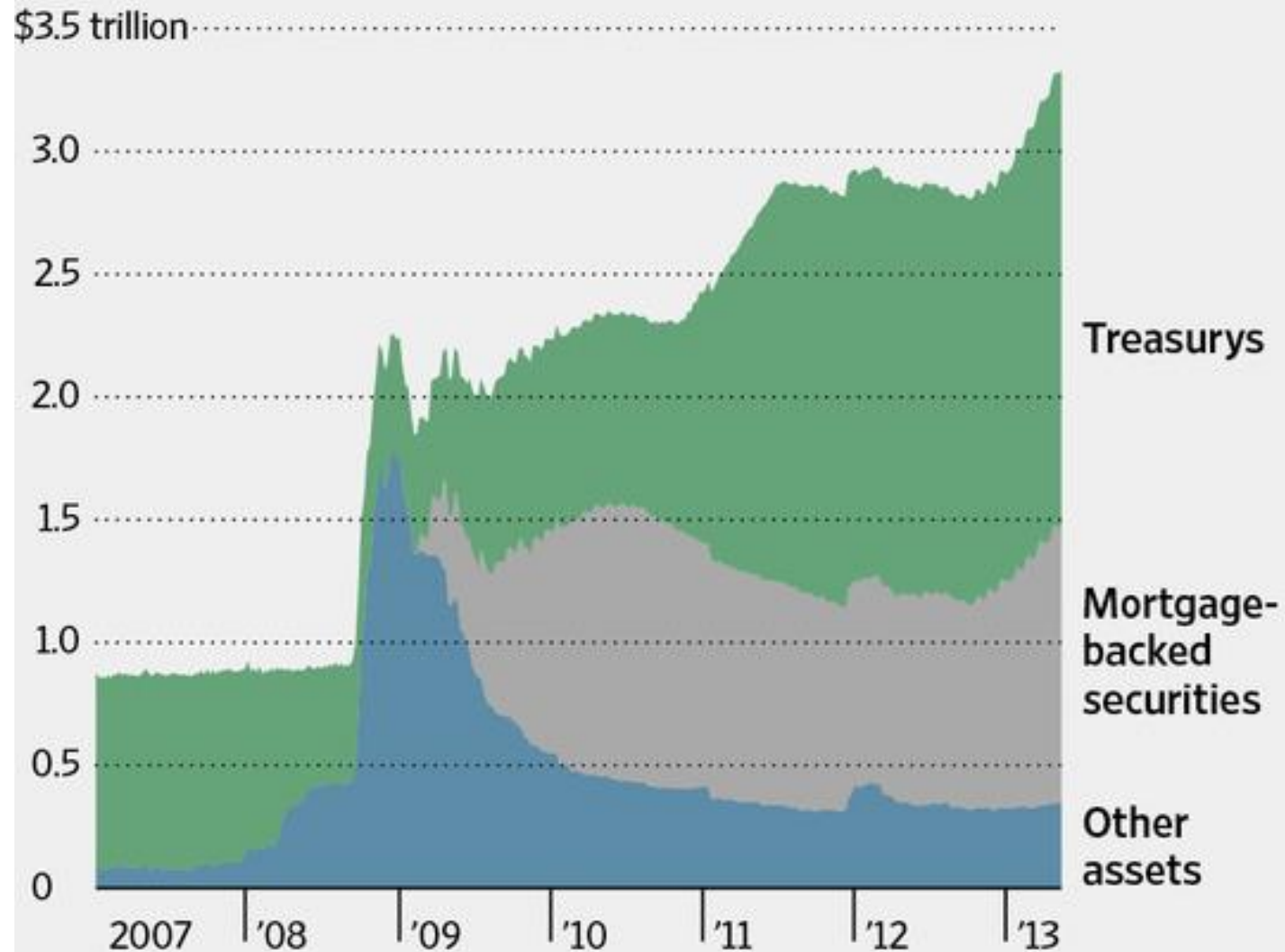
## Asset Purchase Program Size: The Fed

<u>Program</u>	<u>Assets Purchased</u>	<u>Peak Size (billion NC)</u>	<u>2008 GDP (billion NC)</u>	<u>Share of Economy (%)</u>
QE1	GSE agency debt	\$175	\$14,292	1.2%
	MBS	\$1,250		8.7%
	Treasuries	\$300		2.1%
QE2	Treasuries	\$600		4.2%
Maturity Extension Program		\$667		4.7%
Q3 (to Aug 2013)	MBS	\$160		1.1%
	Treasuries (\$45 B\Month)	\$360		2.5%

Source: Fawley and Neely (2013)

