Lecture 3: Financial crisis: causes, responses

Course on Central banking, City Uni, Feb 2019

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Recap so far

- Purpose of the course:
  - To help you assess the causes of the global financial crisis of 2008
  - And to evaluate central bank responses.

Recap / ctd…

- We studied some historical episodes, recent and old, where central banks, money and banks were crucial to what unfolded. [Lecture 1]
- Comprehensive review of what central banks currently do, how they do it, and why they do it. [Lecture 2].
- That was to help us understand what central banks thought about the world pre-2008, and how they responded.
- Some of the causes already hinted at.

‘Causes’ analysis: health warnings !

- Not complete list.
- Some mutually exclusive, some not.
- Ongoing controversy.
- Slides will reveal my views, not necessarily shared by others.
- No suggestion of order of importance.
- Some proximate, some ultimate, some in between.

Possible causes of the crisis

- Bank [and general] leverage – low capital ratios [ie problems with bank liabilities].
- Reliance on wholesale funding.
- Deliberate AND misapprehended risk taking on the bank asset side.
- From originate-and-hold to originate-to - distribute.
- Credit ratings: shopping and miscalculation.
- Shadow banks and regulatory arbitrage.

Crisis causes /ctd

- US: interference in risk management of Federal Mortgage Agencies to promote sub prime lending.
- Uncertainty and ‘too interconnected to fail’.
- Loose monetary policy.
- Uphill capital exporting.
- Sovereign-bank doom loop.
- Fast convergence of the catching up countries.
- Risk parity treatment by the ECB in the Eurozone.

Crisis causes / ctd…

- Economists, neoclassical economics and New Keynesian macro.
- Ideological belief in free markets leading to under-regulation.
- Moral hazard from regulatory backstop.
- Structure of compensation in finance.
- Political economy of financial regulation.
- Historical memory encoded in the institutions and policies.

- Volatile dynamics of complex systems.
- Theft, bad people.

Real time crowdsourcing of course content

I mentioned I was compiling a list of causes, half joking, on Twitter. Actually got a useful reply.

