Apocalypse Now?:

Increasing risk of a financial crisis

Ignacio de la Torre

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Philip IV of France (1289-1314): The "money counterfeiting" king (Dante)

Quantitative easing of the French *sou:* Percentage of coin which is counterfeit (1293-1303)

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First impacts of quantitative easing: Burning of the Templars

Why has 1.5 trillion dollars in value of sovereign bonds disappeared in the last three weeks?

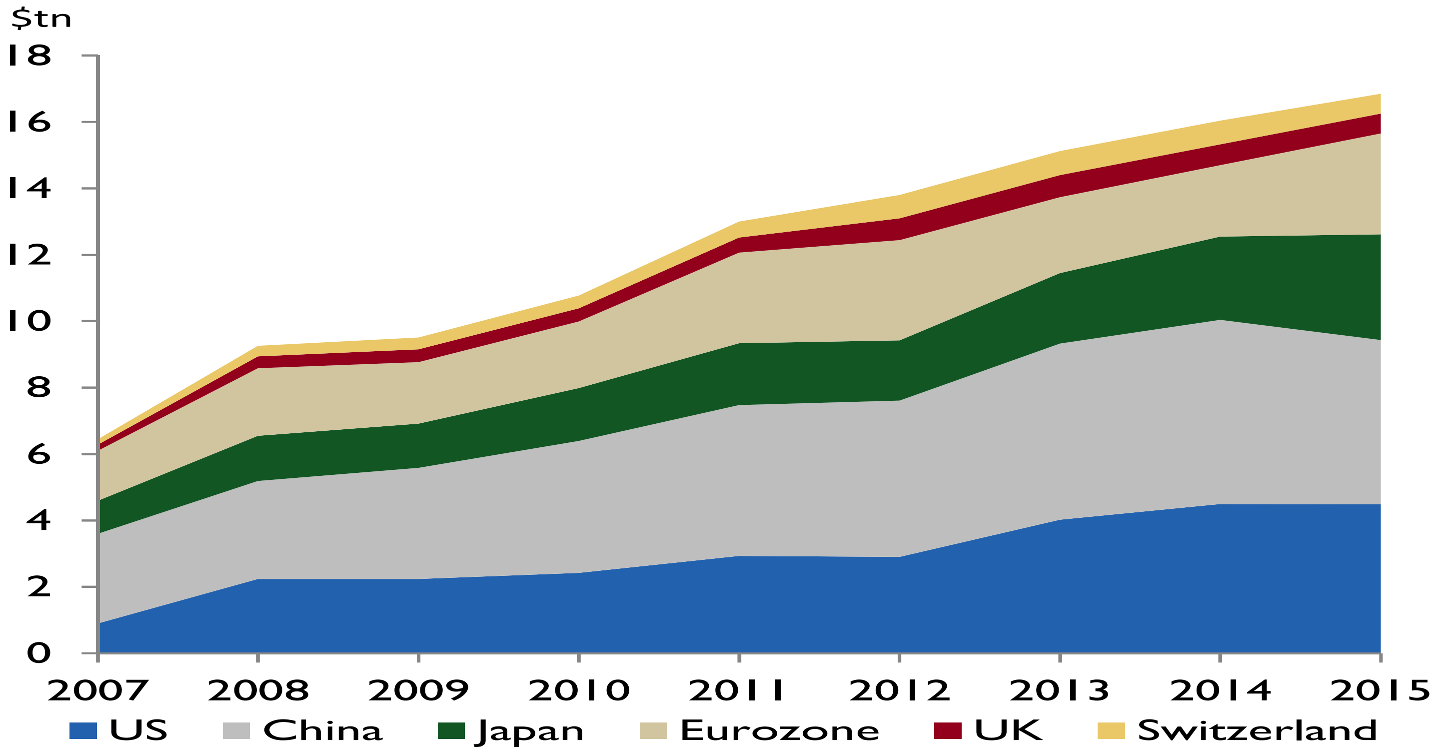
Executive summary

- *Quantitative easing*: from bubble to bubble
- Limits to monetary policy and greater use of fiscal policy
- Bond correction and systematic error

1. Quantitative easing has generated historical bubbles

Unconventional monetary policy increased the balance sheets of central banks …

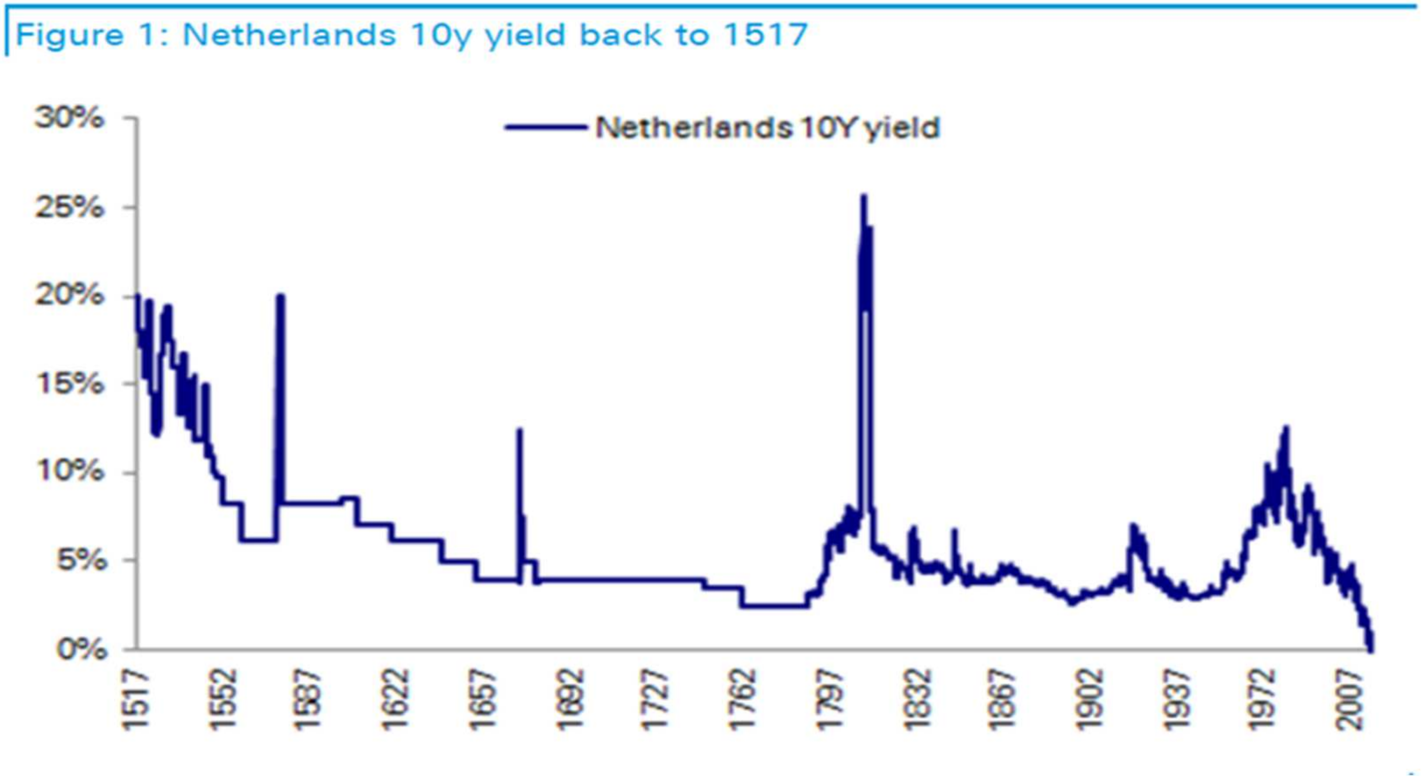
Evolution of central banks' balance sheets ($Tn)



Source: Algebris Investments (UK) LLP

Bond purchases by central banks generate a sovereign bond bubble…

10-year Dutch bond yield since 1517



Source: Deutsche Bank

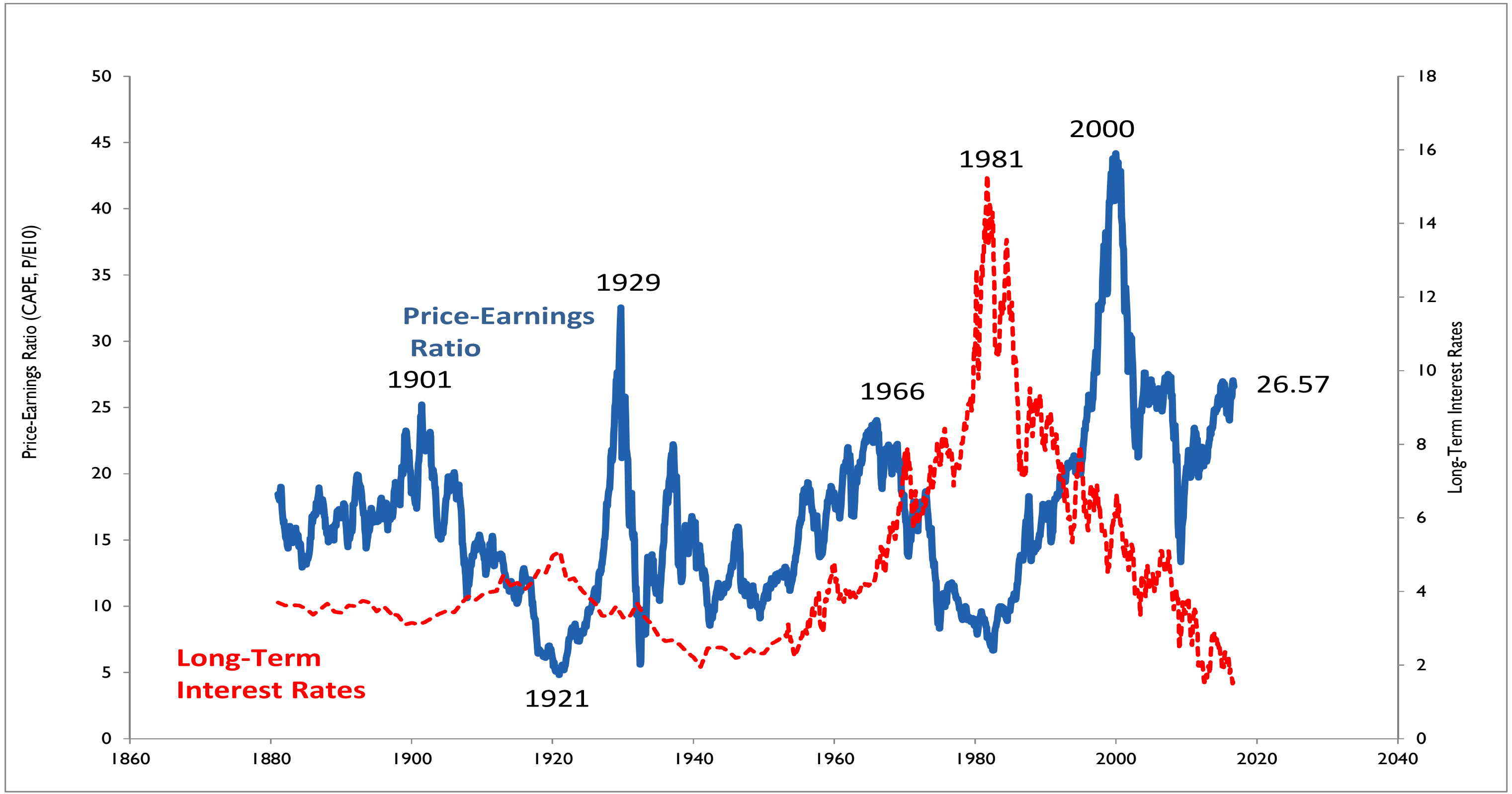
…resulting in negative interest rates

Amount of global debt (trillions of dollars) and yield on 10-year sovereign bond in Germany and Japan

Source: Bank of America Merrill Lynch, Thomson Reuters, The Wall Street Journal

From bubble to bubble: stock markets

S&P 500 CAPE[1]
(Last data: 2016 - 09 - 09)

