Arne Jon Isachsen
BI Norwegian Business School

QUANTITATIVE EASING

1. **Point of departure**
2. **More on the US**
3. **Secular Stagnation**
4. **More on the Euro Area**
5. **Helicopter money**
6. **Summing up**

1. Point of departure

1985 – 2007 Great Moderation

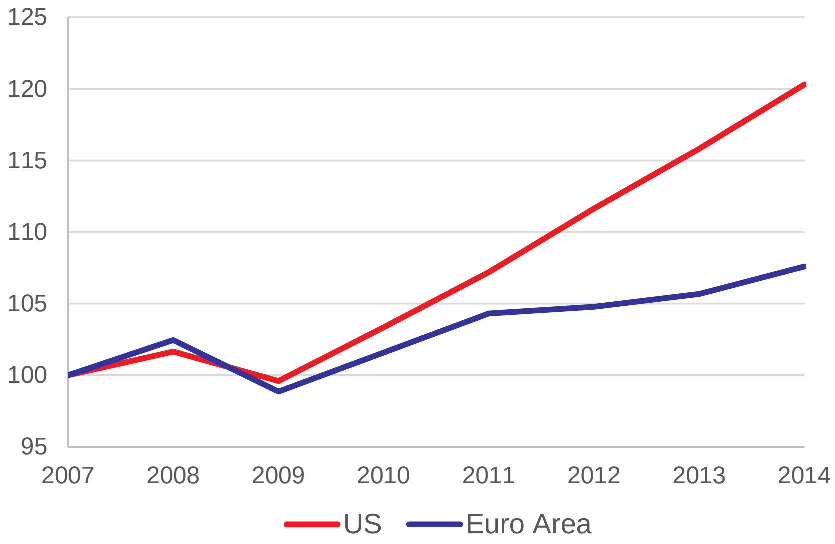
2007 – 2009 Great Recession

2009 – 2015 Slow Recovery

USA in 2014, GDP 20.3 % higher than in 2007

Euro Area in 2014, GDP 7.6 % higher than in 2007

Figure 1: GDP Volume Index (2007 = 100)