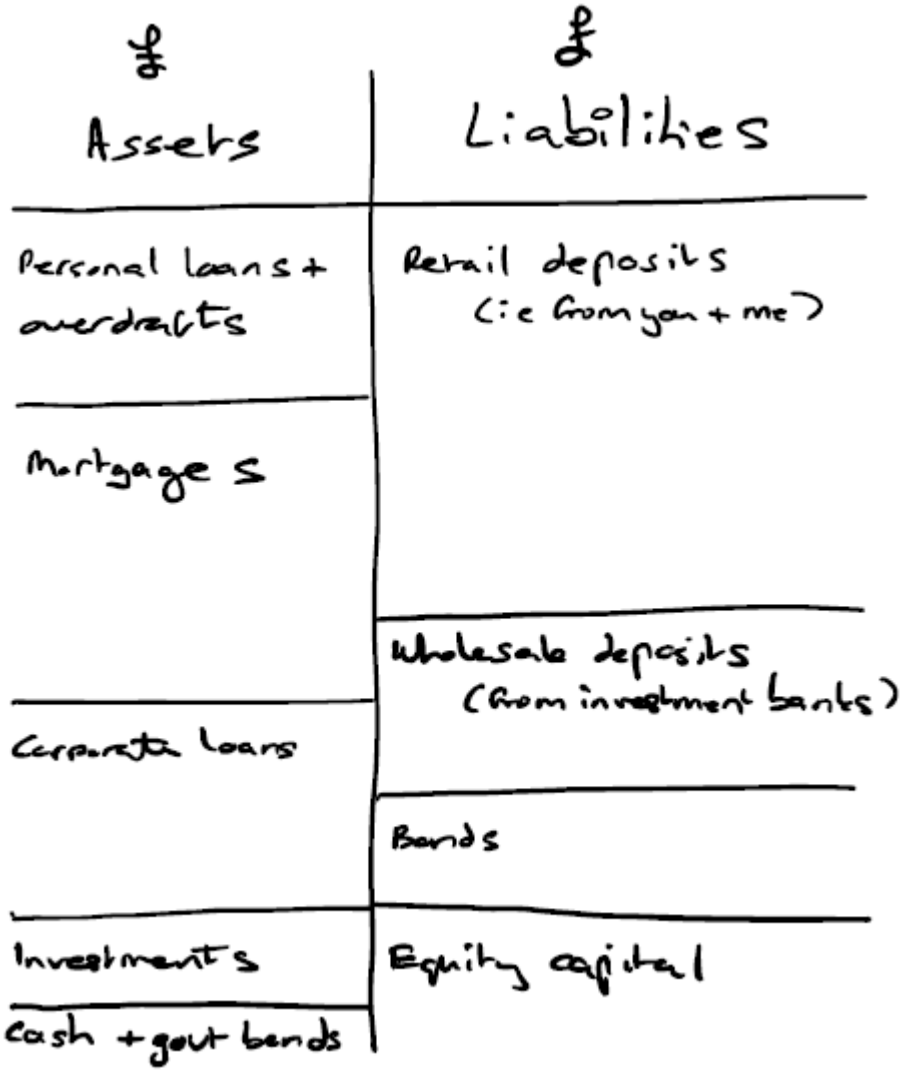
Causes analysis health warnings: again

- Unending sequence of temporal events, one preceding the other.
- Where do we stop?! The big bang, 13.7bn ya?!
- Exercise Anchored/truncated by:
  - Considering what was necessary or sufficient, or both, if anything
  - Asking ourselves what policy could have done differently to prevent it [and a future crisis]

Insufficient equity funding; over-reliance on subsidised debt; flightiness of wholesale funding

CRISIS CAUSES: BANK LIABILITIES

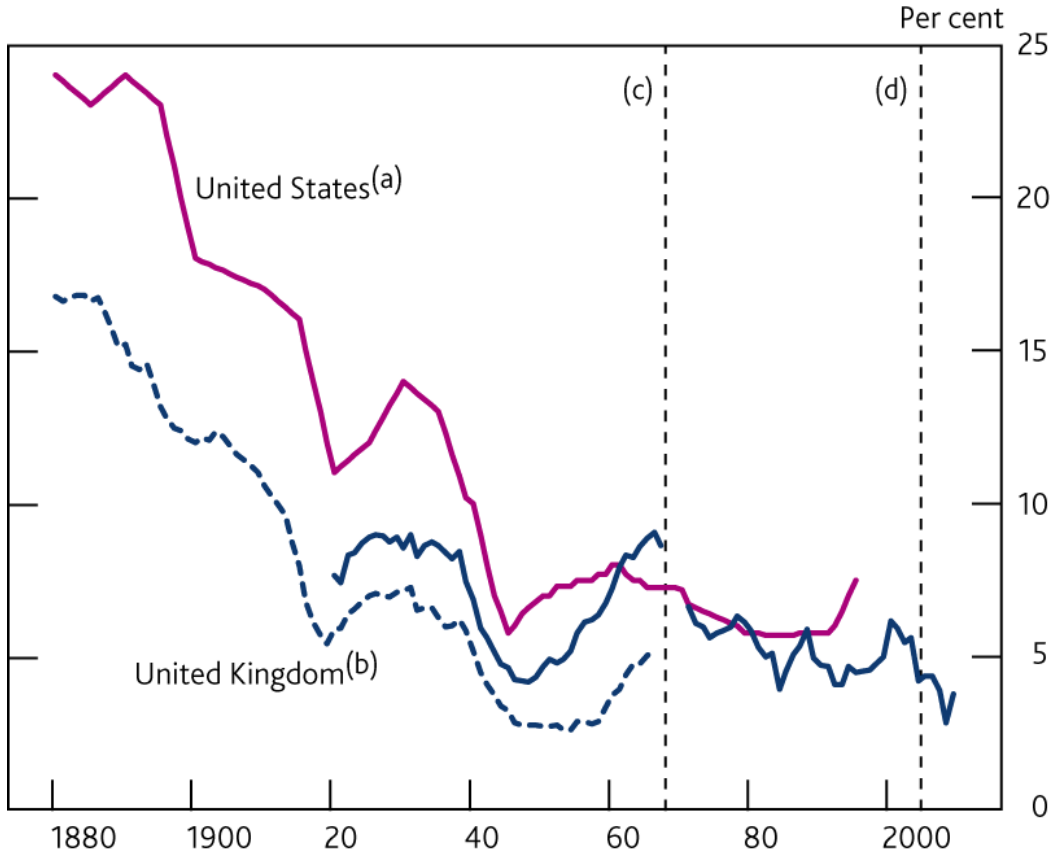
Capital and the bank balance sheet



Recall this slide from Lecture 2.