# Heavily Laden

Assets on the Federal Reserve balance sheet



Source: Federal Reserve

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The Wall Street Journal

# QE: BOE and ECB

## Asset Purchase Program Size: BOE

<u>Program</u>	<u>Assets Purchased</u>	<u>Peak Size (billion NC)</u>	<u>Peak Size (billion USD)</u>	<u>2008 GDP (billion NC)</u>	<u>Share of Economy (%)</u>
APF	Gilts	£375.00	\$590.00	£1,441	26.0%
	Commercial Paper	£1.97	\$3.10		0.1%
	Corporate Bonds	£1.60	\$2.52		0.1%

## Asset Purchase Program Size: ECB

<u>Program</u>	<u>Assets Purchased</u>	<u>Peak Size (billion NC)</u>	<u>Peak Size (billion USD)</u>	<u>2008 GDP (billion NC)</u>	<u>Share of Economy (%)</u>
CBPP	Covered Bonds	€ 60	\$81	€ 9,219	0.7%
SMP	Euro Area Sov. Debt	€ 220	\$297		2.4%
CBPP2	Covered Bonds	€ 40	\$54		0.4%

Source: Fawley and Neely (2013)

# QE: BOJ

## Asset Purchase Program Size: BOJ

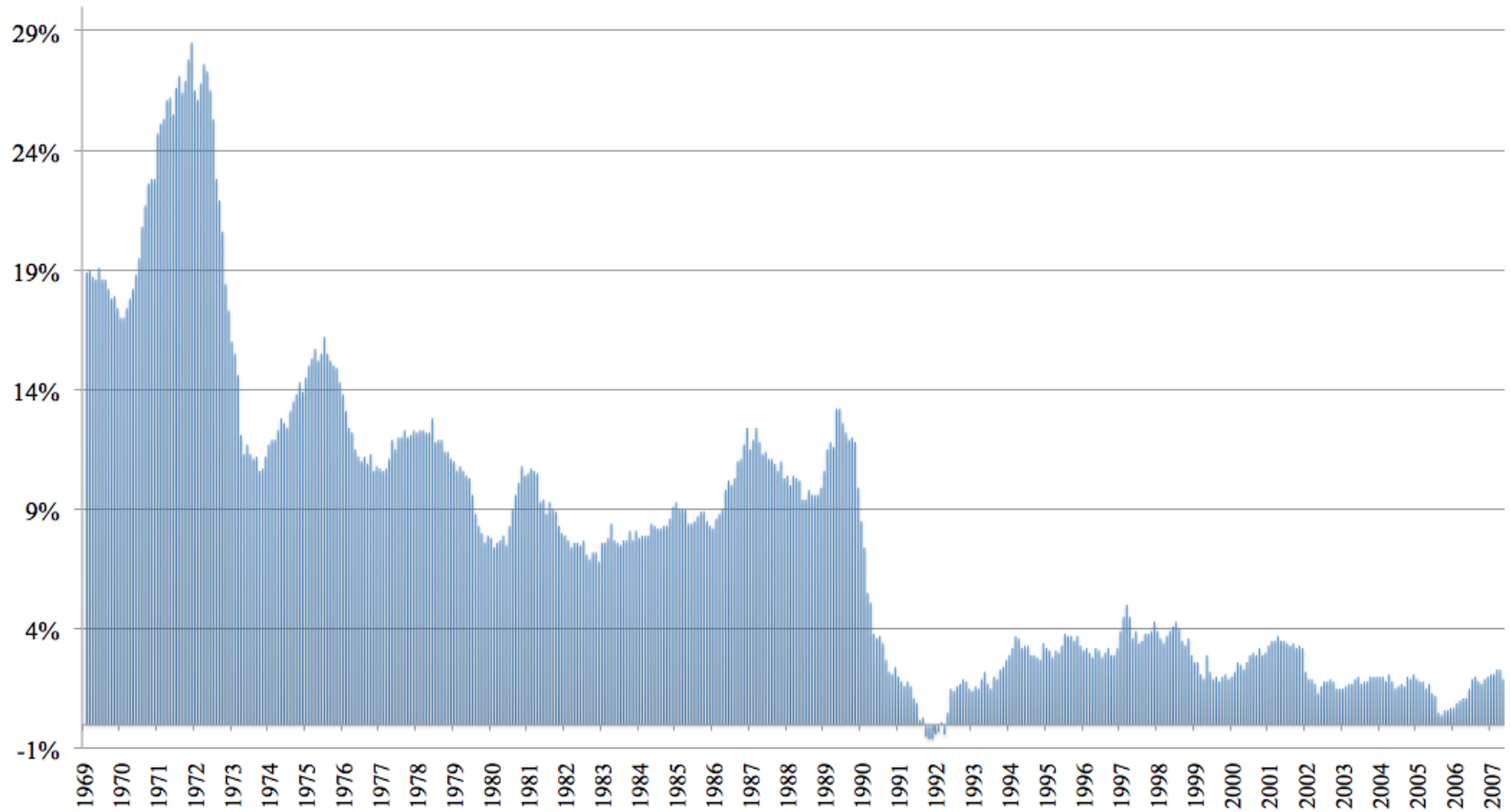
<u>Program</u>	<u>Assets Purchased</u>	<u>Peak Size (billion NC)</u>	<u>Peak Size (billion USD)</u>	<u>2008 GDP (billion NC)</u>	<u>Share of Economy (%)</u>
Outright Purchases	JGBs	¥106,800	\$1,253	¥501,209	21.3%
	Commerical Paper	¥3,000	\$35		0.6%
	Corporate Bonds	¥1,000	\$12		0.2%
APP	JGBs	¥44,000	\$516		8.8%
	Treasury Disc. Bills	¥24,500	\$287		4.9%
	Commerical Paper	¥2,200	\$26		0.4%
	Corporate Bonds	¥3,200	\$38		0.6%
	ETFs	¥2,100	\$25		0.4%
	J-REITs	¥130	\$2		0.0%