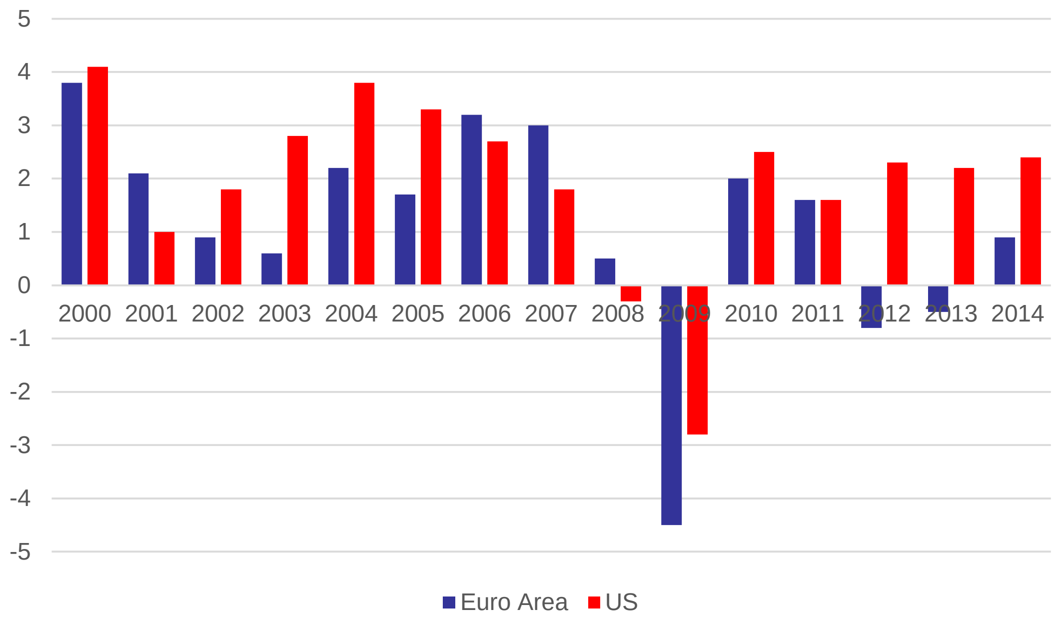


Source: OECD Statistics

Some observations of a few macroeconomic variables

USA outperforming Euro Area on GDP-growth

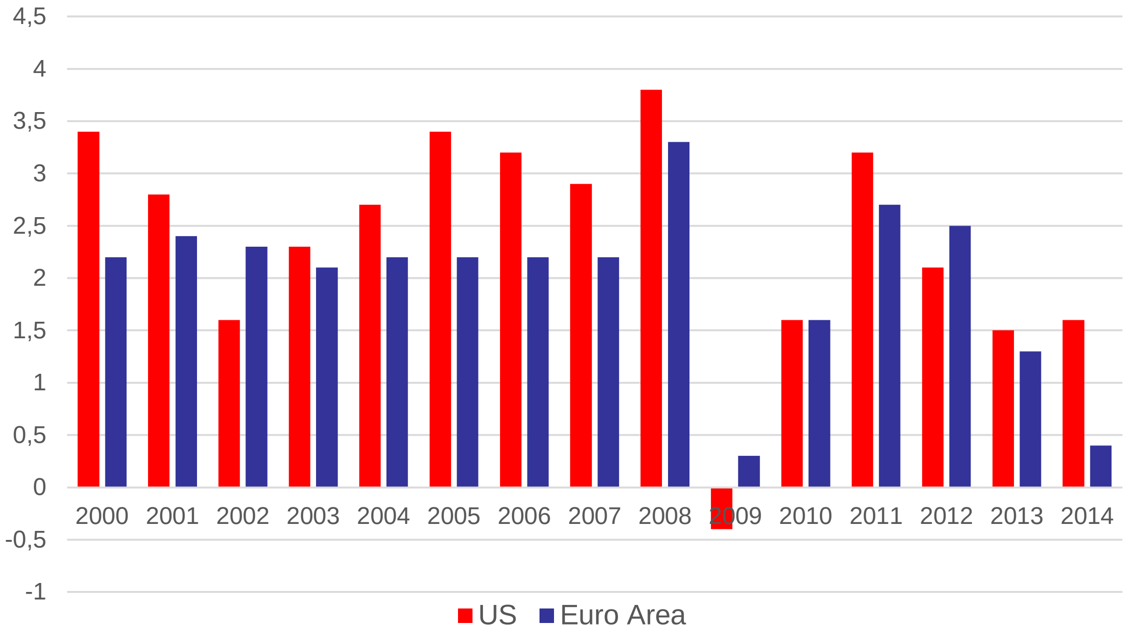
Figure 2 – GDP growth



Source: OECD Statistics

Figure 3 – Inflation

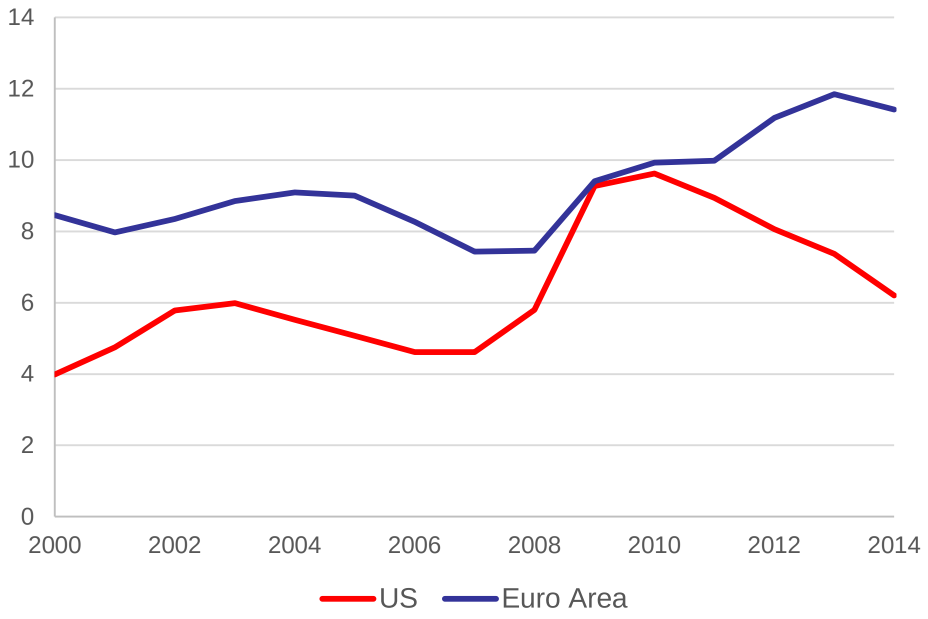
ECB undershooting inflation target of 2 %



Source: OECD Statistics

Figure 4 – Unemployment rate

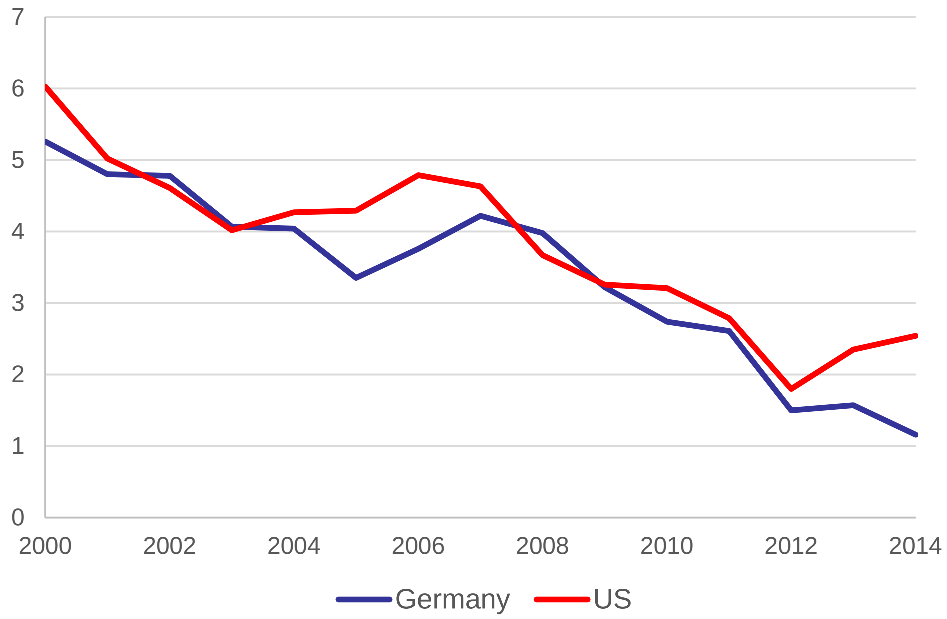
Euro Area is doing poorly. Twice the unemployment rate compared to the US



Source: Datastream

Figure 5 – 10 year government bond yield

Long run real yields bottoming out? German Bunds at 8 bp in April 2015.



USA has tackled the crisis much more skillfully than EU
(or euro area).

Losses have been taken and banks have been recapitalized.

More flexible labor markets in terms of wages and labor mobility.

	USA	Euro area
GDP-growth 2015	2.6 %	1.5 %
Budget balance	- 2.5 %	- 2.2 %
Ten year G-bond	2.24 %	0.62 % (Germany)
Unemployment rate	5.4 %	11.3 %

Euro area – did not take the losses in 2009 and 2010 – a grave error.

Feared for the banking system. Misplaced fear.