How much equity capital a bank has – liabilities it does not have to pay back if its loans go bad – are key to the stability of an individual bank.

Chart 3.6 Long-run capital ratios for UK and US banks



Falling 'capital' [ie equity funding that you don't have to pay back] means smaller cushion when banks lose money on their assets.

System becomes more prone to bank runs.

Source: BoE

'Safeguarding financial stability', slideshow.

Sources: United States: Berger, A, Herring, R and Szegö, G (1995), 'The role of capital in financial institutions', Journal of Banking and Finance, Vol. 19(3–4), pages 393–430. United Kingdom: Sheppard, D (1971), The growth and role of UK financial institutions 1880–1962, Methuen, London; Billings, M and Capie, F (2007), 'Capital in British banking, 1920–1970', Business History, Vol. 49(2), pages 139–62; British Bankers' Association, published accounts and Bank calculations.

(a) US data show equity as a percentage of assets (ratio of aggregate dollar value of bank book equity to aggregate dollar value of bank book assets).
(b) UK data on the capital ratio show equity and reserves over total assets on a time-varying sample of banks, representing the majority of the UK banking system, in terms of assets. Prior to 1970 published accounts understated the true level of banks' capital because they did not include hidden reserves. The solid line adjusts for this. 2009 observation is from H1.
(c) Change in UK accounting standards.
(d) International Financial Reporting Standards (IFRS) were adopted for the end-2005 accounts. The end-2004 accounts were also restated on an IFRS basis The switch from UK GAAP to IFRS reduced the capital ratio of the UK banks in the sample by approximately 1 percentage point in 2004.

Bank capital regulation

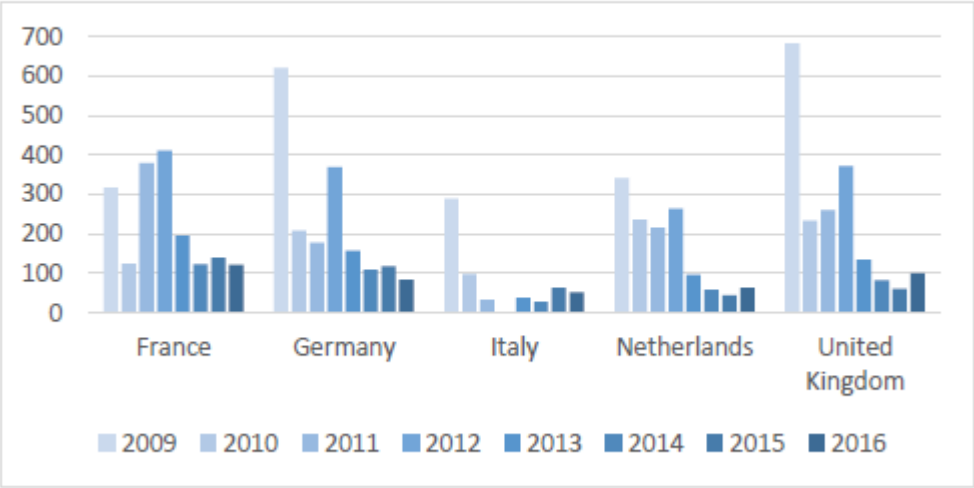
- Basel agreements on capital adequacy.
- Capital related to ‘risk weighted assets’.
- Banks allowed to use their own internal models of risk.
  - Risk poorly understood [old argument made in Taleb’s Black Swan / Fooled by Randomness]
  - Banks can game the models to reduce capital funding.

Why any need to regulate bank capital? Or in fact anything to do with banks?

- Bank controllers will try to game the state for a bail out.
- They do this by risking as little as possible of their own non-refundable equity finance.
- Individual bank collapse can have externalities on the whole system, due to size and interconnectedness.
  - Per capita cost to wider economy >cost to individual bank shareholder.