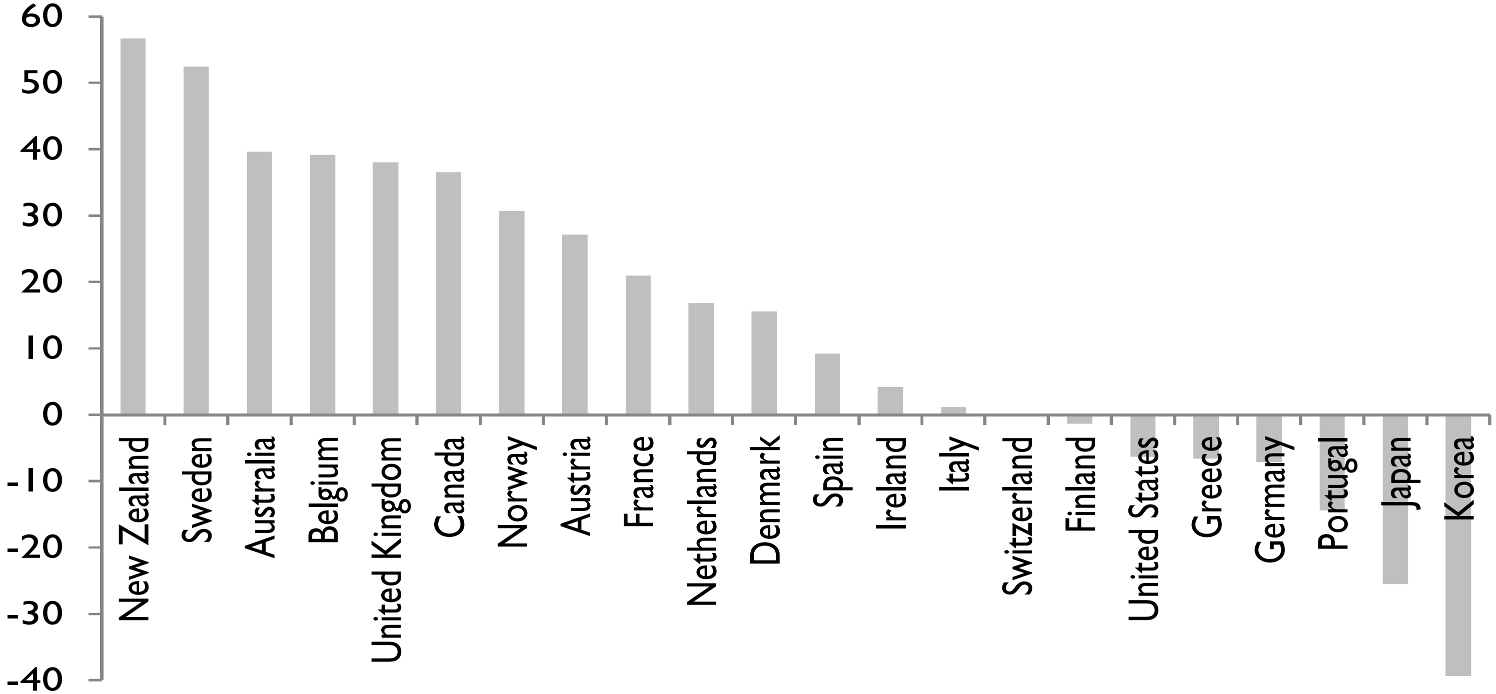


Source: Yale University

[1] *CAPE: means "Cyclically adjusted PE ratio", i.e., multiple that reflects the ratio of share price to companies' last ten years average earnings.*

From bubble to bubble: real estate

Over (+) or Undervaluation (-) of housing measured by "Price/ disposable income" vs. historic average %
Second quarter 2016



Source: OECD

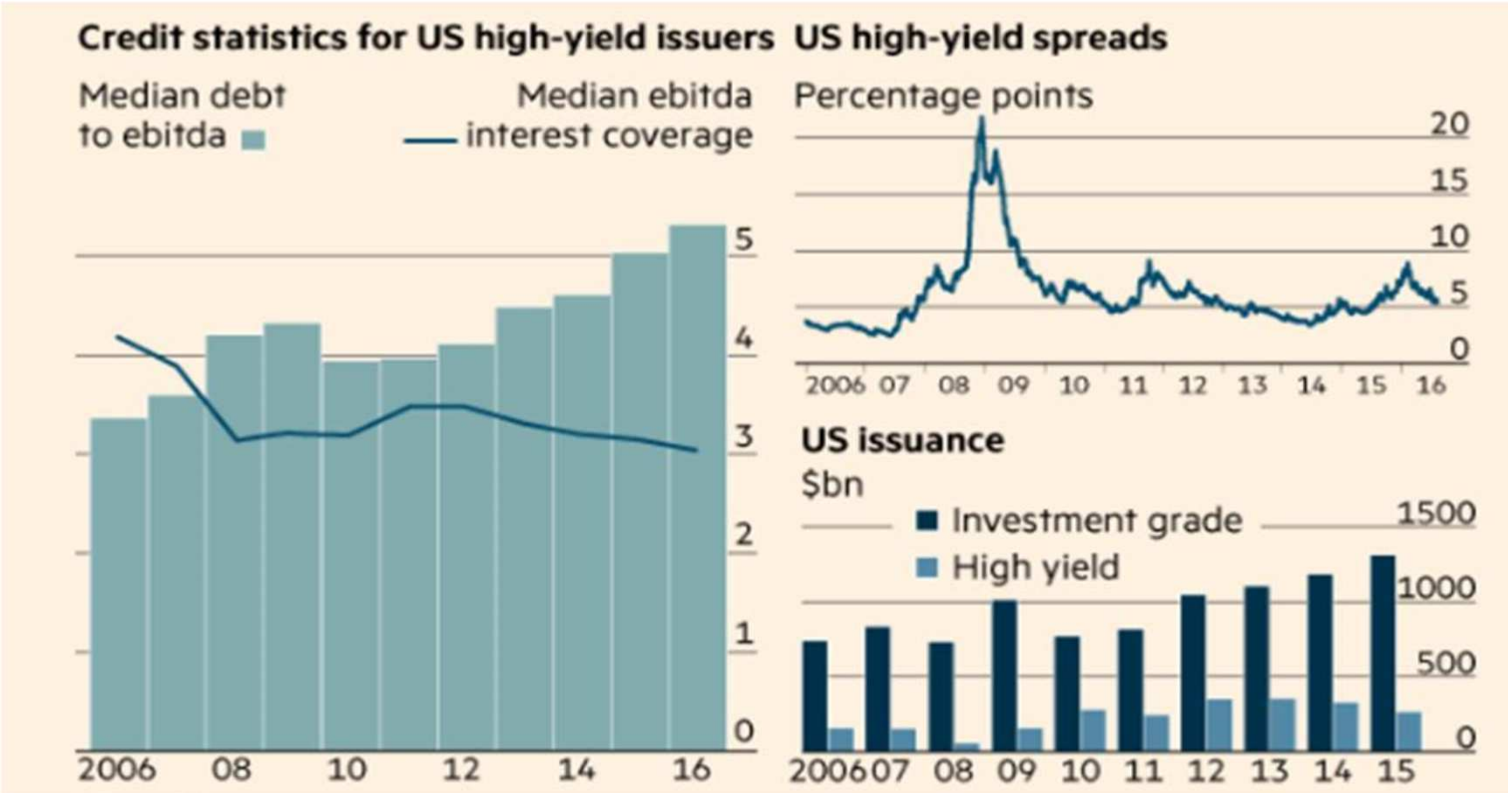
Conclusion: bubbles in other assets are generated through the overvaluation of the sovereign bond. The "value" of these assets depends on supply and demand

2. Limits of monetary policy may reduce bond demand

2.1 Financial instability

Leverage of High Yield issuers (U.S)

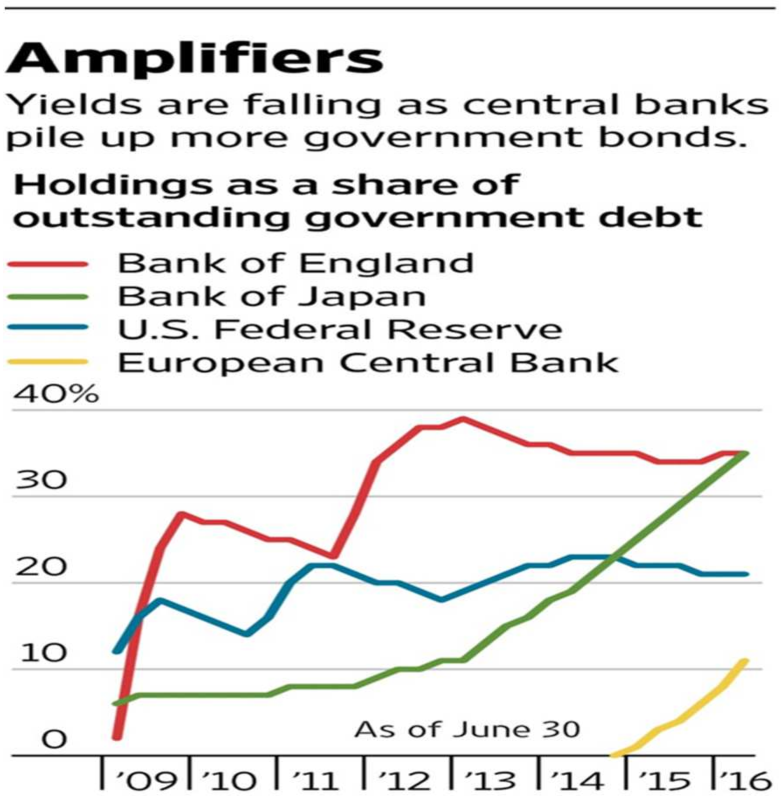
Credit statistics for U.S. high-yield segment



Source: Standard & Poor's; Federal Reserve Bank of St. Louis; Dealogic; Bank of America and Financial Times

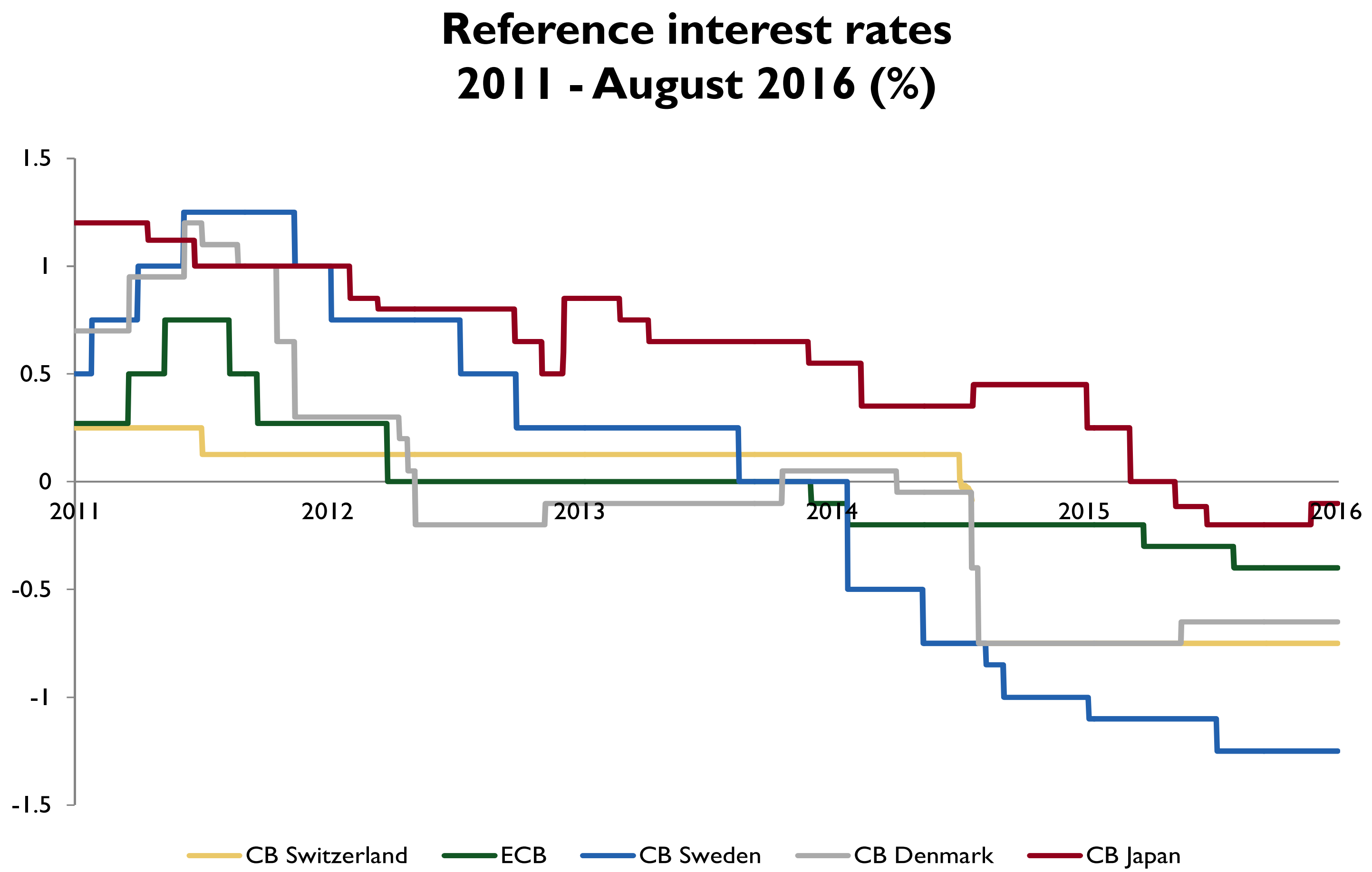
Banks are reaching their limits on bond purchases

Percentage of sovereign bonds owned by central banks (%)