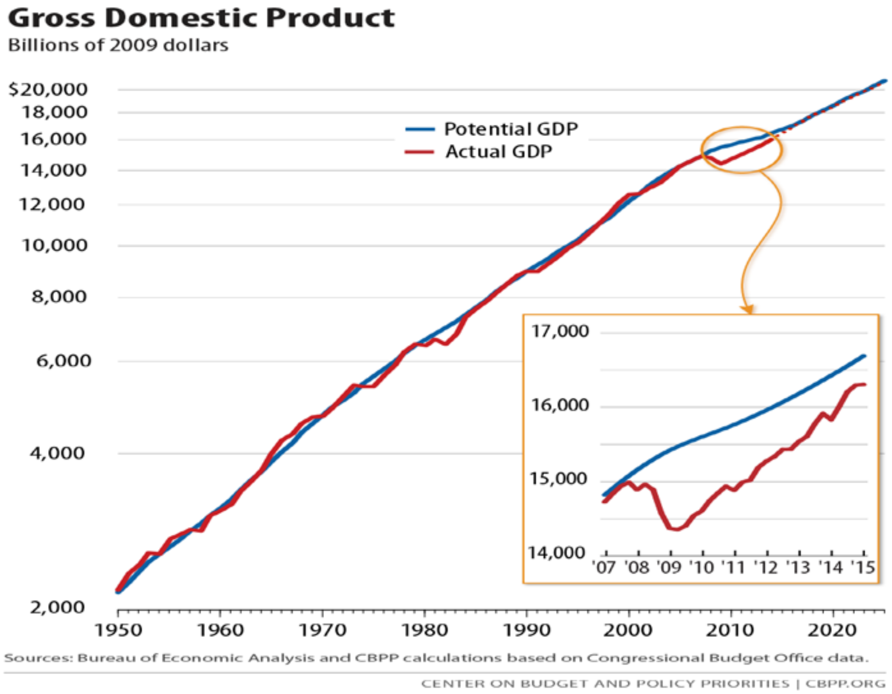
Greece pays the price these days – devaluing after doing away with thousands of companies; few are left to benefit from improved competitiveness.

Churchill (1941): “Give us the tools, and we will finish the job.”

The tool – devalue the currency – is arriving way too late, if at all.

2. More on the US

Figure 6 – Potential GDP



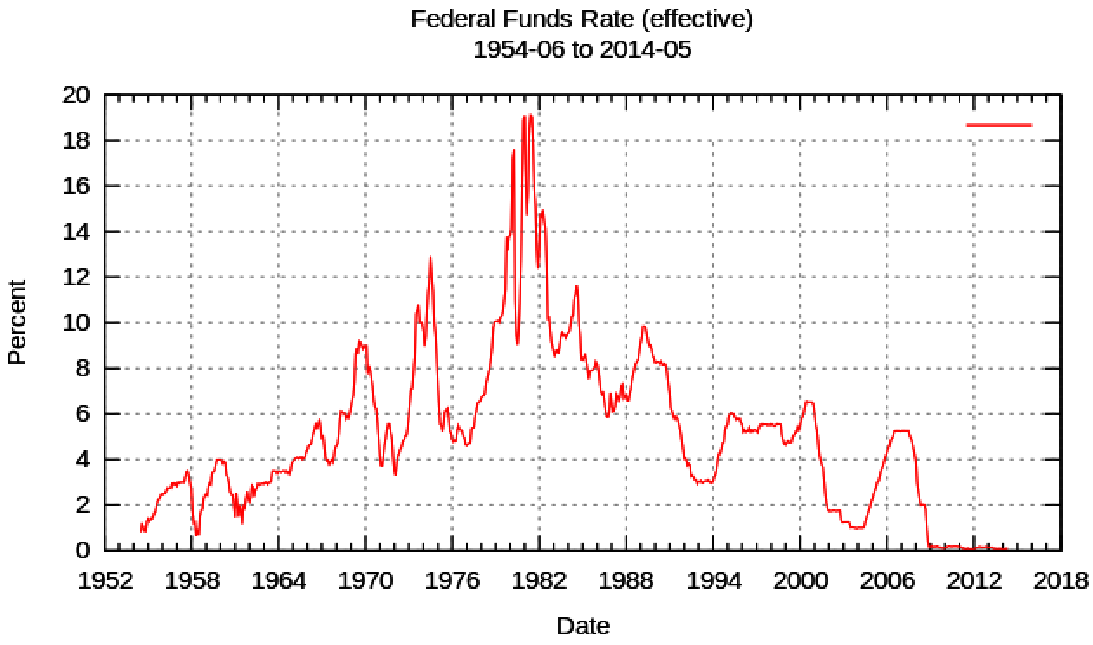
Lehman hits the wall in September 2008.

October and TARP is passed in Congress, 700 billon USD (5 % of GDP) made available to shore up the banking system.

Losses are taken. Credit starts to flow again.

Figure 7: Federal Funds Rate Last 60 Years

Since December 2008, federal funds rate between zero and 25 bp.