Over reliance on subsidised debt finance

Figure 2. Size of implicit funding subsidy per banking sector (in basis points)



Source: [Groenewegen&Wiertz, ESRB, wp no 53/17, p5]

Chart measures how much cheaper too big to fail banks can borrow relative to similar non bank companies.

This is thought of as a subsidy, because the cheap financing reflects that markets think the government will bail the banks out and stop them defaulting.

Italian banks get a low subsidy because the government is not considered a good back-stop! [The doom loop working].

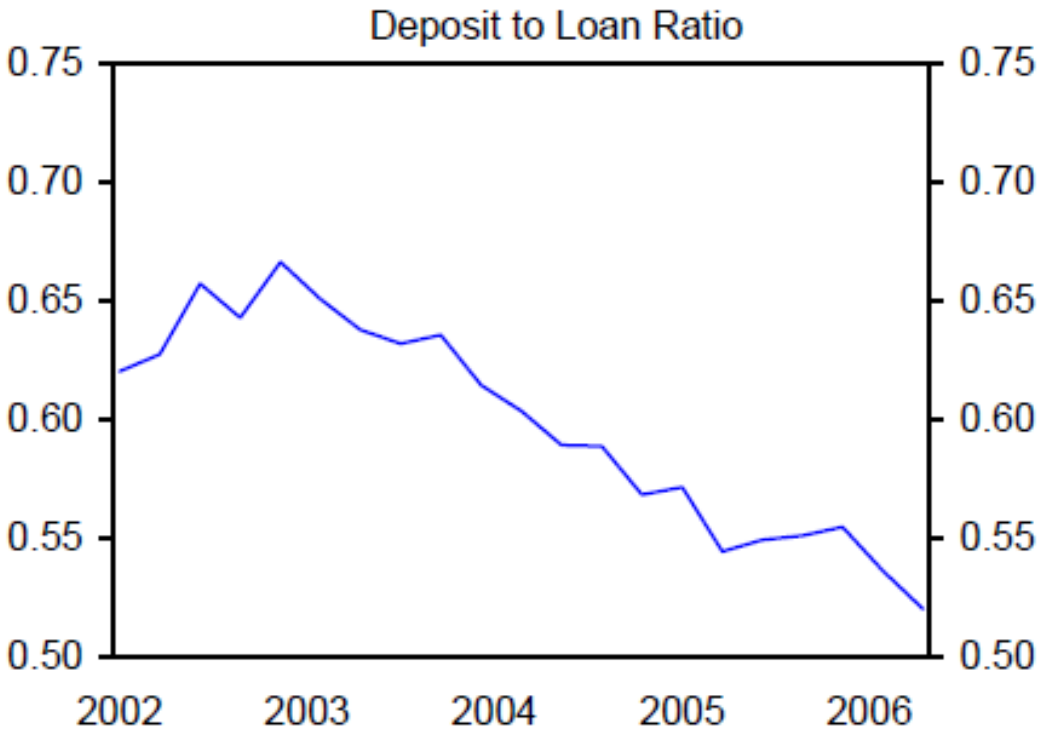
Digression: how would you calculate the implicit subsidy to banks?

- Compare face value discount of large companies versus large banks [ie bond yields].
- Compare yields of large versus small banks.
- Idea: large companies similar to large banks, but won't be bailed out.
- Small banks also won't be bailed out. Not 'too big to fail.'

Digression/ctd… calculating the subsidy to banks

- Problems:
  - Maybe small banks will be bailed out.
  - Economies of scale in banking [increasing margins and lowering cost of finance?]
  - Maybe large corporates would also be bailed out [like US company General Motors was in 2009].