Source: Fawley and Neely (2013)

# Japan: Some Subtle Distinctions

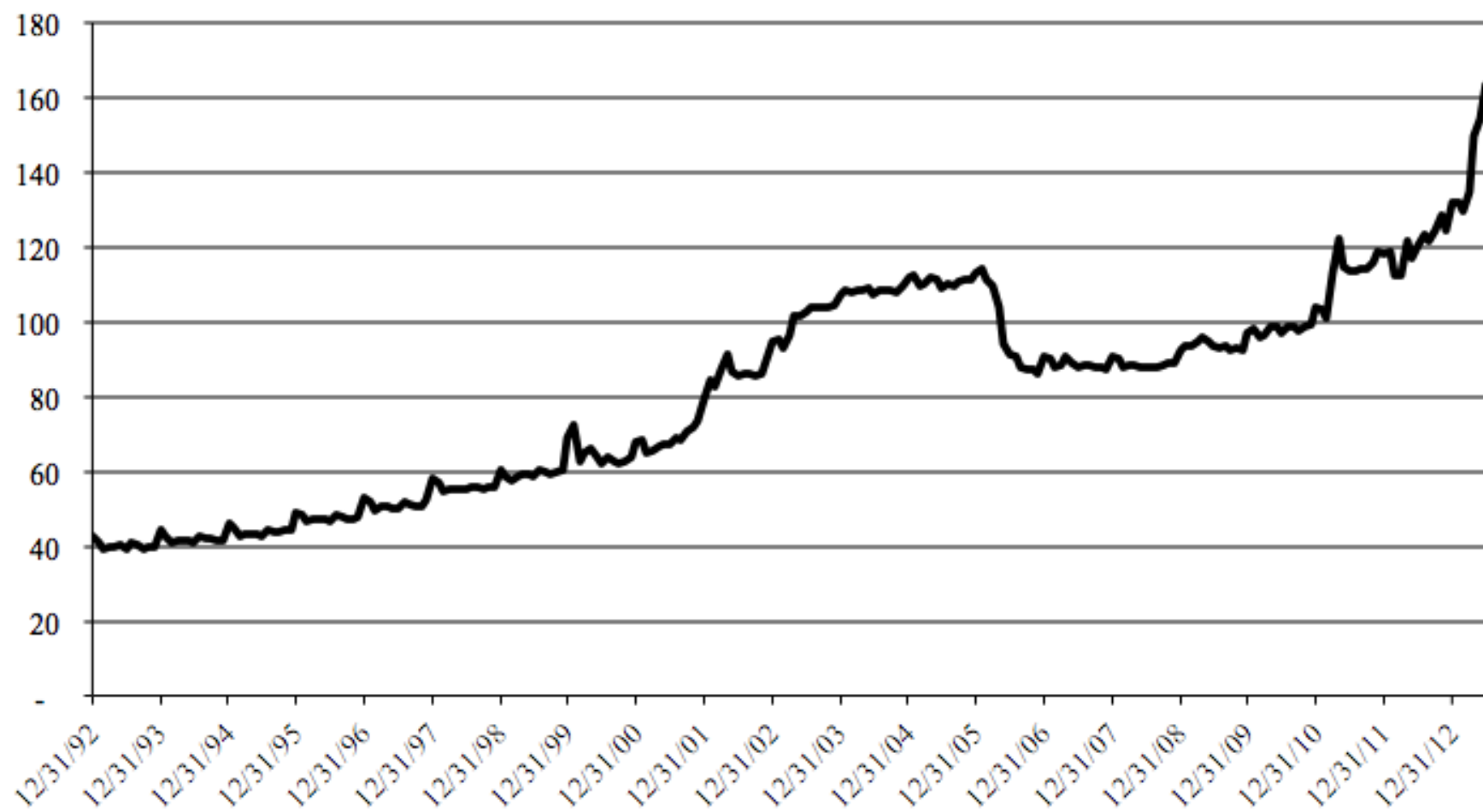
- Japan faced stagnation plus deflation.
- Why is deflation so bad?
  - Might got back to the 19<sup>th</sup> century – huge controversy over “too little’ gold – wealth transfers from debtors (Westerners and famers) to Easterners (bankers) – cross of gold speech 1996 election.
- Confused in all of this is the “chiseler” hypothesis
  - Original meaning was a price cutter. This idea meant that if a business man cut his prices he would put profit at risk and delay recovery. Had to prop up prices, even though monetary dynamics required prices to drop.
- Deflation could operate through the real rate
  - If the nominal rate is zero, the rate of deflation 5%, then the real rate is +5%.
  - If you believe in such a thing as a downward deflationary spiral, then the real rate of interest could be unbounded on the upside
    - But that is a leap of faith for many economists (including me).