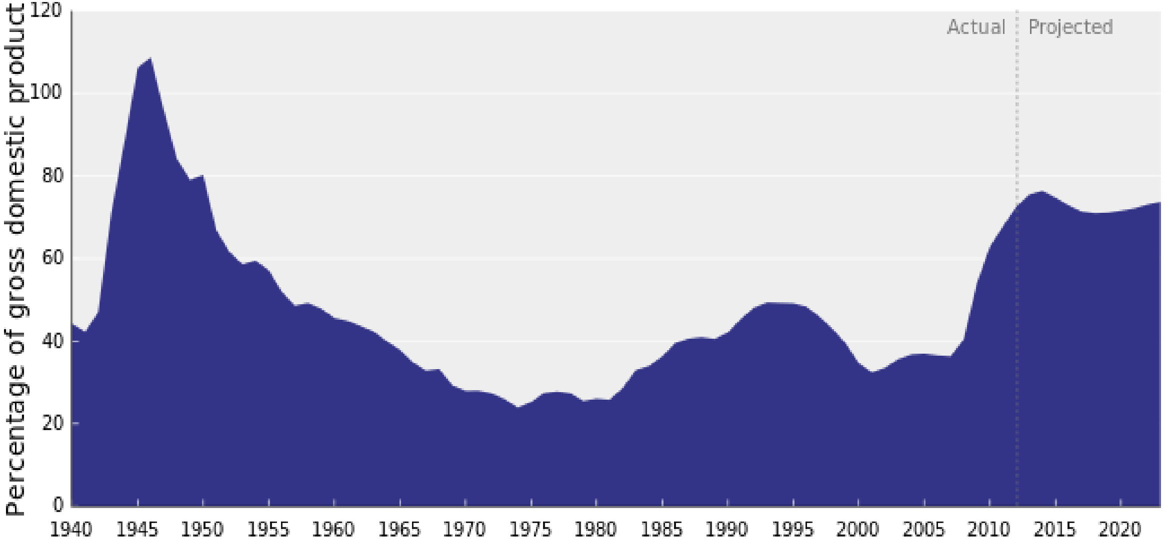
Federal funds rate between zero and 0.25 % since December 16, 2008.

But more stimuli are needed.

Cap on fiscal policy, i.e. cannot accumulate too large government debt.

Figure 8: U.S. federal debt held by the public as a percentage of GDP, from 1940 to 2012

Congress unwilling to keep the state accumulating debt – and rightly so.



One game in town, creative monetary policies.

With federal funds rate effectively at zero, Ben Bernanke introduces Quantitative Easing (QE), i.e. tries to stimulate aggregate demand by reducing longer-term rates.

To stimulate aggregate spending when short-term interest rates have reached zero, the Fed must expand the scale of its asset purchases or, possibly, expand the menu of assets that it buys.

The portfolio balance channel assumes that the market for long-term Treasury securities is segmented from the rest of the financial market. This being the case, long-term Treasury yields can be reduced through large scale asset purchases (QE).

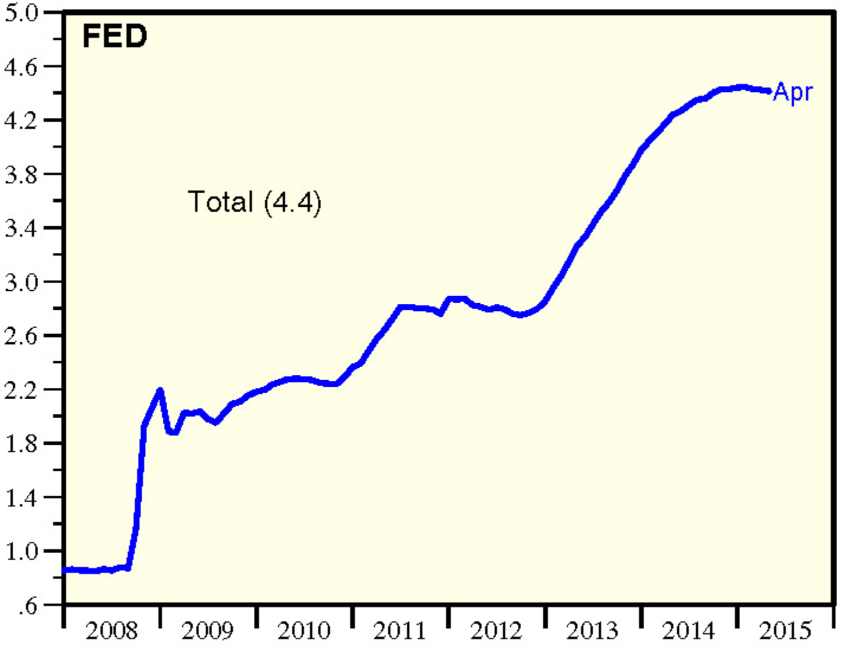
Also, buying MBS, with direct impact upon private debt in the housing market.

Fed conceived of as market maker in MBS. Liquidity is improved, and required return comes down.

Figure 9a – Total assets of FED (trillions of US dollars)

Balance sheet of the Fed about 25 % of GDP.

Norwegian Oil Fund more than twice GDP.

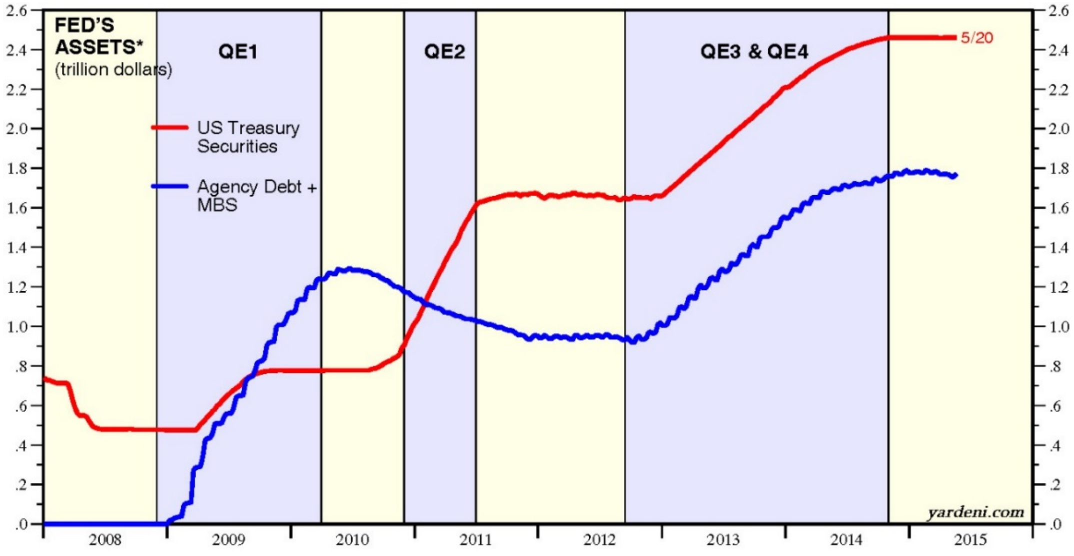


Source: Global Economic Briefing: Central Bank Balance Sheets (2015). Yardeni Research Inc. May 15, 2015.