Bank wholesale funding in Ireland



Source: IMF Article IV on Ireland, 2007

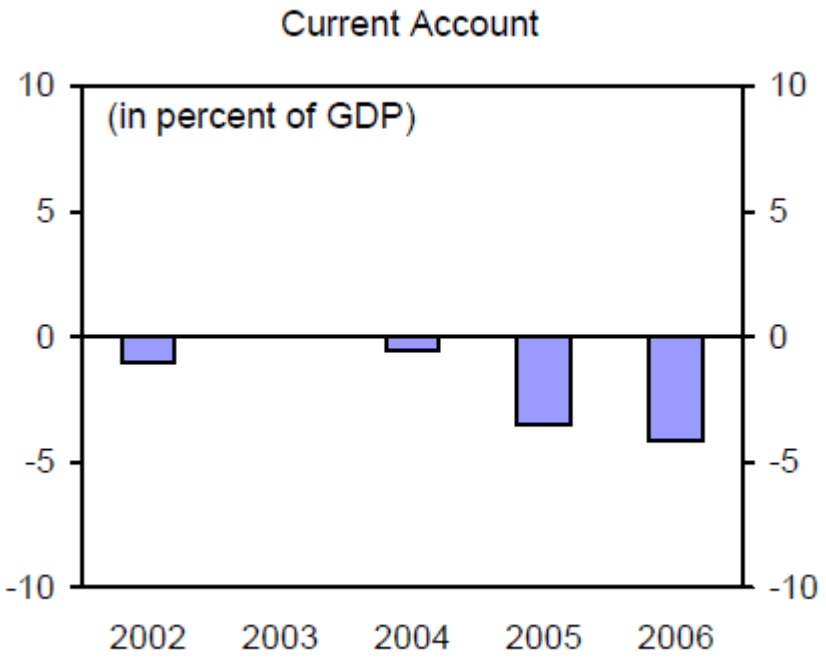
Ireland increased its reliance on wholesale funding.

This is borrowing not via deposits, but other commercial institutions.

This can often be short term and flighty. And in this case was.

Northern Rock failed partly for this reason too.

Irish current account imbalance



Source: IMF Article IV on Ireland, 2007

Corollary of increase in wholesale funding is the current account balance.

Negative CA is national private borrowing: domestic banks don't source this borrowing from home deposits [of course!]…

..but from foreign institutions that take foreign savings and channel them in to the home country [here=Ireland].

You'll frequently see anxiety about the current account in the media. Key q is how is the borrowing being funded? What is the borrowing for? Are expectations about future income to pay it back justified or not?

Commercial property; self-reporting mortgages; buy to let; originate to distribute; uncertainty about who was on the hook for what; political pressures on US mortgage lending

BANK ASSETS

Sub-prime lending

- =lending to those with low incomes, bad credit histories, or both.
- Temporally was the global trigger for the crisis.

Classic Economist article before the crisis


Subprime lending

Rising damp

Will turbulence in America's subprime mortgage market spread?

Mar 8th 2007

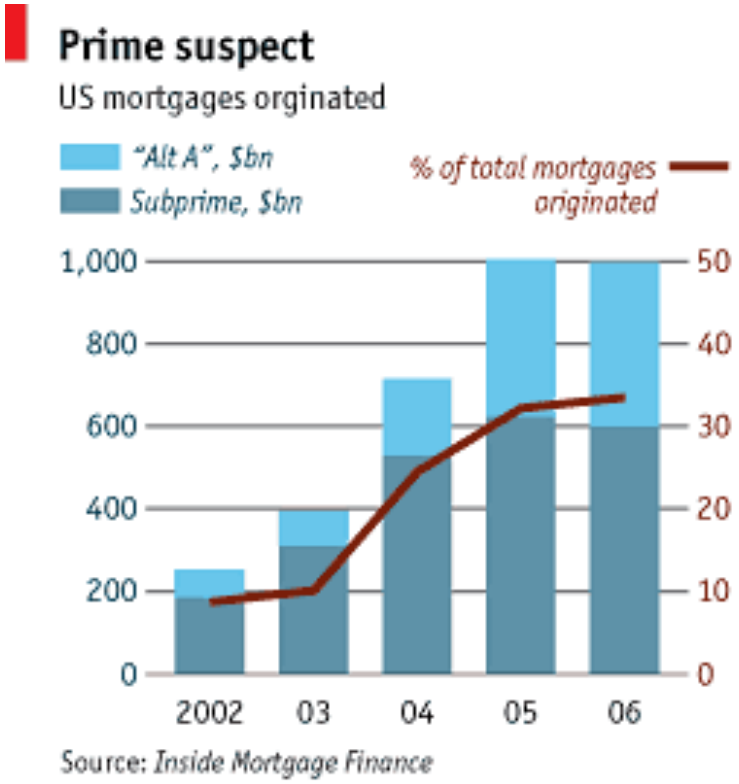
Timekeeper

Like 1

This is a snapshot from an old Economist piece on sub prime lending. Note the date on the article, March 2007.