Source: J.P Morgan Chase, The Wall Street Journal

Some central banks have set negative interest rates

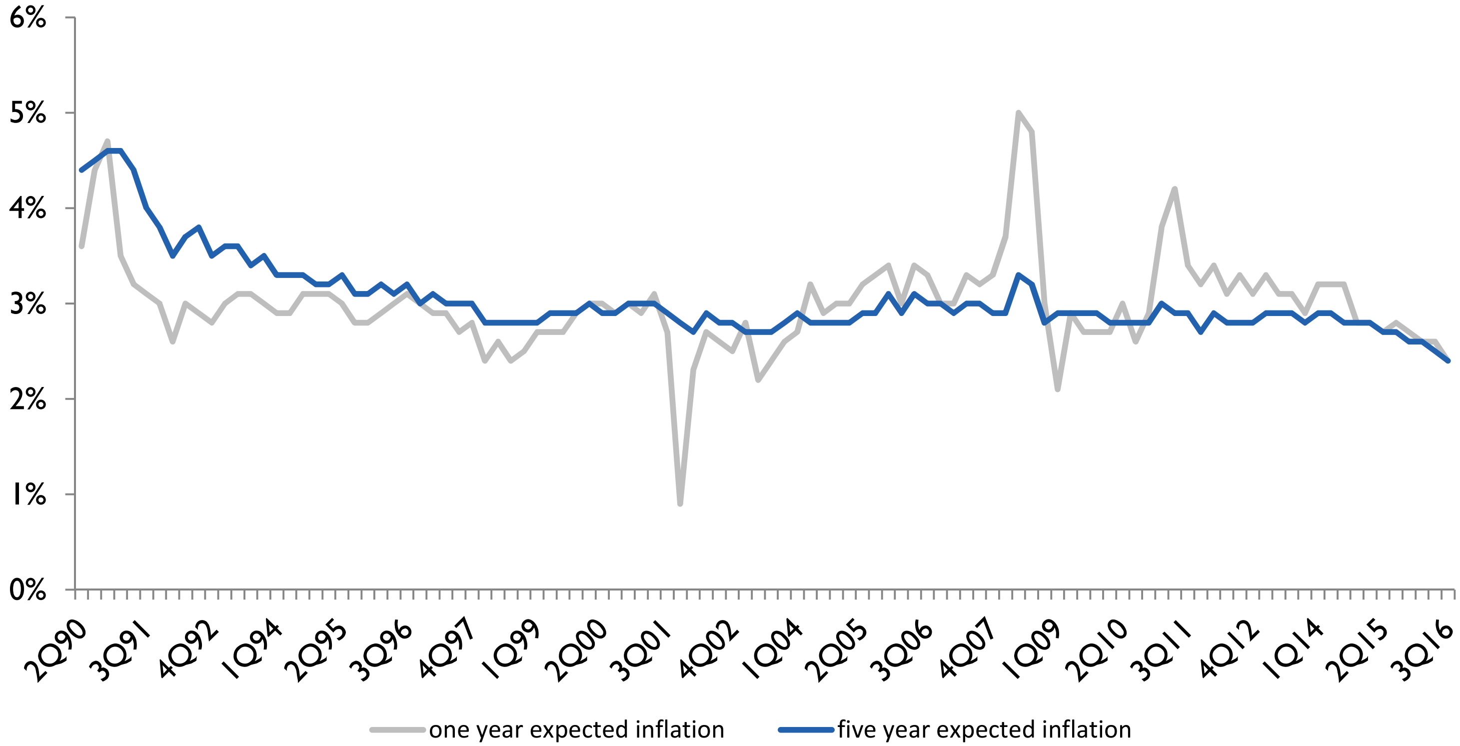


Source: ECB, Central Banks of Switzerland, Denmark, Sweden and Japan

2.2 Inflation risk

Expected inflation has ramained stable but…

1 and 5 year expected inflation
1990 – Q3´16



Source: University of Michigan

… something is beginning to change

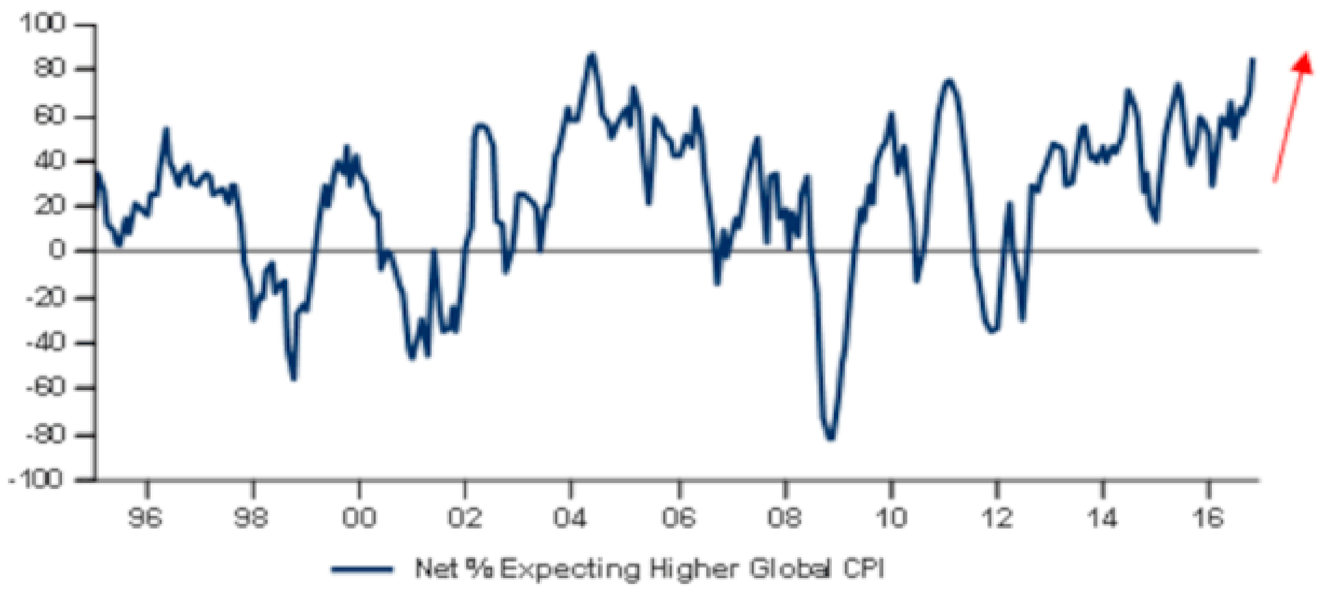
Evolution of 5-year expected inflation in the Eurozone

Source: Bloomberg (Financial Times)

… something is beginning to change (cont.)

Evolution of expected inflation by fund managers

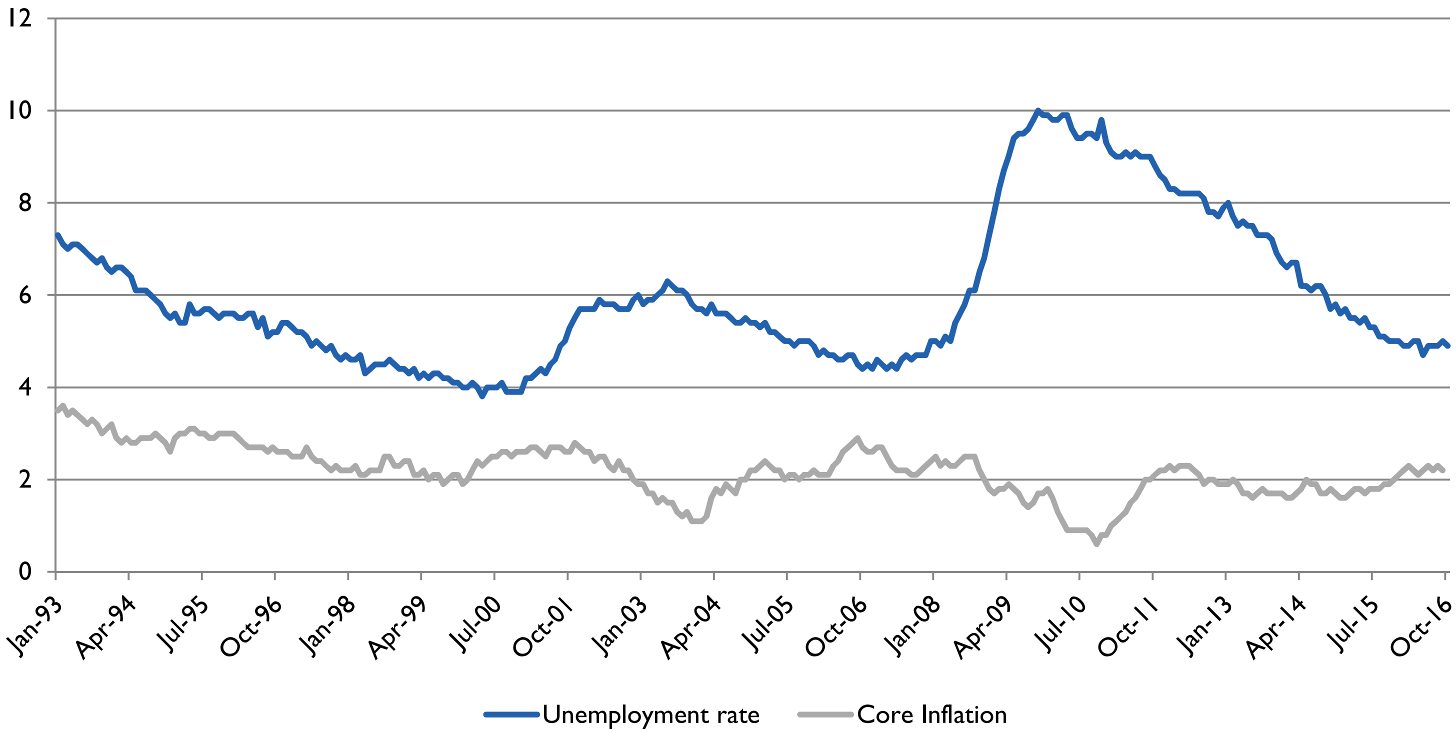
Exhibit 10: Inflation expectations



Source: BoA Merril Lynch Global Fund Manager Survey

Inflationary pressure (i): US unemployment rate is close to historic lows

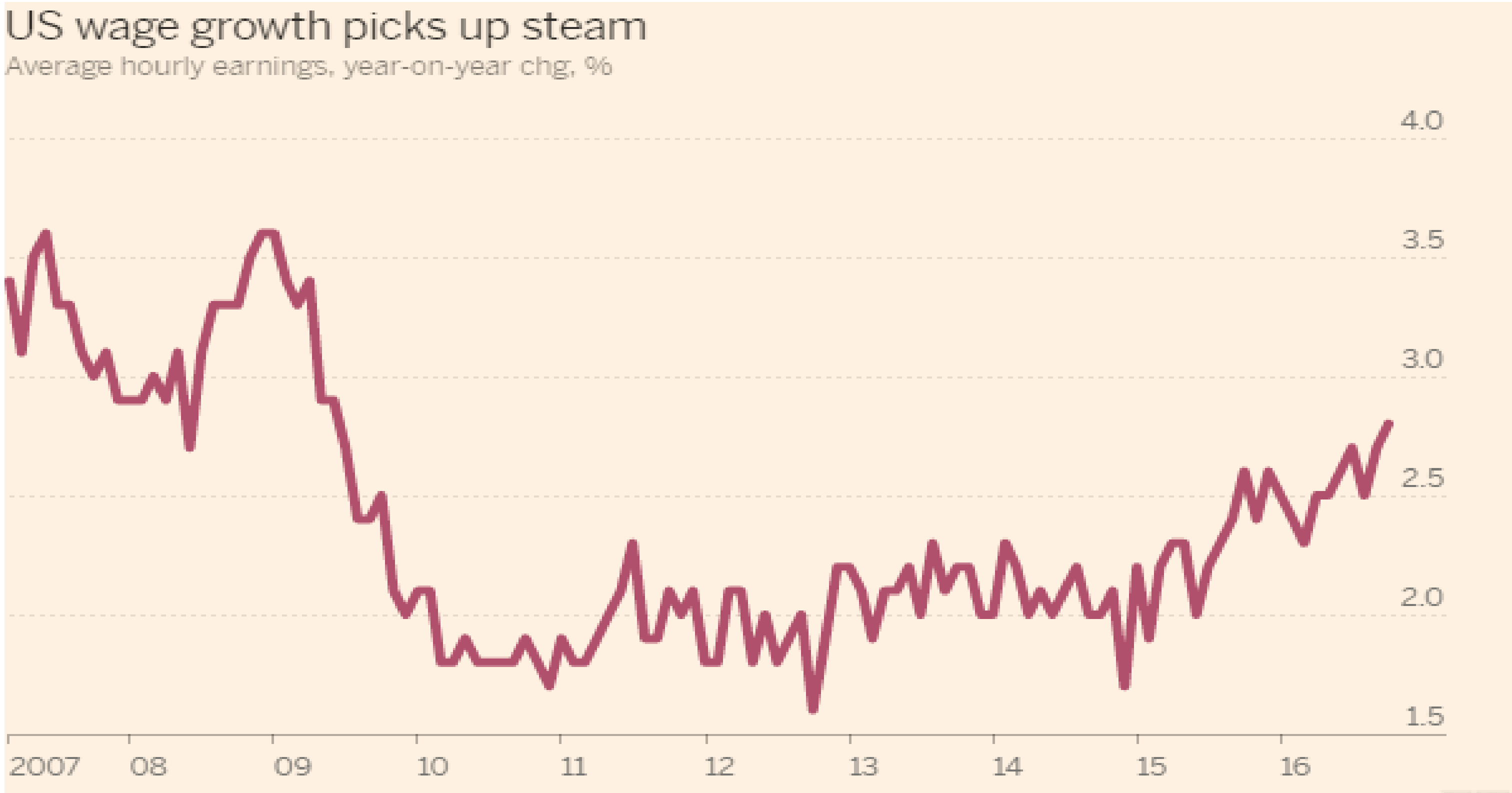
Unemployment rate and core inflation in the US 1993 – October 2016 (%)