Figure 9b – Total assets of FED (trillions of US dollars)

Four rounds of quantitative easing

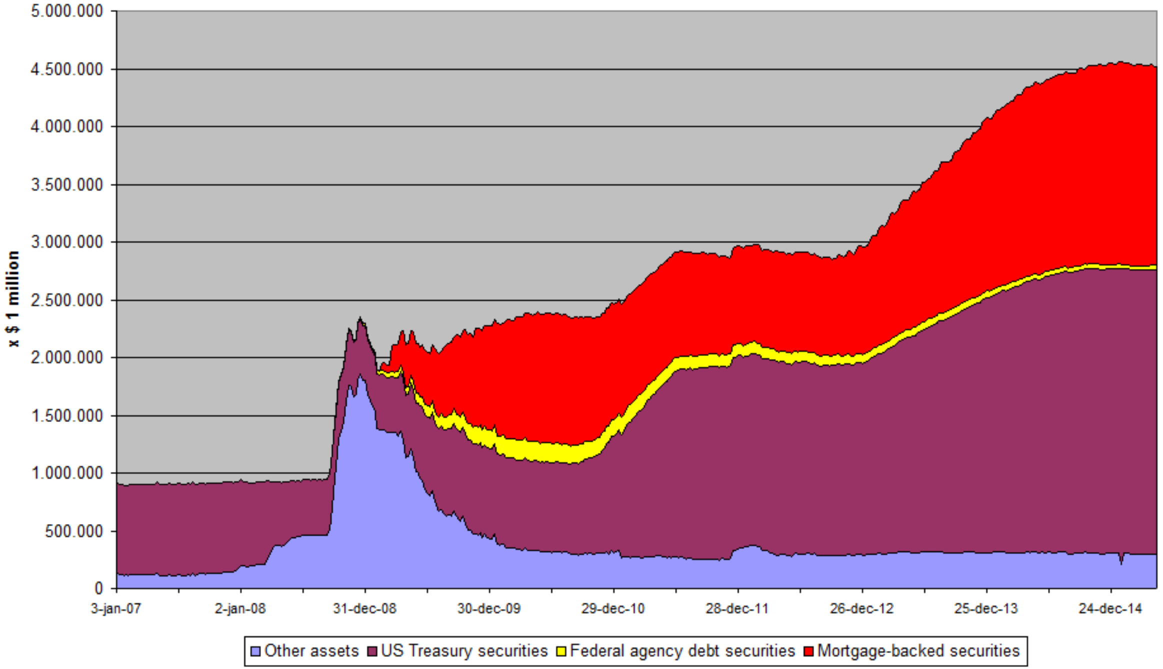
Private debt is a substantial share



* Average of daily figures for weeks ending Wednesday.
Note: QE1 (announced 11/25/08) = Fed buys $1.24tn in mortgage securities. QE2 (announced 11/3/10) = Fed buys $600bn in Treasuries. QE3 (announced 9/13/12) = Fed buys $40bn/month in mortgage securities (to infinity and beyond). QE4 (announced 12/12/12) = Fed buys $45bn/month in Treasuries.
Source: Federal Reserve Board.

Source: Global Economic Briefing: Central Bank Balance Sheets (2015). Yardeni Research Inc. May 15, 2015.

Figure 9c – U.S. Federal Reserve balance sheet total



Source: Wikipedia & FED.

Communication about contingent future path of rates, and of policies, in order to influence expectations in the market.

Bernanke in late 2012, will keep interest rates low until unemployment reaches about 6.5 percent. Quite surprising – linking monetary policy to a real variable like the rate of unemployment.

Bernanke early 2013, with the jobless rate in January at 7.9 percent, it will take three more years before the unemployment rate reaches 6 percent. Now, at 5.4 percent.

Bernanke, May 2013, the Fed would lower the amount of assets purchased by the Fed (tapering) each month if economic conditions, such as inflation and unemployment, were favorable.

The taper began in December 2013 and ended with a final $15 billion purchase in October 2014.

Can change the federal funds rate without having to reduce the balance sheet of the Fed first.

Janet Yellen, the Fed's benchmark interest rate would remain near zero for a "considerable time" after the taper's end. The Fed may hang onto the bonds for years, which could give the economy a QE-like boost even after QE itself has been tapered out.

The Federal Reserve's quantitative easing (QE) program has been accompanied by a flow of funds into emerging-market economies (EMEs) in search of higher returns.

Tapering is announced in May 2013, and the flows are reversed.

Figure 10: Emerging market bond and equity fund flows

QE in America, and money flows to emerging markets.

Expecting lower interest rates in the US, and the exchange rate weakens.

Tapering announced, and money flows back to the US, from some emerging markets. The dollar strengthens.