# Japanese Money Supply (M2 + CDS), Annualized Growth



Data from Bloomberg Finance, LP

## Japan Monetary Base (1993-2013)



*Source: Bloomberg Finance L.P.*



# QE Totals By Central Bank

## Asset Purchase Programs

	Peak Size <u>(billion NC)</u>	Peak Size <u>(billion USD)</u>	Share of <u>Economy (%)</u>
Fed Total	\$3,512	\$3,512	24.6%
BOE Total	£378.57	\$596	26.3%
ECB Total	€ 320	\$432	3.5%
BOJ Total	¥186,930	\$2,193	37.3%

Source: Fawley and Neely (2013)

# QE NOTES - 1

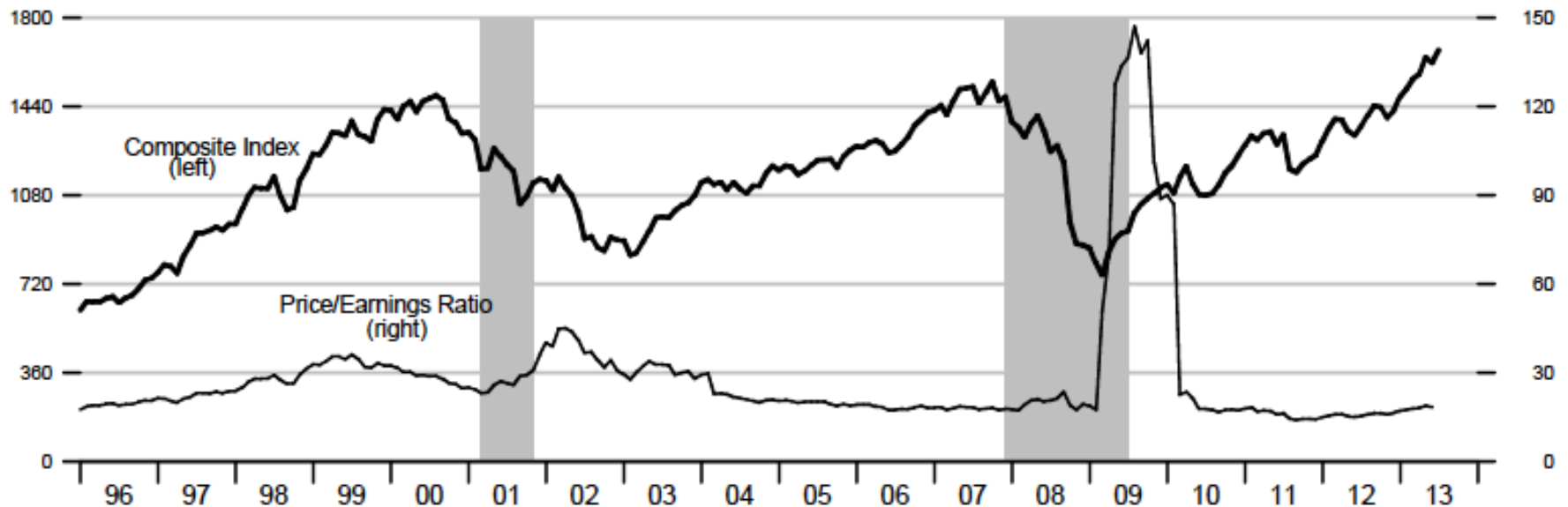
- The case for QE in Japan picked up momentum with Milton Friedman's Wall Street Journal Op-Ed piece.
- I endorsed this in my In Defense of Free Capital Markets book. The monetary transmission mechanism I wrote about: pump up the monetary base and eventually you get enough expansion in M2 to make deflation go away.
  - The problem with deflation is that you have fixed the nominal rate at zero and then let the real rate go up.
  - My solution – and that of many others -- was to create a little bit of inflation.
  - None of this has anything to do with a liquidity trap – if such a thing even ever existed.
- Bernanke's theory is different. He is saying a portfolio balance mechanism can work.
- More generically, the idea is to flatten the yield curve.
  - Central banks normally operate only on the shortest end of the curve – though that influences longer rates indirectly.
  - This is actually going after the entire curve, trying to bring down rates and risk premia.
- Taylor says that QE can work through expectations across the yield curve.
- Broader Issues
  - So much for "money is a veil" – Just how neutral is money?
  - The view of monetary policy may be changing – not as limited as once thought?
  - An amazing number of "new" channels