Source: Bureau of Labor Statistics

Inflationary pressure (ii): wages increase

Hourly wages in the US



Source: Bloomberg, Adam Samson / Financial Times

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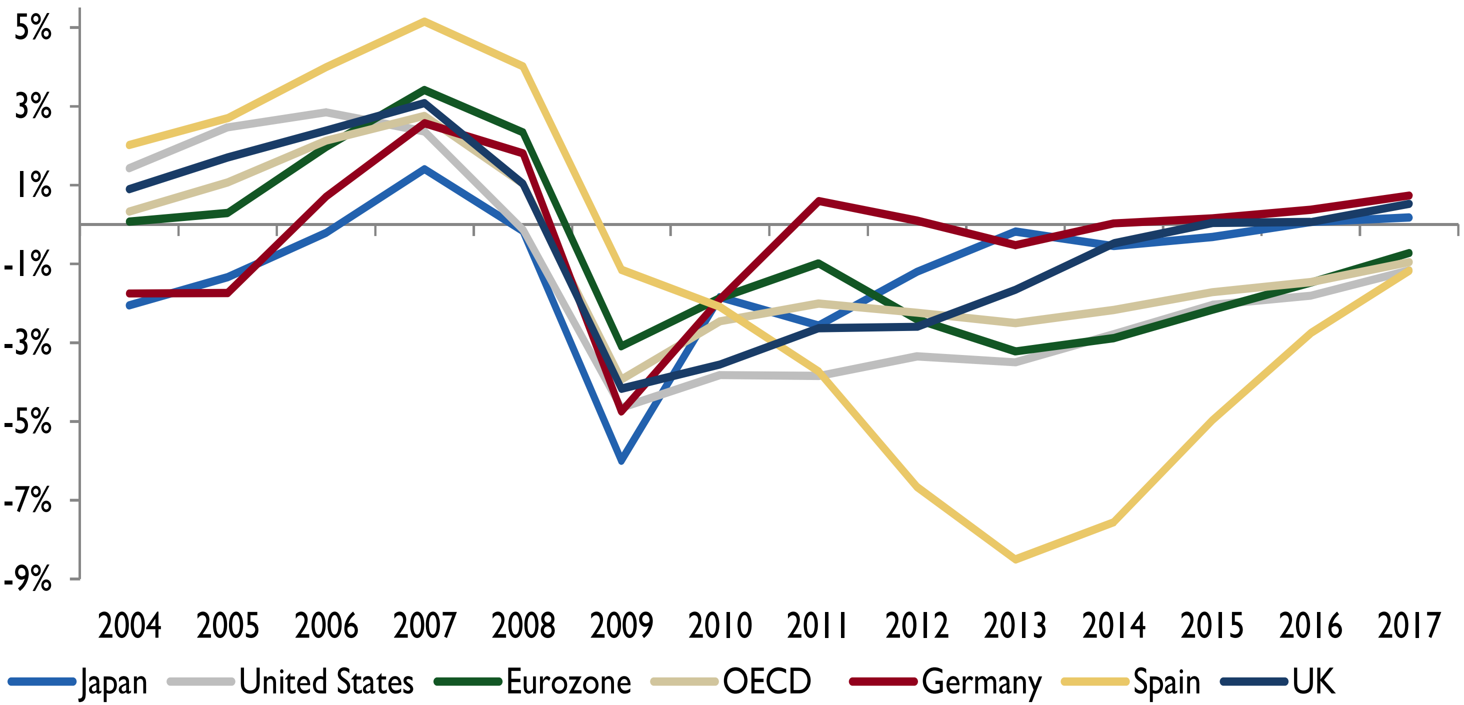
Inflationary pressure (iii): *output gaps* declining

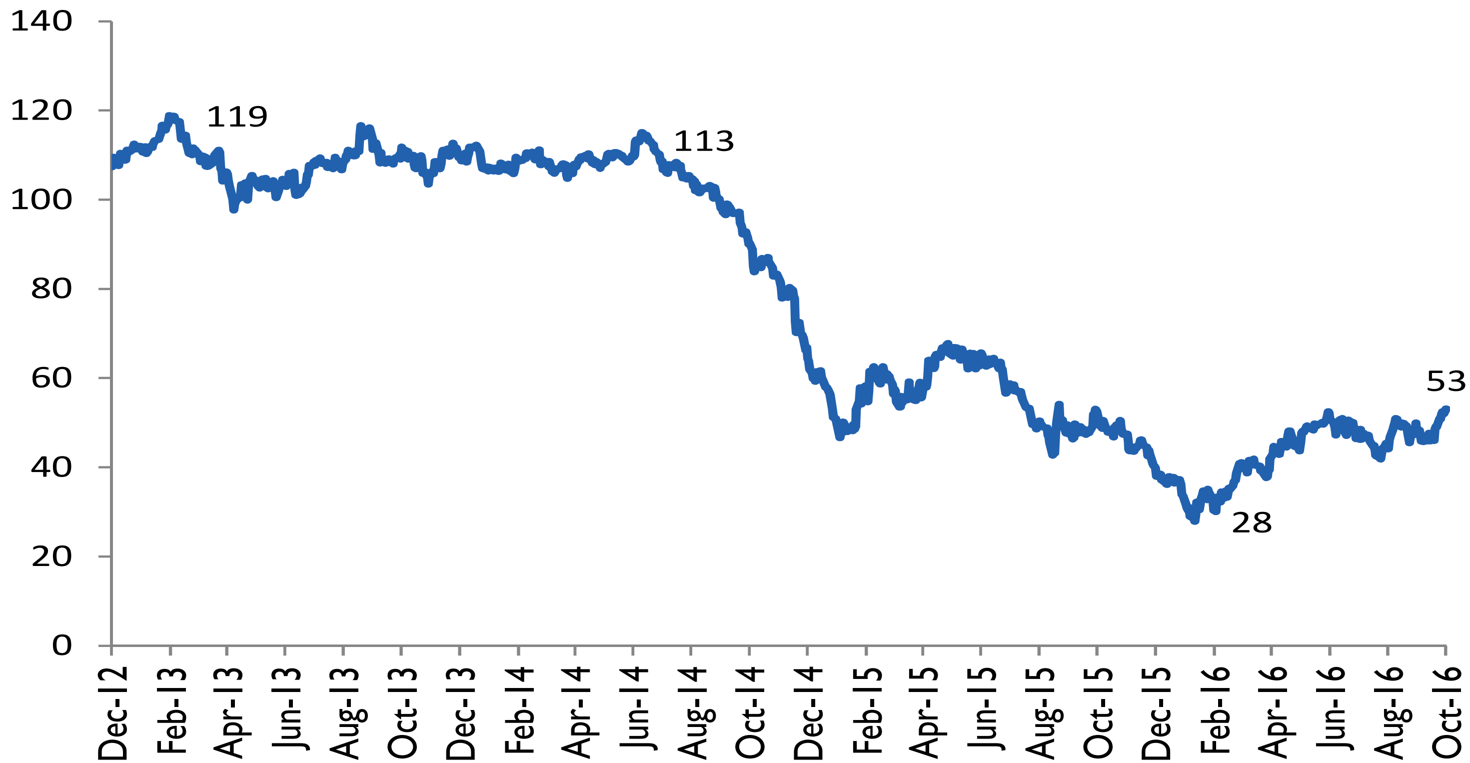
Output gap as % of GDP



Source: OECD

Inflationary pressure (iv): positive contribution of oil

Barrel of Brent oil price ($/barrel)



Source: Bloomberg

Inflationary pressure (v): inflation is also a monetary phenomenon, depends on credit and velocity

Quantitative theory of money
Irving Fisher

$$M \times V = P \times Q$$

M = Amount of money in circulation

V = Velocity of money in circulation, number of times that it changes of hands

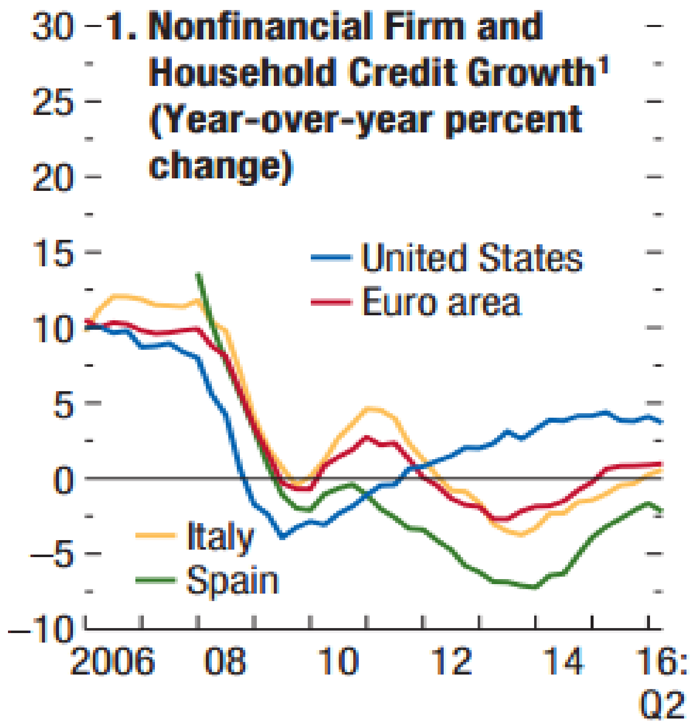
P = Price Level (Inflation)

Q = Production level (GDP)

Source: Arcano

Credit is recovering, though only moderately

Credit to the private sector
Annual variation (%)



Source: IMF World Economic Outlook Apr'16

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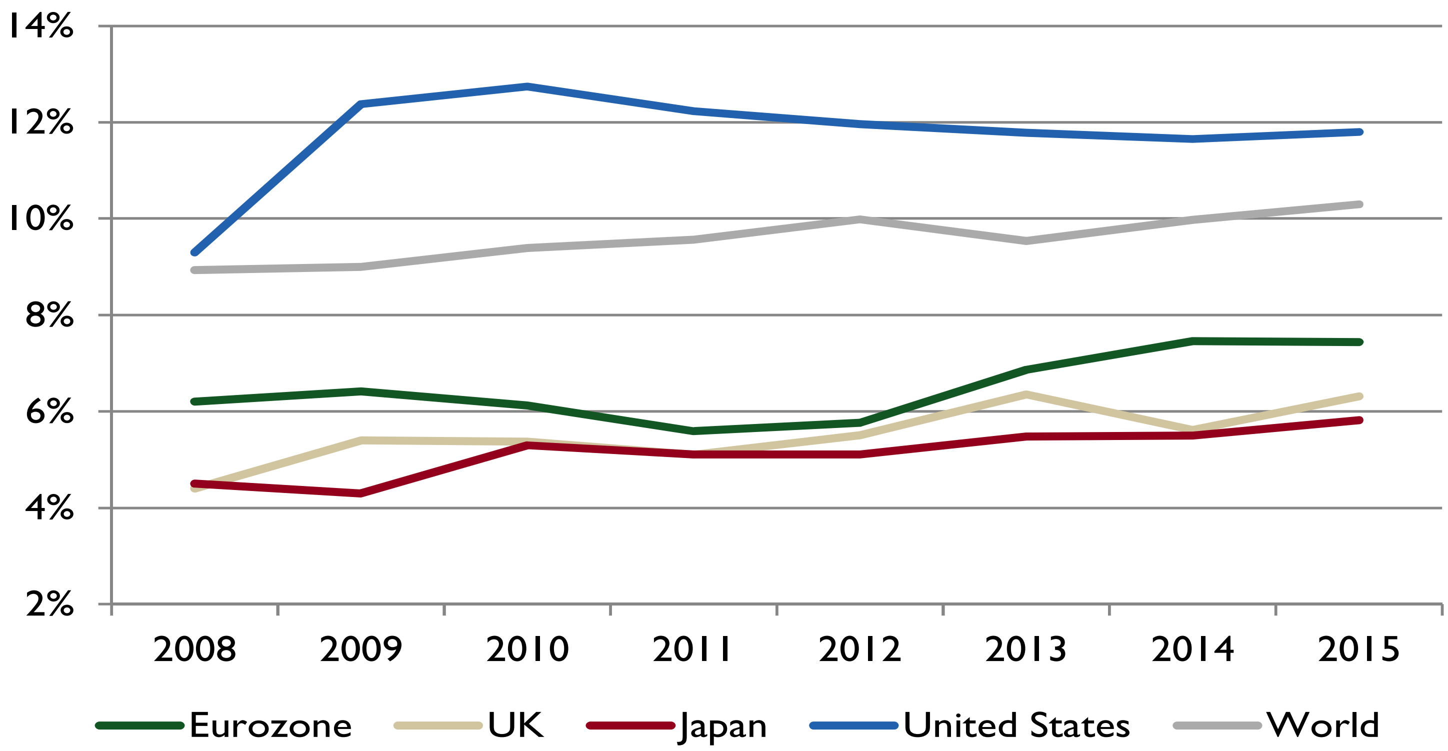
In addition, banks will be more receptive to lending, due to their higher capitalization