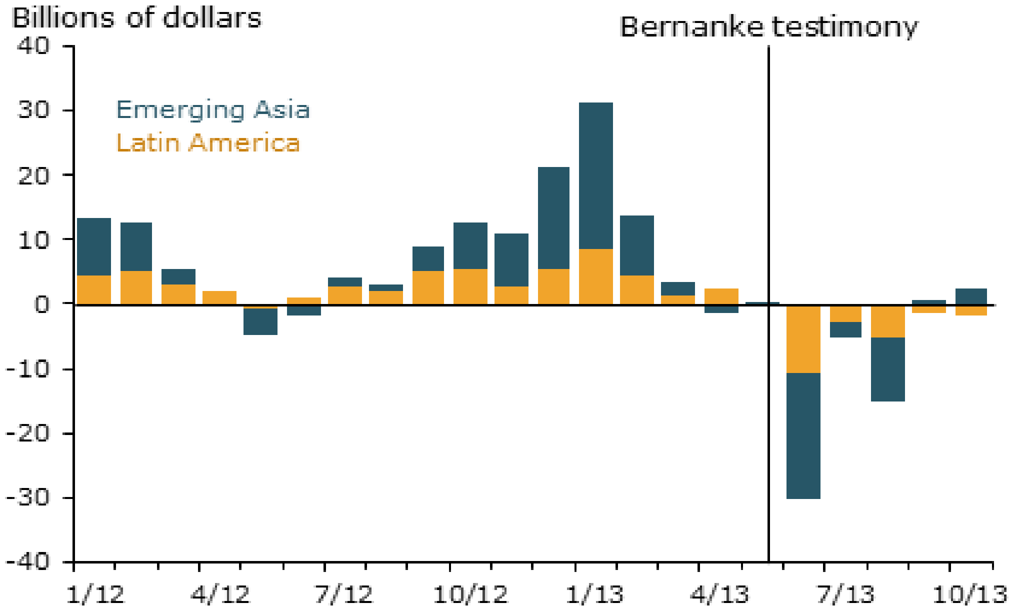
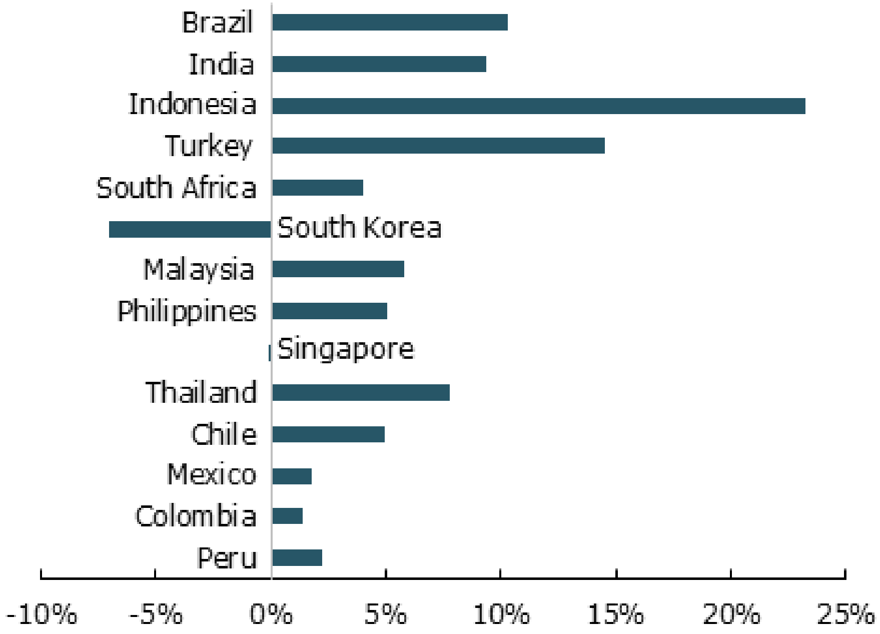


Figure 11: Exchange rate depreciation, May to December 2013



As alluded to, the foreign currencies depreciate ones tapering is announced

The essence of QE:

The central bank changes the composition of assets that are owned by the private sector.

Given that these assets are not perfect substitute, prices shall have to change so as to make the given stocks willingly held.

What prices? Interest rates (on different maturities)
Exchange rates
Stock prices (HKMA in 1998)

3. Secular Stagnation

TFP-growth is growth not explained by growth in capital and labor

2009-2014, GDP-growth, annual average, of 2.4 %
Unemployment down from 10 % to less than 6 %

Which means that POTENTIAL GDP is growing at less the 2.4 %.
Robert Gordon: Supply side – not the demand side, that matters.

	GDP-growth	TFP-growth	
1920-1972	3.71	2.01	
1972-1996	3.01	0.52	
1996-2004	3.32	1.43	The effects of dot.com revolution
2004-2014	1.58	0.54	The new normal, as they say in China

Better education no longer an engine of growth in USA.

Income distribution needs to be less skewed, both to have aggregate demand increase, and to have better educated Americans.

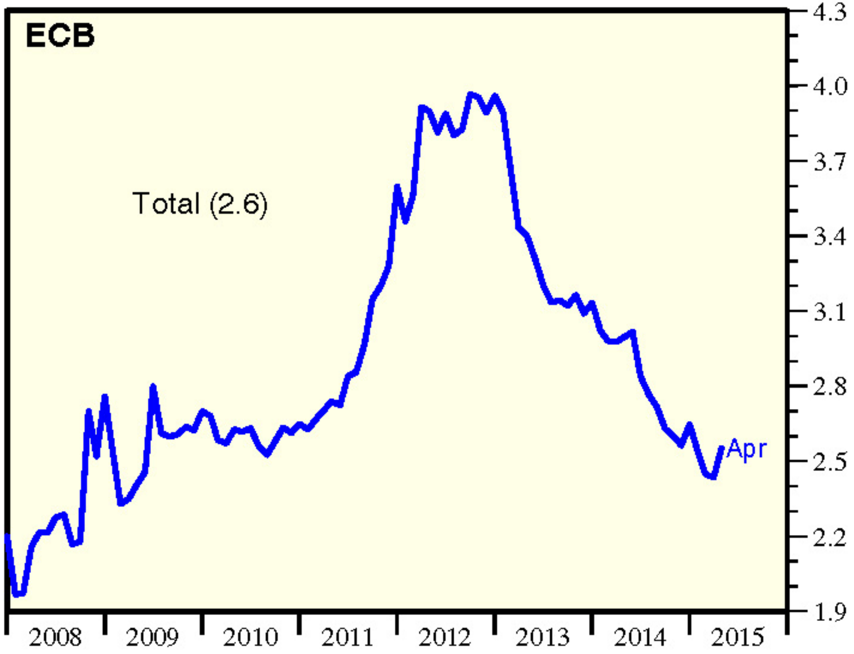
4. More on the Euro area

22 January 2015 - ECB announces expanded asset purchase program

- ECB expands purchases to include bonds issued by euro area central governments, agencies and European institutions
- Combined monthly asset purchases to amount to €60 billion
- Purchases intended to be carried out until at least September 2016
- Program designed to fulfill price stability mandate

9 March 2015 – and ECB ready to start a new round of QE.

Figure 12 – Total assets of ECB (trillions of US dollars)



LTRO in 2011 and 2012. Banks paid back pretty fast

Source: Global Economic Briefing: Central Bank Balance Sheets (2015). Yardeni Research Inc. May 15, 2015.