# QE NOTES - 2

- What have the results been so far?
  - It seems like it is working just as Bernanke said it would, at least up to and including the asset markets.
  - At present there are signs that the US economy is in recovery.
  - However, it would be a rush to judgment to attribute this solely to QE.
  - An unanswered question is whether the recovery would have been more robust if conventional monetary policy had been pursued.
- Potentially Adverse consequences?
  - Future inflation?
  - Asset market bubbles?
    - Don't expect the Fed to try bursting bubbles (if they even exist).

# The Stock Market Seems To Like QE

## Standard & Poor's 500



Source: Federal Reserve Bank of St. Louis Monetary Trends August 2013

# Not Much Inflation in the Majors – Most of Which Are Using QE

## Recent Inflation and Long-Term Interest Rates

	Consumer Price Inflation Rates				Long-Term Government Bond Rates			
	Percent change from year ago				Percent			
	2012Q3	2012Q4	2013Q1	2013Q2	Apr13	May13	Jun13	Jul13
United States	1.70	1.90	1.68	1.42	1.76	1.93	2.30	2.58
Canada	1.22	0.94	0.91	0.77	1.77	1.89	.	.
France	1.98	1.54	1.06	0.80	1.80	1.87	2.21	.
Germany	2.02	2.01	1.54	1.50	1.20	1.29	1.53	.
Italy	3.17	2.47	1.91	1.17	4.28	3.96	4.38	.
Japan	-0.34	-0.24	-0.63	.	0.59	0.88	.	.
United Kingdom	2.41	2.67	2.77	2.69	1.78	1.94	2.31	.

\* Copyright © , 2011, Organisation for Economic Cooperation and Development, OECD Main Economic Indicators ([www.oecd.org](http://www.oecd.org)).

Source: Federal Reserve Bank of St. Louis Monetary Trends August 2013

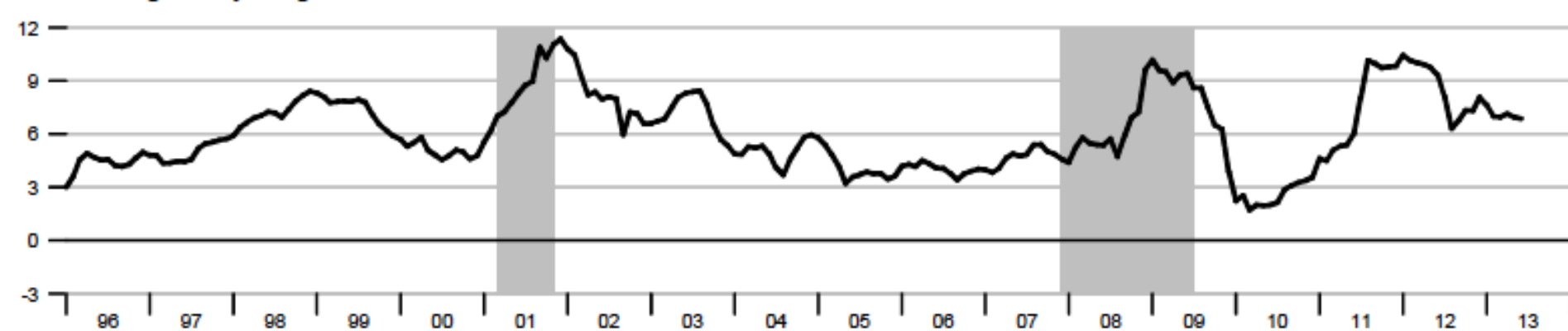
# Why Is There Little or No Inflation in the QE Countries?

- The Quantity Theory:
  - $M V = P T$
- M is money
  - As distinguished from government bond and especially distinguished from the government's fiscal deficit.
- V is the velocity of money
- P is the price level
- T is aggregate transactions.
- A big question is what is “M?” For most economists, M is a broad based monetary aggregate, such as M2. It is not the monetary base (“high powered money”).