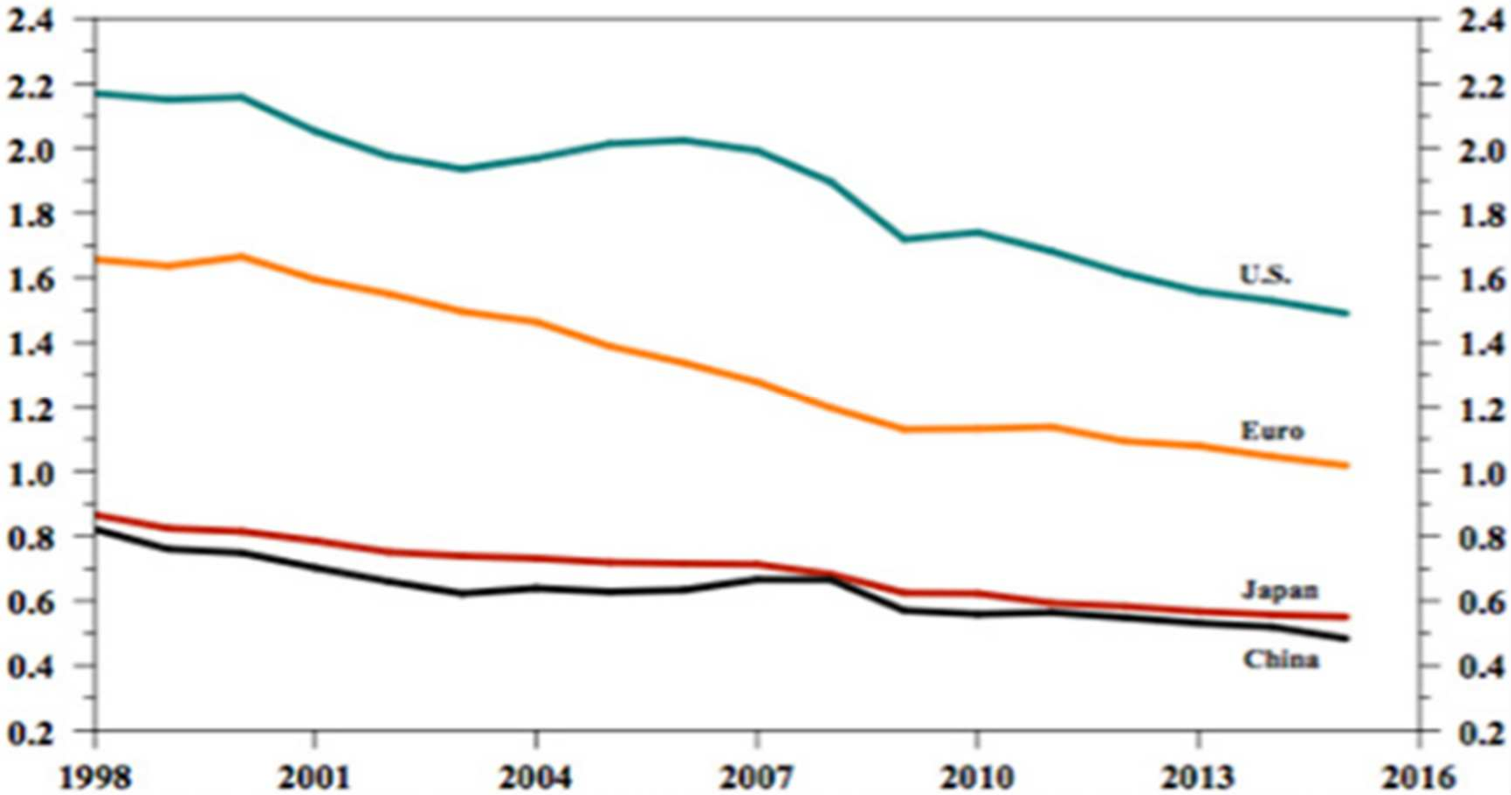
Equity to total assets (%)



Source: World Bank

The velocity of money collapsed during the crisis…

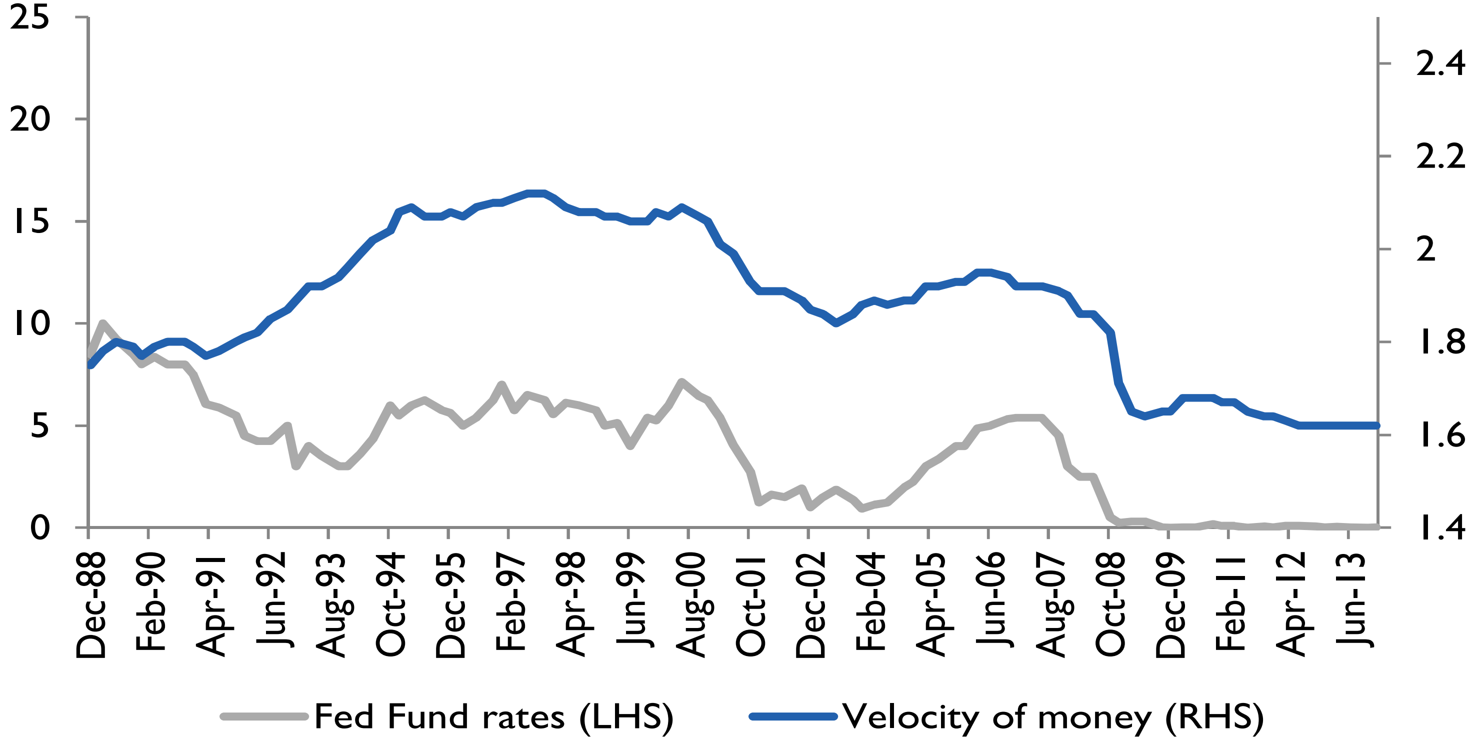
Velocity of money in circulation
1998 – Q1'16



Source: Hoisington Quarterly Review and Outlook – Q1'2016

…but if interest rates rise, the velocity of money can increase

Relation between interest rates and velocity of money U.S



Source: Code Red, of John Mauldin and Jonathan Tepper, page 191

MxV = PxQ

M = Amount of money in circulation

V = Velocity of money in circulation, number of times that it changes of hands

P = Price Level (Inflation)

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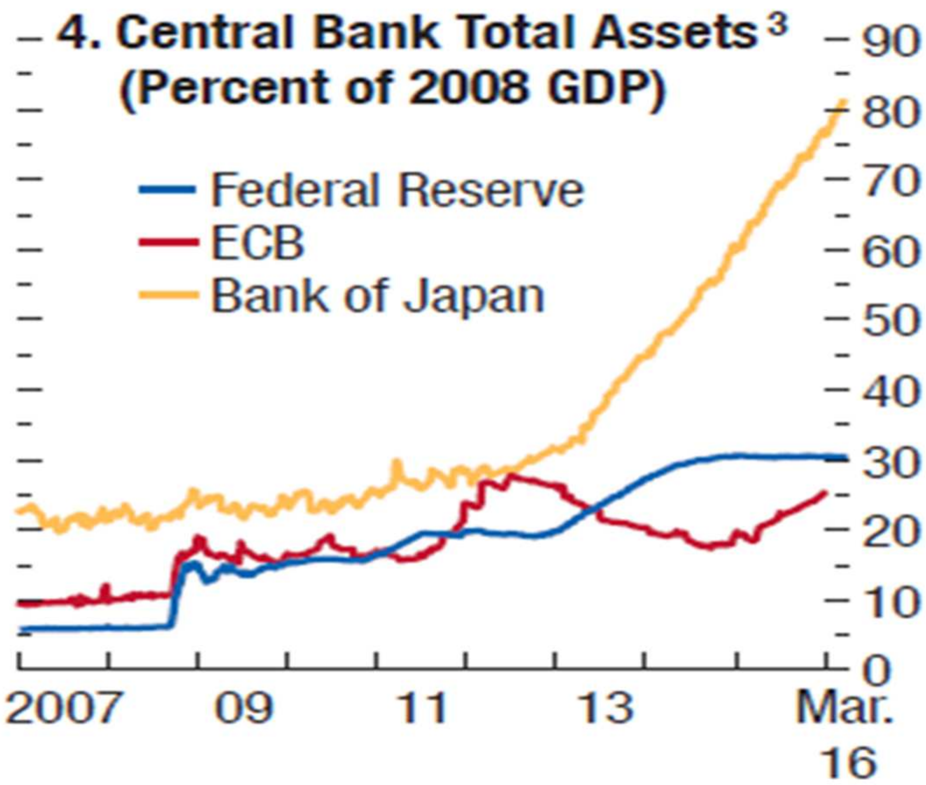
Therefore money supply and the velocity of money can increase ….generating more inflation

Will banks maintain their balance sheets at historic highs considering the risks?

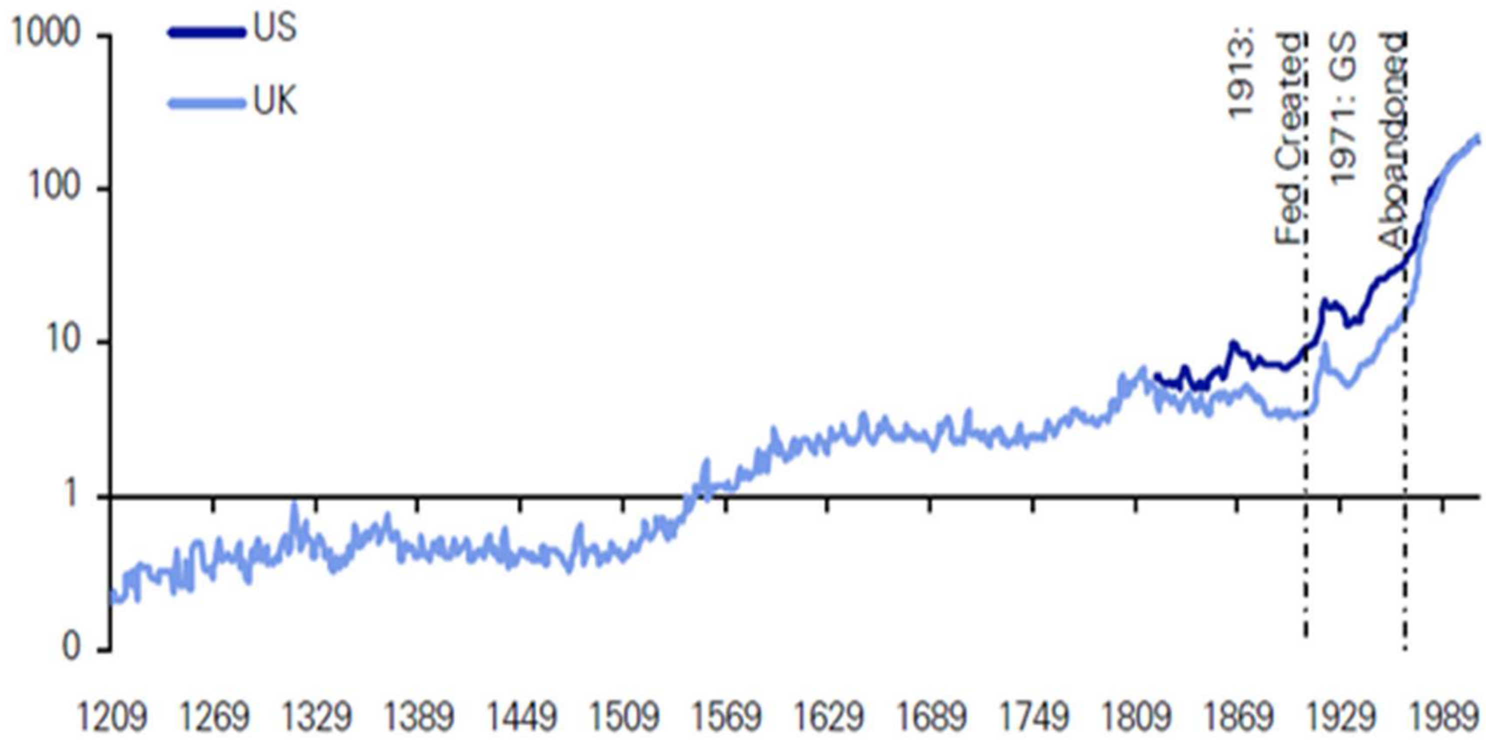
Central bank balance sheets as % of GDP



Source: BIS, September 2016

Inflation increased significantly as the amount of money was not conditional on a solid reference