Of course the answer was: yes.

US sub prime loan growth



Sub prime=loans to people with uncertain incomes and or bad credit histories.

Alt A=those with unverified income.

Value of loans, and proportion of new originations rises in run up to crisis.

These borrowers more likely to default due to inability to or propensity not to pay, when times get tough for them.

Recall that recessions when they hit tend to hit those in lowest income and temporary jobs hardest.

Source: The Economist, March 2007

$1tn bad sub prime loans is not a lot

Macro-mapping of the financial system

21 jurisdictions and the euro area — Exhibit 2-1

	Total global financial assets (FAs)	Central banks	Banks[1]	Public financial institutions	Insurance corporations[2]	Pension funds	OFIs[3]	Financial auxiliaries
Size in 2016 ($ trillion)	339.9	26.2	137.8	16.0	29.1	31.0	99.2	0.7
Share of total global FAs (%)	100.0	7.7	40.5	4.7	8.6	9.1	29.2	0.2
Growth in 2016 (year-over-year, %)	7.5	12.3	6.9	6.3	5.9	6.4	8.0	9.7
Growth 2011-15 (compounded, %)[4]	5.6	8.3	3.1	3.7	5.8	6.3	9.0	5.0

Based on historical data included in jurisdictions' 2017 submissions. Exchange rate effects have been netted out by using a constant exchange rate (from 2016). [1] All deposit-taking corporations. [2] For some jurisdictions, data on insurance corporations include separate accounts. [3] OFIs also includes "captive financial institutions and money lenders". [4] Increases in the value of assets may also reflect improvements in the availability of data over time at a jurisdictional level (for example, if a jurisdiction only provided data from 2013-2015 for a specific entity type included in OFIs, the aggregate 2011-2015 growth rate of OFIs might be slightly affected).

Sources: National sector balance sheet and other data; FSB calculations.

$1tn, even if it all defaulted, was not large in comparison to total global bank loans. But it was the panic and uncertainty that the defaults triggered.

Source: Financial Stability Board [h/t Adam Tooze , historian at Columbia Uni on Twitter.]

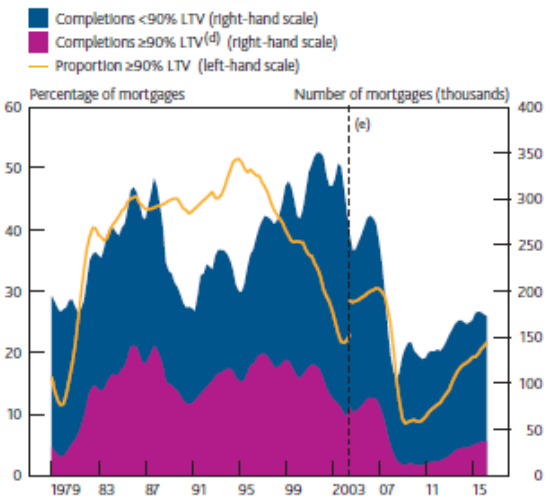
Political economy of US sub-prime

- Spreading home ownership to low income families seen as good.
  - Home ownership solves crime problems?
  - Turns you into a Republican voter?
  - Part of the American dream?
- Calomiris and others argue Federal agencies that underwrite mortgage market were leaned on to lower risk mgt standards to spread sub prime loans.

High Loan to Value / Loan to Income mortgages

Chart A.9 High LTV mortgage lending remains lower than at any point between 1982 and 2008

New mortgage lending by LTV at origination[(a)(b)(c)]



Sources: Council of Mortgage Lenders (CML), FCA Product Sales Database (PSD) and Bank calculations.