# Closer Look At USA: M2 Has Been Somewhat Subdued

## Monetary Services Index - M2

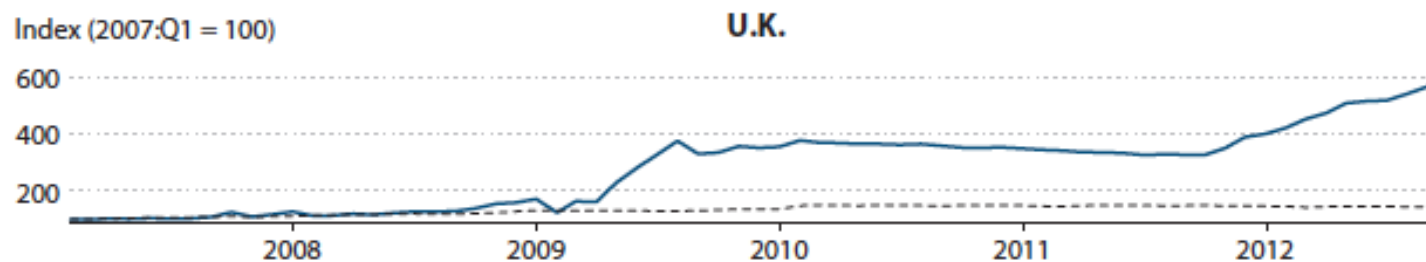
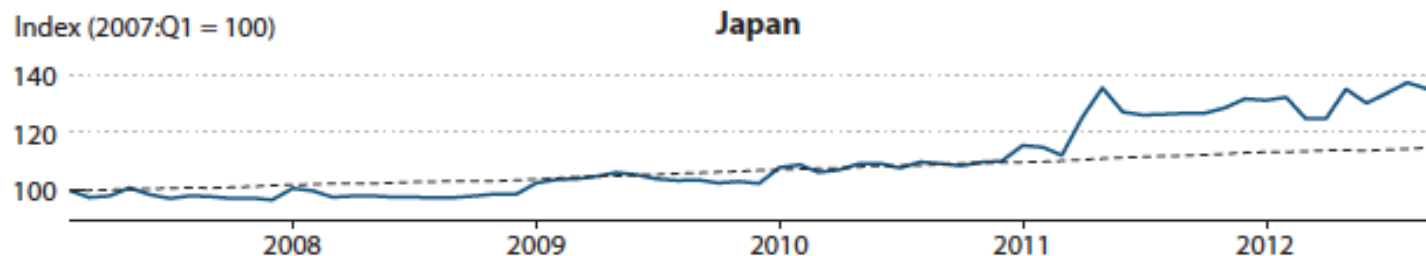
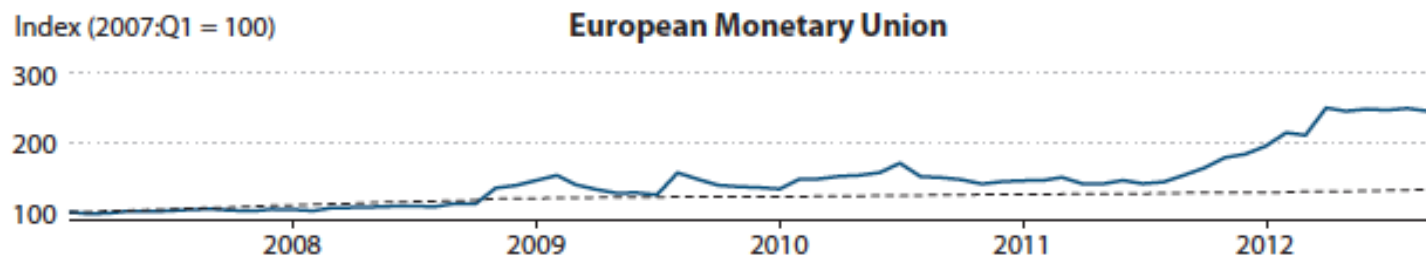
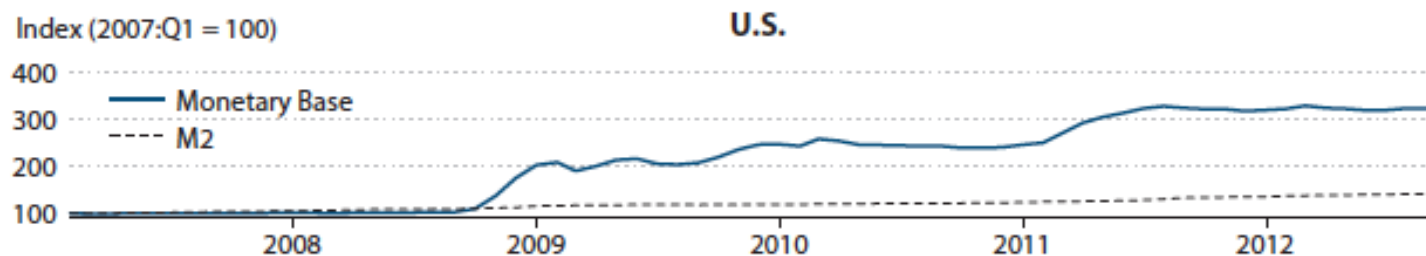
Percent change from year ago



Source: Federal Reserve Bank of St. Louis Monetary Trends August 2013

This is a fairly important point. QE has not so much expanded the broad-based monetary aggregates as it has lead to an accumulation of excess reserves. This is apparent in data for all four QE banks.