Historic inflation in the U.S and United Kingdom (logarithmic scale)



Source: Deutsche Bank, GFD

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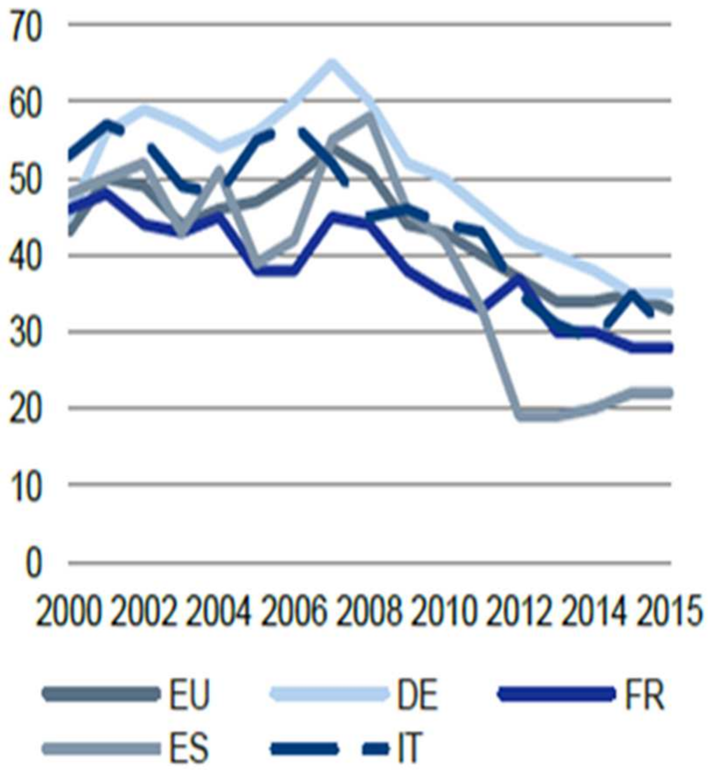
We assume inflation risk and instability… but is monetary policy working?

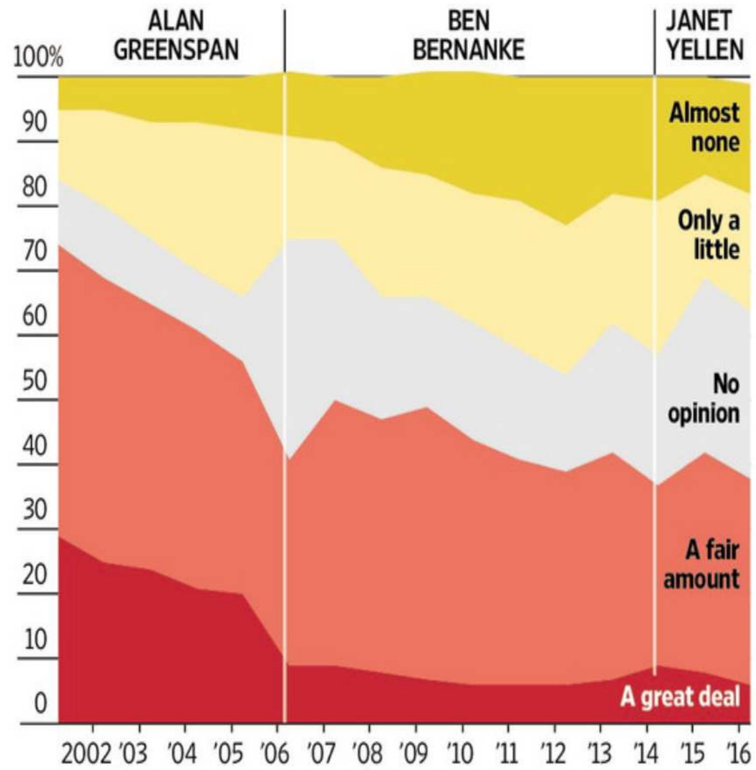
Citizens reduce their confidence in central banks

ECB



Source: Eurobarometer

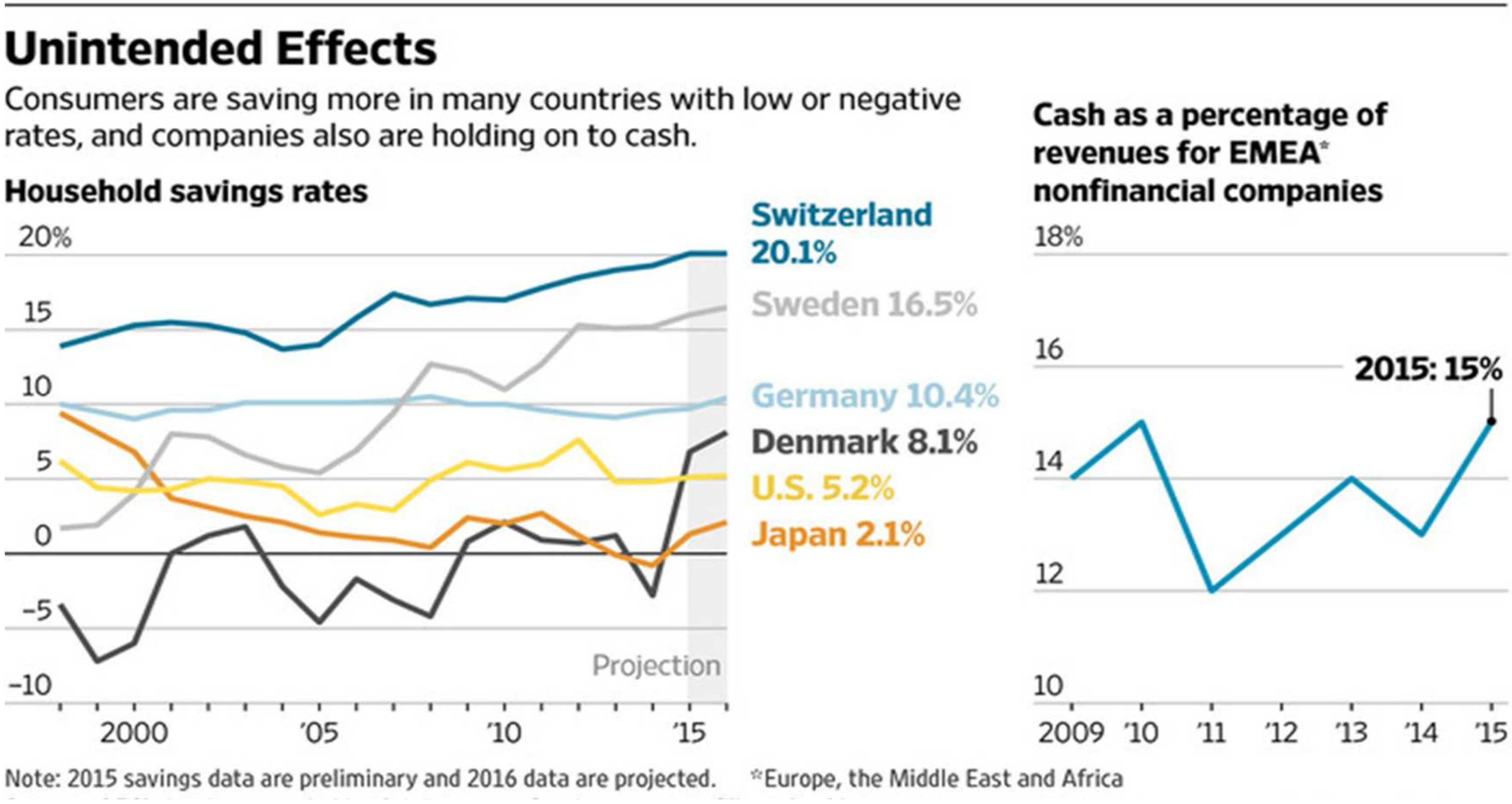
FED



Source: Gallup, The Wall Street Journal

Unorthodox policies have uncertain results: savings have increased

Savings of companies and individuals



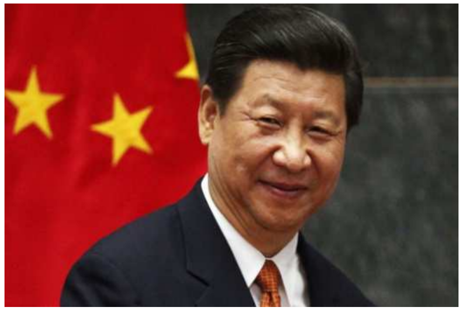
Source: OECD, Moody's Investors Service, companies, The Wall Street Journal

The risks involved will make central banks more restrictive.

This trend implies lower bond demand, making the price fall

Is he alone?

No. They practice the same fiscal policy (more stimulus)



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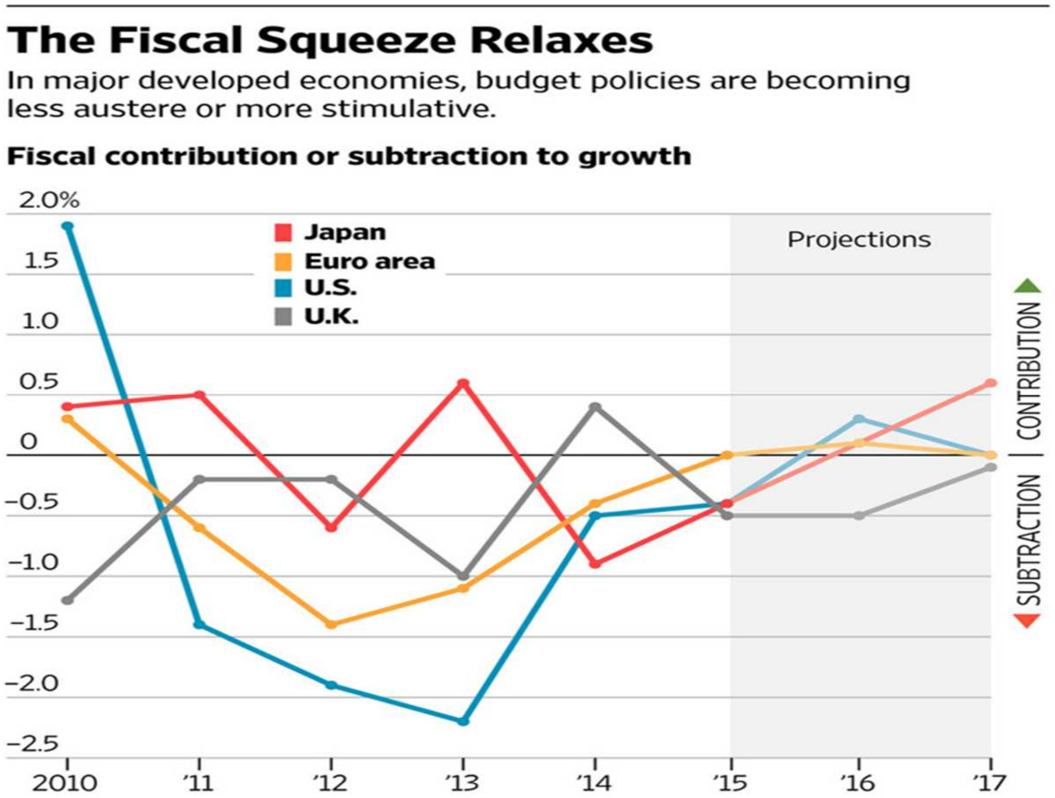
Fiscal policy is beginning to ease

Evolution of fiscal contribution to growth



Source: J.P Morgan, The Wall Street Journal

Conclusion: More fiscal policy implies more bond supply, making the price fall

1.5 trillion dollars of value lost in three weeks

Since the date of publication (26/10/2016), the 30-year U.S bond has decreased 10%