On 21 December 2011 the ECB concluded Long-Term Refinancing Operation (LTRO). Three years loans at 1% interest to European banks, accepting loans from the portfolio of the banks as collateral.
Loans totalling €489 bn. A solid subsidy to the financial community.

The by far biggest amount of €325bn was tapped by banks in Greece, Ireland, Italy and Spain.

On 29 February 2012, the ECB held a second 36-month auction, LTRO2, providing eurozone banks with further €529 billion in low-interest loans.

More difficult for ECB than for the Fed – 19 governments and central banks to deal with.

Germans are not Keynesians, making it hard to improve competiveness for EMU-countries in need of that.

The same E.U. Treaty that prohibits the ECB from financing governments also allows it complete independence in conducting monetary policy. The interpretation of what is allowed and what not has shifted as the threat of deflation has increased.

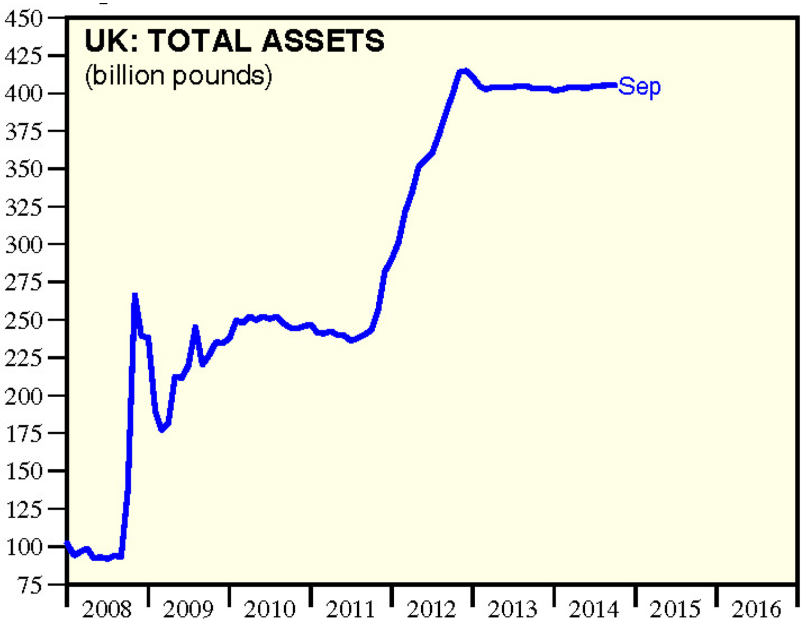
German exporters are delighted. The DAX hit an all-time high after the announcement, because the euro is now at a 12-year low against the dollar.

But Bundesbank and Jens Weidmann are not delighted.

A brief look at the Bank of England

Figure 13 – Total assets of BOE (billion punds)

BOE – two episodes of QE



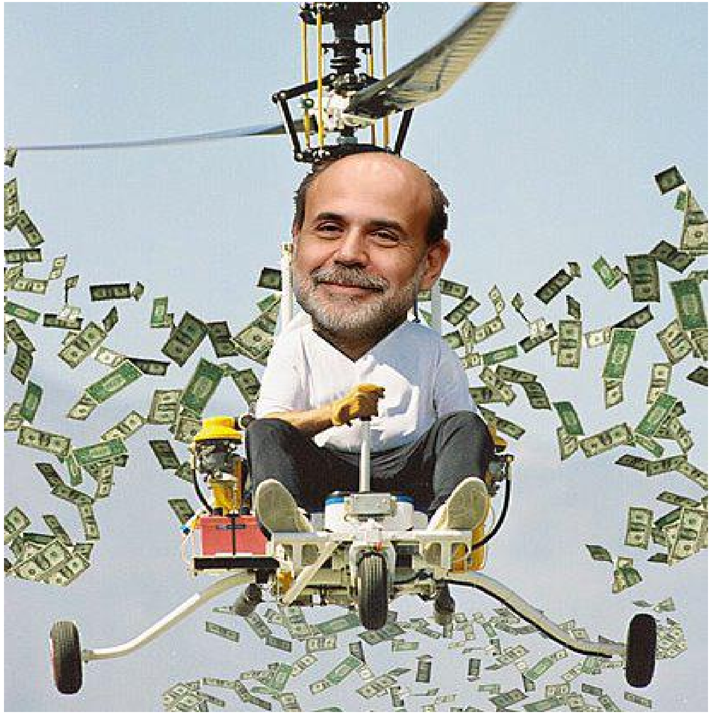
Source: Global Economic Briefing: Central Bank Balance Sheets (2015). Yardeni Research Inc. May 15, 2015. Bank of England

5. What about Helicopter money?

Handing out newly created money, debt-free, directly to governments instead of banks? The central bank would in effect be financing the government's expenditures. Receiving serious attention.

Distributional concerns add to the case of Helicopter money. Why?

Ben Bernanke in 2002 hinted to this mechanism, and Helicopter-Ben was born.