(a) Data are shown as a four-quarter moving average.
(b) Data include loans to first-time buyers, council/registered social tenants exercising their right to buy and home movers.
(c) The PSD includes regulated mortgage contracts only.
(d) The number of mortgage loans with ≥90% LTV is calculated using the aggregate number of mortgages from the CML and the proportion of mortgages with ≥90% LTV from the PSD.
(e) PSD data are only available since 2005 Q2. Data from 1993 to 2005 are from the Survey of Mortgage Lenders, which was operated by the CML, and earlier data are from the 5% Sample Survey of Building Society Mortgages. The data sources are not directly comparable: the PSD covers all regulated mortgage lending whereas the earlier data are a sample of the mortgage market. Data for the first three quarters of 1992 are missing, chart values are interpolated for this period.

The higher the loan as a proportion of the value of the house, the more chance that a house price fall leaves the resident in 'negative equity'.

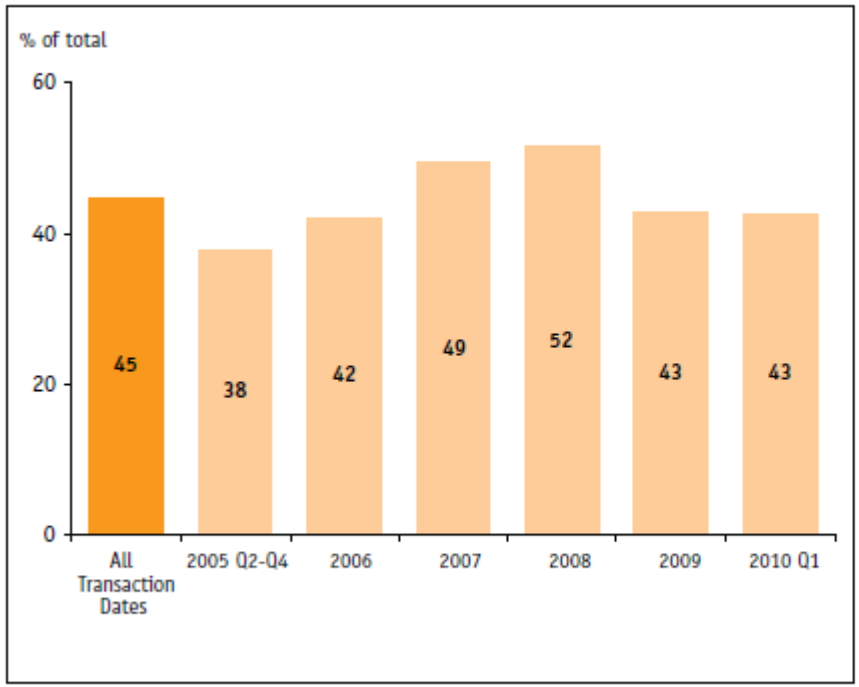
They are more likely to default then. And the bank is less likely to recover its money.

High LTV originations were high in years before the crisis. Lower now, but rising.

Source:
Financial Stability Report, June 2017, p5.

Self-reported income mortgages

Exhibit 2.4: Proportion of mortgages where income was not verifiec



Source: FSA PSD

In pre-crisis period self-reported income mortgages rise.

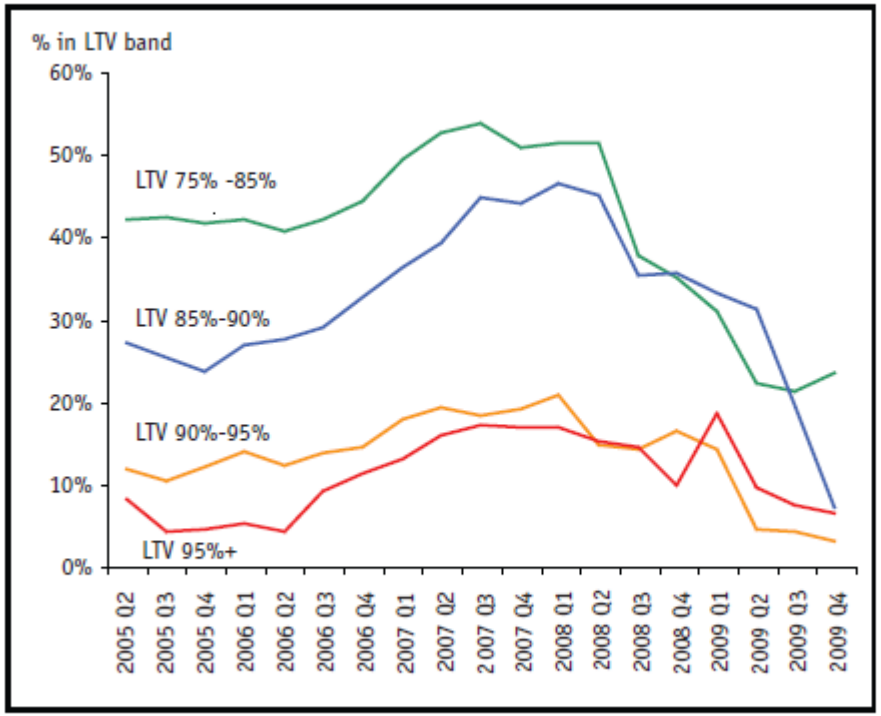
Banks are exposed as people may have overstated their income.