Yield on 30-year U.S bond (Nov15 - Nov 2016)

Source: Bloomberg (Financial Times)

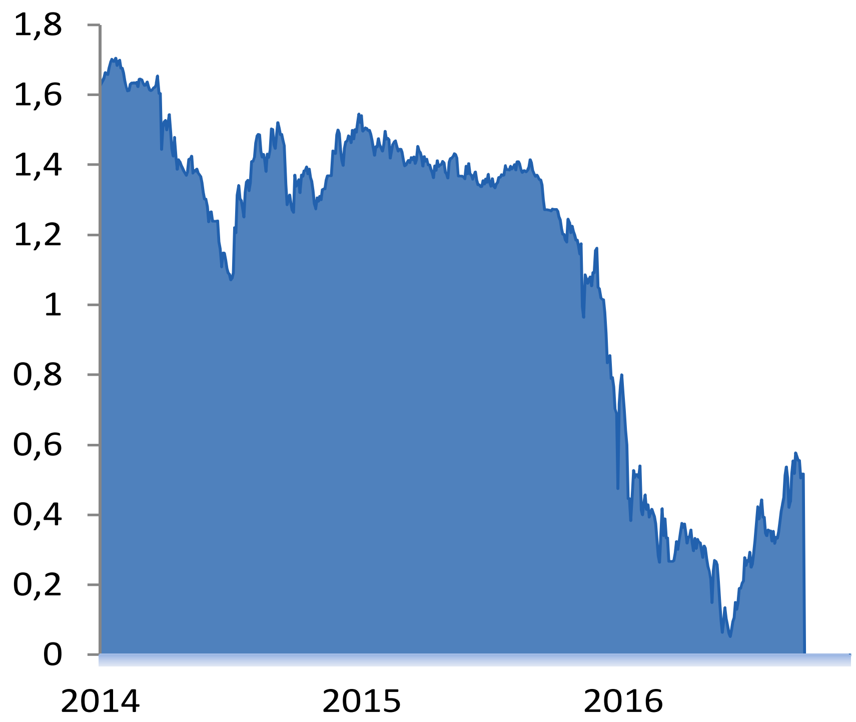
Italy: "free risk bond" decreases 14%

Yield on 30-year Italian bond

Source: Bloomberg

Japan

Yield on 30-year Japanese sovereign bond 2014 - Nov'16



Source: The Wall Street Journal

Germany

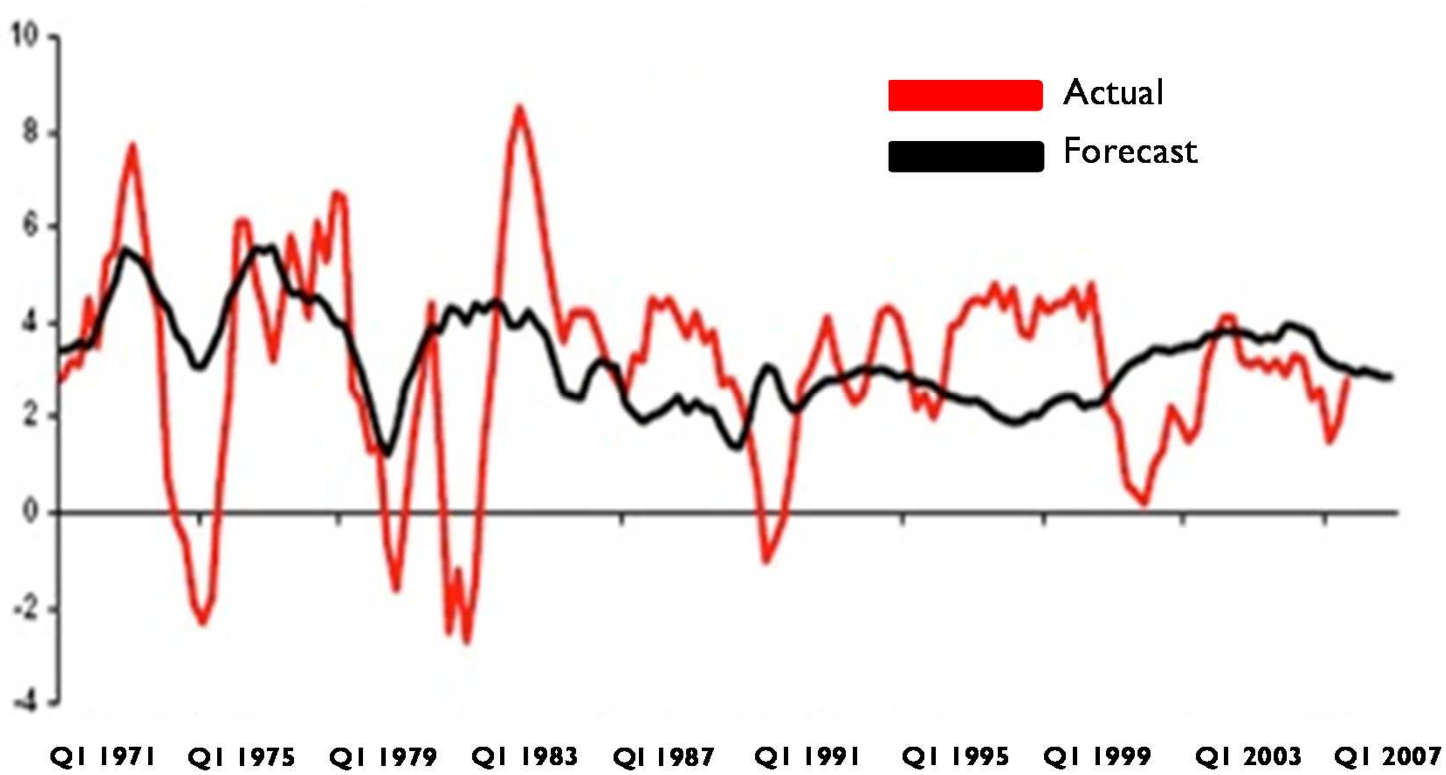
Yield on 10-year German bond

Source: Bloomberg

3. If the bubble bursts quickly, the consequences in an illiquid market can be systemic

Analysts will not foresee the bubble implosion

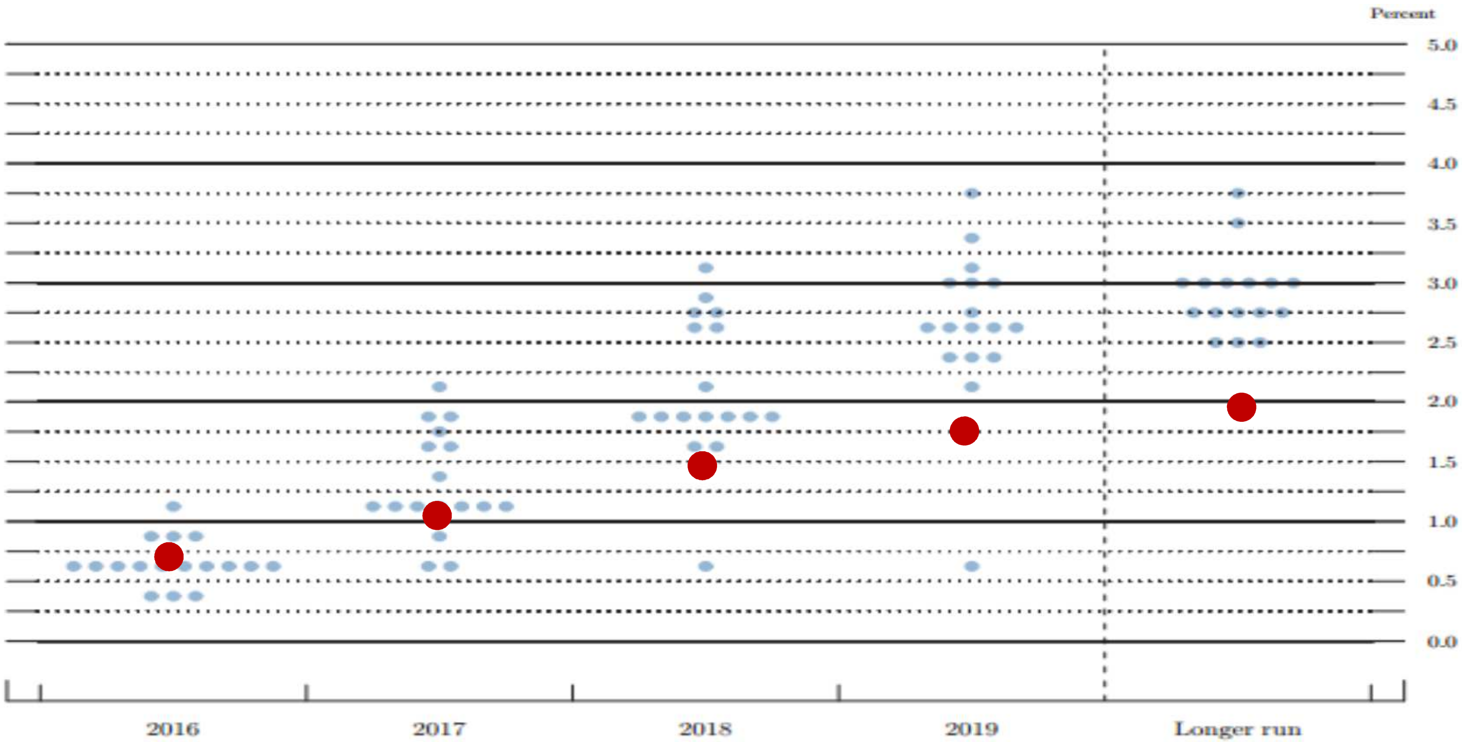
Annual growth (%) of US GDP and analyst consensus estimates



Source: Red Code, of John Mauldin and Jonathan Tepper, page138

Difference between FED and market interest rate expectations…could indicate volatility ahead

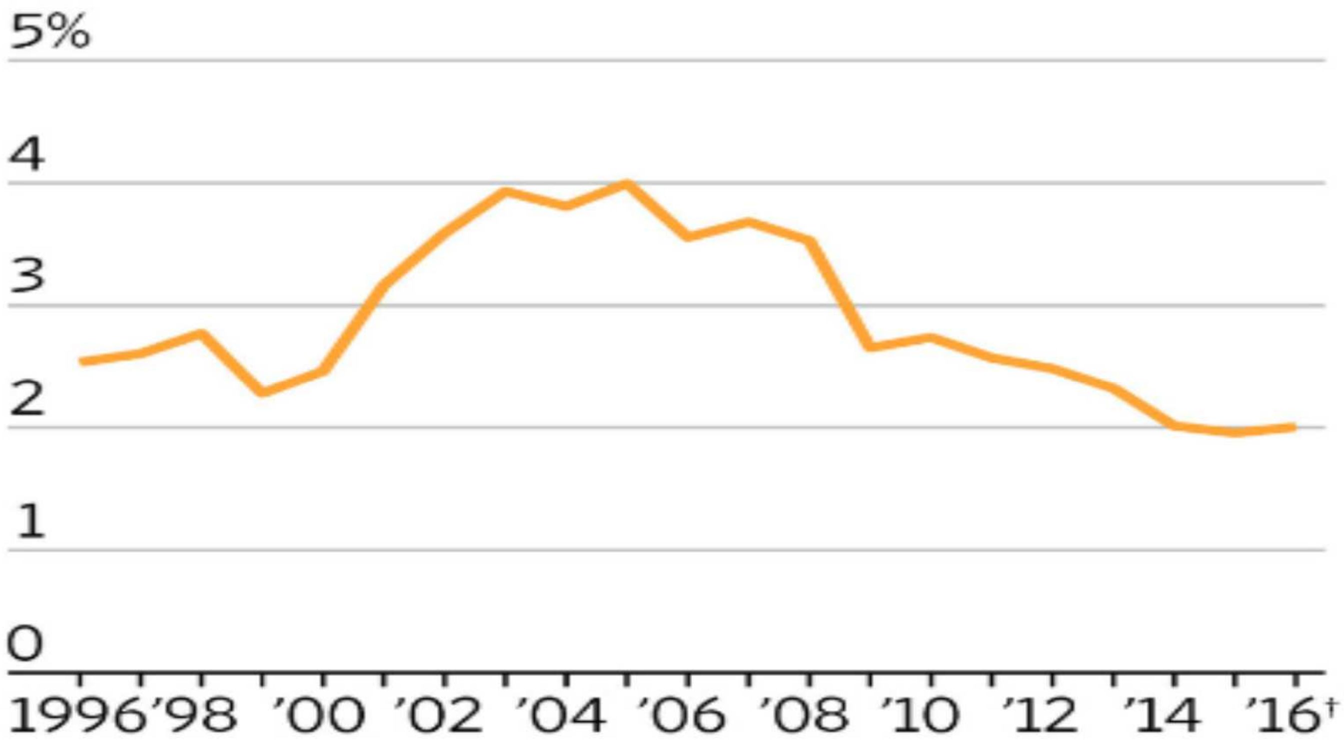
Interest rate expectations:
FOMC vs. market



Source: Federal Reserve and Bloomberg

New banking regulations limit market-making ability of banks, reducing liquidity and amplifying market declines