Lord Adair Turner – Member of UK Financial Policy Committee, former Chairman of Financial Services Authority, April 2013:

"'Helicopter money' – by which we mean overt money finance of increased fiscal deficits – may in some circumstances be the only certain way to stimulate nominal demand, and may carry with it less risk to future financial stability than the unconventional monetary policies currently being deployed."

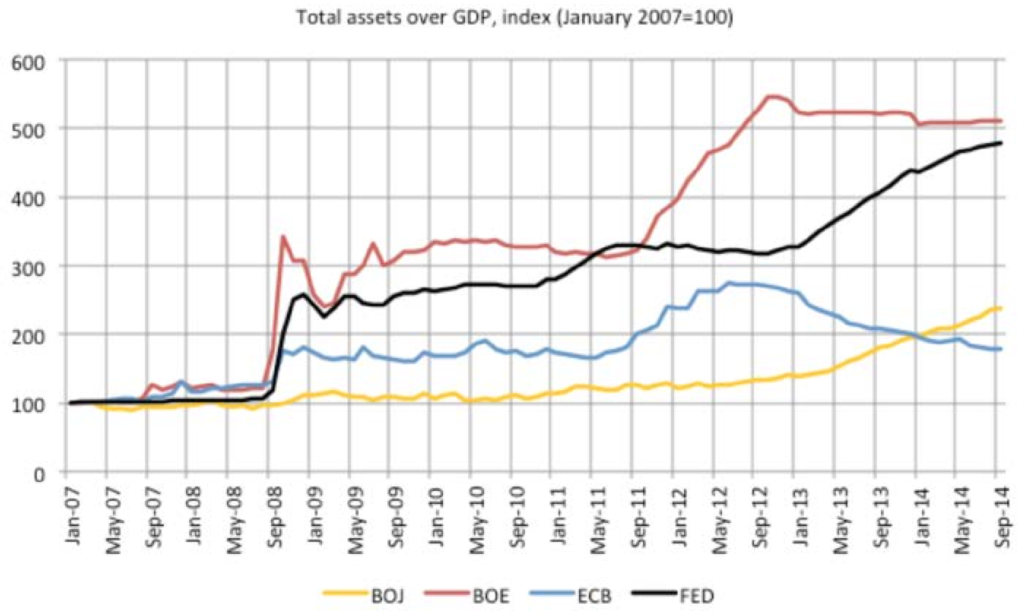
QE TO THE PEOPLE

ECB will inject 60 bn euros a month for the next 18 months into the financial system. 19 economists suggest a different approach.

The new money created by ECB could be used to finance government spending (such as investing in much needed infrastructure projects); alternatively each eurozone citizen could be given €175 per month, for 19 months. Either approach would be far more effective than the ECB's plans for conventional QE.

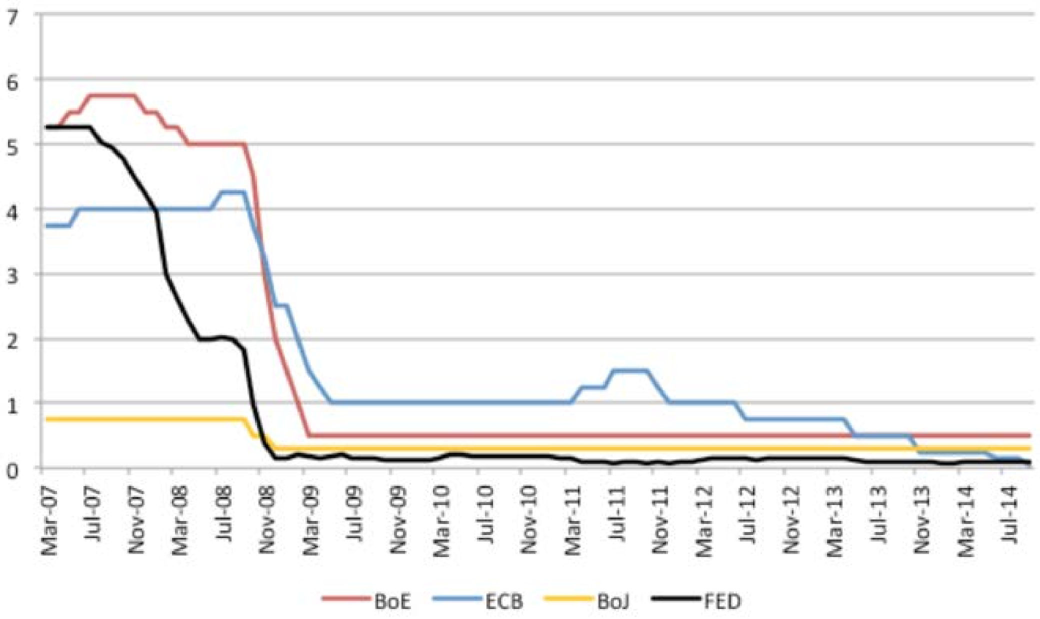
6. Summing up

Figure 15 – Balance sheets of four major central banks



Source: Mody, Ashoka (2014), «The ECB's balance sheet, if needed», *Bruegel*, 3 December 2014.

Figure 16 – Policy rates of four major central banks



QE is innovative – but not all that spectacular

The Fed buys OTHER assets than T-bills.
And will most likely sit on them for a long time.

However, the federal funds rate is free to be raised,
when FOMC feels like it.

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ECB follows suit – lending to banks in 2011 and 2012

Now, more like QE of Fed – buying securities in the second hand market, to influence fixed rate interest rates of different maturities

Also, as the stock of money increases, the value of it tends to be reduced, i.e. the euro exchange rate on the decline. But of late, increasing a bit. Guessing here is beyond me.

In November 2000, the price of one euro was 83 US cents

Potential output in the US not much bigger than realized (Gordon)
Which means that future growth of about 2 % seems reasonable.

Different in Euro Area – with all the underutilized resources.
However, a common currency means that the tools available for economic policy making is quite limited.

Then, the elephants in the room – China and India – for later talks.