# Monetary Base and M2 Expansion



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SOURCE: Federal Reserve Board, ECB, BOJ, and BOE.

Frawley and Neely (2013)



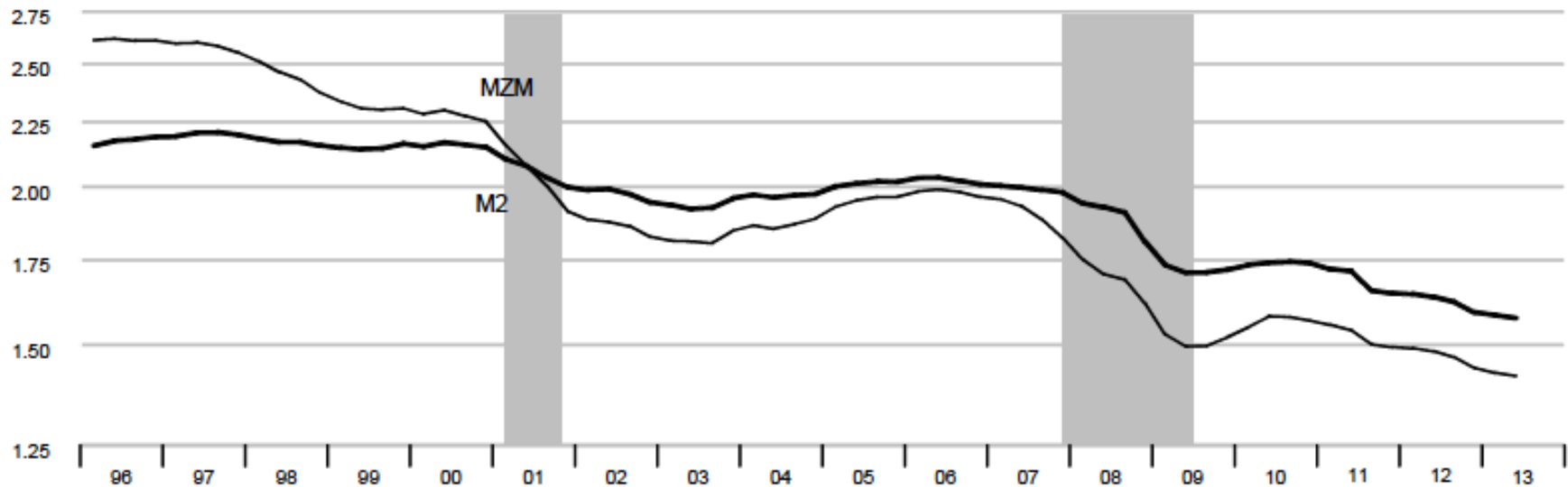
# And US Velocity Has Been Dropping

*Monetary Trends*

updated through  
08/06/13

## Velocity

Nominal GDP/MZM, Nominal GDP/M2 (Ratio Scale)



Source: Federal Reserve Bank of St. Louis Monetary Trends August 2013

# Milton Friedman's Dictum

*The monetary transmission mechanism operates with long and variable lags.*

# The Channels Of Monetary Policy

- “Conventional”: Target Fed Fund Rate. Then use Money Supply → Short-term Rates → Real Economic Activity.
- Real Interest Rate QE: Target Growth in Money Supply → Halt Deflation → Produce a Drop in the Real Interest Rate
  - Stop QE when deflation stops
- Asset Demand QE: LT Bond Purchases → Stocks and Other Assets → Aggregate Demand.
  - Stop QE when aggregate demand is sufficient and sustained.

# The Portfolio Balance Hypothesis

- Fed Chairman Bernanke, “Monetary Policy since the Onset of the Crisis” – speech given at Jackson Hole, Wyoming, August 31, 2012.
- Important Questions:
  - Is there any empirical support?
  - How potent?
  - How permanent?
  - What do we know about the lag structure?
  - Does the PB argument lend itself to a policy rule?
  - What are the collateral effects?
    - Spillover to EM countries?