U.S debt ratio (*) traded daily in secondary markets

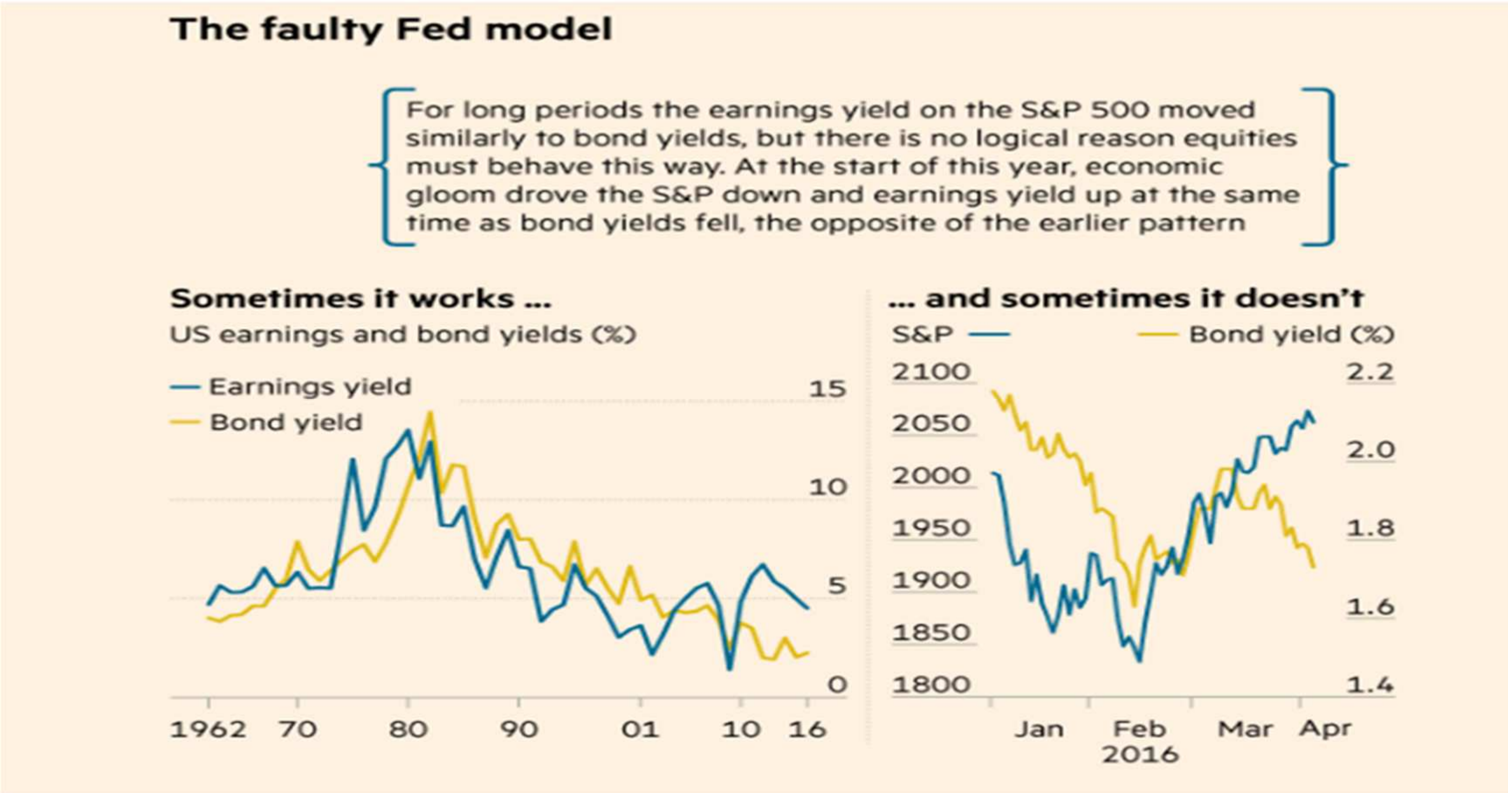


(*) Public and private debt

Source: Federal Reserve, Securities Industry, Financial Markets Association and The Wall Street Journal

Fixed income and equity can fall at the same time

Stock market earnings yield vs. bond yield (left)
S&P evolution vs. bond yield (right)



Source: Financial Times (Thomson Reuters Datastream)

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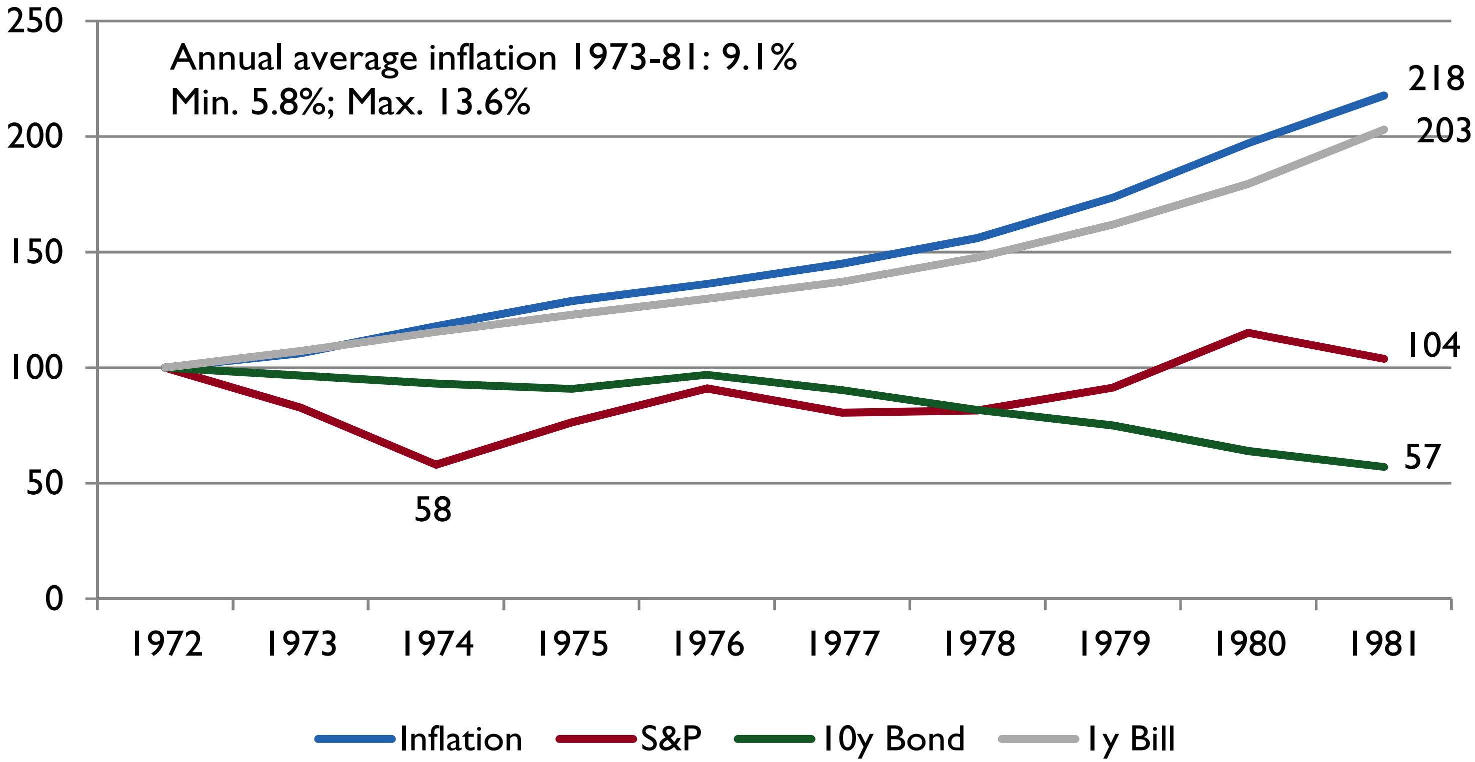
Inflation threatens stock markets and bonds

Cumulative yield of US assets vs. inflation (1972 base 100)



Source: Bloomberg

Conclusions

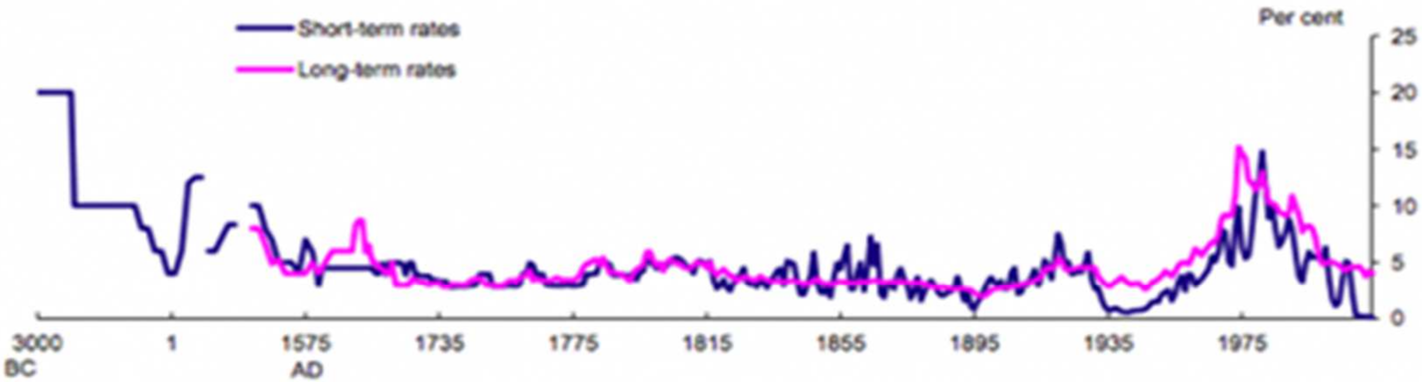
Conclusions

- Central banks have caused the largest bubble of sovereign bonds in history, the bubble has spread to many other assets
- However, unorthodox monetary policies are reaching their limit and will be replaced by fiscal policies
- Bond demand may decline and supply may increase, causing the price to fall and deflating other existing bubbles
- Our base case scenario assumes the correction will be gradual, but we see growing risks of a financial crisis if there is a rapid adjustment, due to the liquidity paradox
- A financial crisis does not have to be an economic crisis, as seen in1994

If interest rates rise, the value of assets declines

Evolution of short and long-term interest rates over 5,000 years

Chart 5: Short and long-term interest rates



Sources: Homer and Sylla (1991); Heim and Mirowski (1987); Weiller and Mirowski (1990); Hills, Thomas and Dimsdale (2015); Bank of England; Historical Statistics of the United States Millenial Edition, Volume 3; Federal Reserve Economic Database. Notes: the intervals on the x-axis change through time up to 1715. From 1715 onwards the intervals are every twenty years. Prior to the C18th the rates reflect the country with the lowest rate reported for each type of credit: 3000BC to 6th century BC - Babylonian empire; 6th century BC to 2nd century BC - Greece; 2nd century BC to 5th century AD - Roman Empire; 6th century BC to 10th century AD - Byzantium (legal limit); 12th century AD to 13th century AD - Netherlands ;13th century AD to 16th century AD - Italian states. From the C18th the interest rates are of an annual frequency and reflect those of the most dominant money market: 1694 to 1918 this is assumed to be the UK; from 1919-2015 this is assumed to be the US. Rates used are as follows: Short rates: 1694-1717- Bank of England Discount rate;1717-1823 rate on 6 month East India bonds; 1824-1919 rate on 3 month prime or first class bills; 1919-1996 rate on 4-6 month prime US commercial paper ; 1997-2014 rate on 3month AA US commercial paper to non-financials. Long rates: 1702-1919 - rate on long-term government UK annuities and consols; 1919-1953, yield on long-term US government bond yields; 1954-2014 yield on 10 year US treasuries.

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Thank you

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About the Company and Authors

Arcano Group (www.arcanogroup.com)

- Arcano is a leading independent advisory services firm, with presence in Europe and the United States. We have three specialized areas: Investment Banking, Asset Management and Multifamily Office
- Our team of experts consists of more than 130 qualified professionals that offer financial advisory services and tailored solutions to our clients with a unique, independent approach
- The Investment Banking department is a leader reference in the segment of small and medium sized companies, with clients as Private Equity firms, family owned companies and listed companies
- Arcano also provides financing to medium companies through the Alternative Fixed Income Market (MARF)

Ignacio de la Torre

- Ignacio is a partner of Arcano since 2008
- He has been working in Investment Banking and Capital Markets for 19 years, at Research and Sales departments in Deutsche Bank and UBS investment Bank
- The author teaches Economy and Finance at IE Business School. He earned an MBA at INSEAD, a Ph. D. in Medieval History at UNED, a bachelor degree in Business Administration at ICADE and in Law at UNED. He published four books and won the Everis award in 2009 as co-author

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- Leopoldo Torralba is an Analyst of Macroeconomy and Capital Markets at Arcano since 2015. With 19 years of experience in capital markets (18 in Ahorro Corporación), he has worked in Equity & Fixed Income Research (Financials), Strategic Planning and Management Control, and macroeconomic analysis
- MBA and Finance Professor at IE Business School
- He won the Everis award in 2009 as co-author