# Bernanke: Portfolio Balance

- In using the Federal Reserve's balance sheet as a tool for achieving its mandated objectives of maximum employment and price stability, the FOMC has focused on the acquisition of longer-term securities--specifically, Treasury and agency securities, which are the principal types of securities that the Federal Reserve is permitted to buy under the Federal Reserve Act. One mechanism through which such purchases are believed to affect the economy is the so-called portfolio balance channel, which is based on the ideas of a number of well-known monetary economists, including James Tobin, Milton Friedman, Franco Modigliani, Karl Brunner, and Allan Meltzer. The key premise underlying this channel is that, for a variety of reasons, different classes of financial assets are not perfect substitutes in investors' portfolios. For example, some institutional investors face regulatory restrictions on the types of securities they can hold, retail investors may be reluctant to hold certain types of assets because of high transactions or information costs, and some assets have risk characteristics that are difficult or costly to hedge.

# Bernanke: Portfolio Balance – Cont'd

- Imperfect substitutability of assets implies that changes in the supplies of various assets available to private investors may affect the prices and yields of those assets. Thus, Federal Reserve purchases of mortgage-backed securities (MBS), for example, should raise the prices and lower the yields of those securities; moreover, as investors rebalance their portfolios by replacing the MBS sold to the Federal Reserve with other assets, the prices of the assets they buy should rise and their yields decline as well. Declining yields and rising asset prices ease overall financial conditions and stimulate economic activity through channels similar to those for conventional monetary policy. Following this logic, Tobin suggested that purchases of longer-term securities by the Federal Reserve during the Great Depression could have helped the U.S. economy recover despite the fact that short-term rates were close to zero, and Friedman argued for large-scale purchases of long-term bonds by the Bank of Japan to help overcome Japan's deflationary trap.

# Bernanke: Portfolio Balance – Cont'd

- “Large-scale asset purchases can influence financial conditions and the broader economy through other channels as well. For instance, they can signal that the central bank intends to pursue a persistently more accommodative policy stance than previously thought, thereby lowering investors' expectations for the future path of the federal funds rate and putting additional downward pressure on long-term interest rates, particularly in real terms. Such signaling can also increase household and business confidence by helping to diminish concerns about "tail" risks such as deflation. During stressful periods, asset purchases may also improve the functioning of financial markets, thereby easing credit conditions in some sectors.”

# Critic of QE: John Taylor

- John Taylor
  - Well known for his Taylor Rules. These are algebraic formulations of successful monetary policy rules.
- Taylor has criticized the Fed for abandoning the rules.
- Taylor also criticized the Fed for keeping an artificially low short-term interest rate and announcing it would keep this rate low indefinitely (Forward Guidance).



# Critic of QE: Alan Meltzer

- The Fed will not cure the sluggish conditions (look to fiscal situation instead).
- The Fed should avoid excessive attention on short-term and political influences.
- The Fed should stick to Taylor rules.

Meltzer, Alan, "What's Wrong with the Federal Reserve," WSJ July 9 2012

# Critic of QE: Martin Feldstein

- “Federal Reserve’s Policy Dead End” WSJ May 9, 2013.
- The Fed currently buys \$85 Billion a month of long-term assets.
- Accumulation to date of \$2 Trillion.
- Criticism: LT Assets instead of ST Assets.
- Criticism: QE has not affected the stock market.
- Risks include:
  - Asset-price bubbles
  - Future inflation
- Benefits uncertain – underperformance of GDP relative to potential GDP.

# The Big Question: How Will QE End?

- Do the the QE CBs have to unwind their accumulated position?
- Maybe with a stronger economic environment the QE CBs can dribble the assets out without too much adverse effect.
- What if velocity bank lending starts to rise? Associated rise in broad-based aggregates may result in inflation.
- Still, any mention of “tapering” roils markets. And this is not an unwind but simply the mention that someday CBs will stop buying bonds.
- Alan Blinder (2010):
  - Magic bullet may be the Fed’s paying interest on reserves – lure the banks to keep excess reserves at FED
  - Can also use CD auctions to banks
- A ray of hope: Alan Blinder (2010) says BOJ managed to get out of its earlier QE relatively easily.

# Conclusions

- The great recession of 2008 has induced central banks to follow extreme, almost experimental monetary policies.
  - Dollar swap lines may have materially alleviated the dollar squeeze of 2008. Swap lines appear to have proved their mettle and probably will now be part of the standard central bank tool kit. Note that the Fed felt the need to reinstitute them in 2010.
  - Quantitative easing is a more radical new monetary policy. Although it seems to have had strong and desirable effects on asset markets its final verdict, meaning macro economic effects with respect to output and employment are not yet knowable. Moreover there may be serious side effects with respect to constraints on future monetary policy and indeed inflation.
- Money is less of a veil and monetary policy is potentially much more versatile and potent than was once thought.
- It appears that Chairman Bernanke does not want another term as Fed Chairman. If so, he will leave office in January 2014. Whoever comes into the Fed will have a lot to think about.

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