Large portion post crisis reflects legacy stock.

Source: Financial Services Authority Mortgage Market Review, 2010 [FSA was disbanded, split into the FCA ['conduct'] and the PRA, brought under the BoE].

High LTV, self-reported income mortgages

Exhibit 2.5: Higher-LTV mortgages where income was not verified



Source: FSA PSD

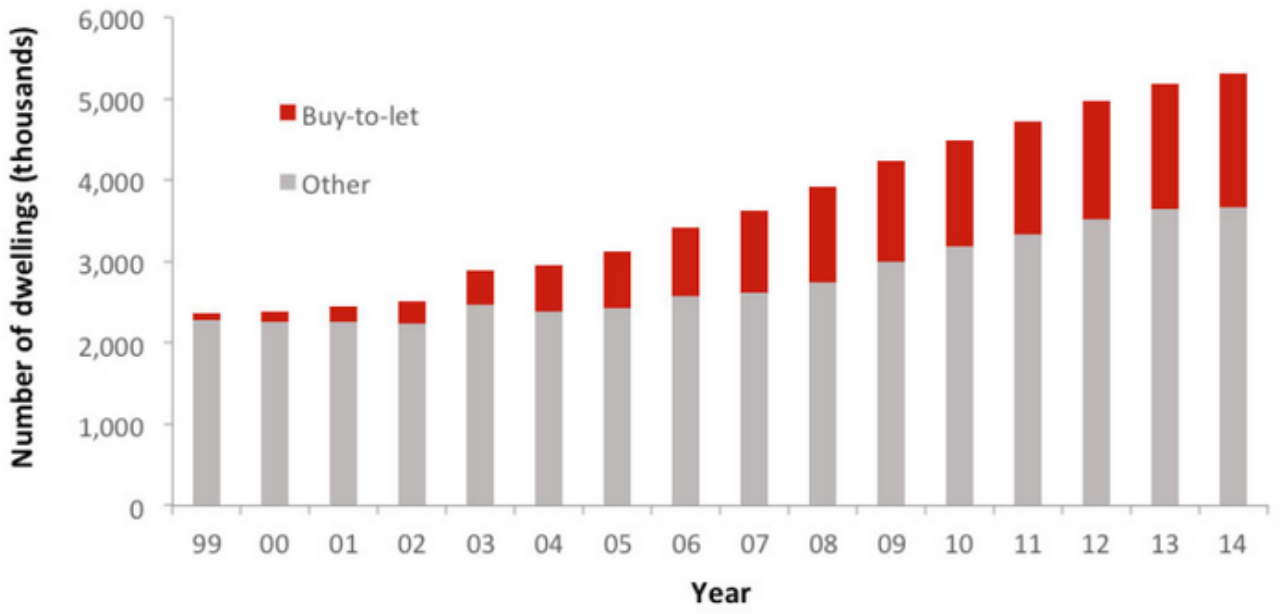
Self-reporting of income prevalent even with high loan to value mortgages.

At peak, 15% of >95% LTVs were self-reported income mortgages!

Source: same as previous slide.

Buy to Let market

Chart 3.C: Dwellings associated with a buy-to-let mortgage have grown as a proportion of the PRS in recent years



Source: UK Govt consultation on FPC powers of direction in BTL market.

Buy to let and risk

- Buy to let properties are by definition, not lived in.
- More likely to default on a BTL as the loan may not be secured on your own home, so you may not lose it.

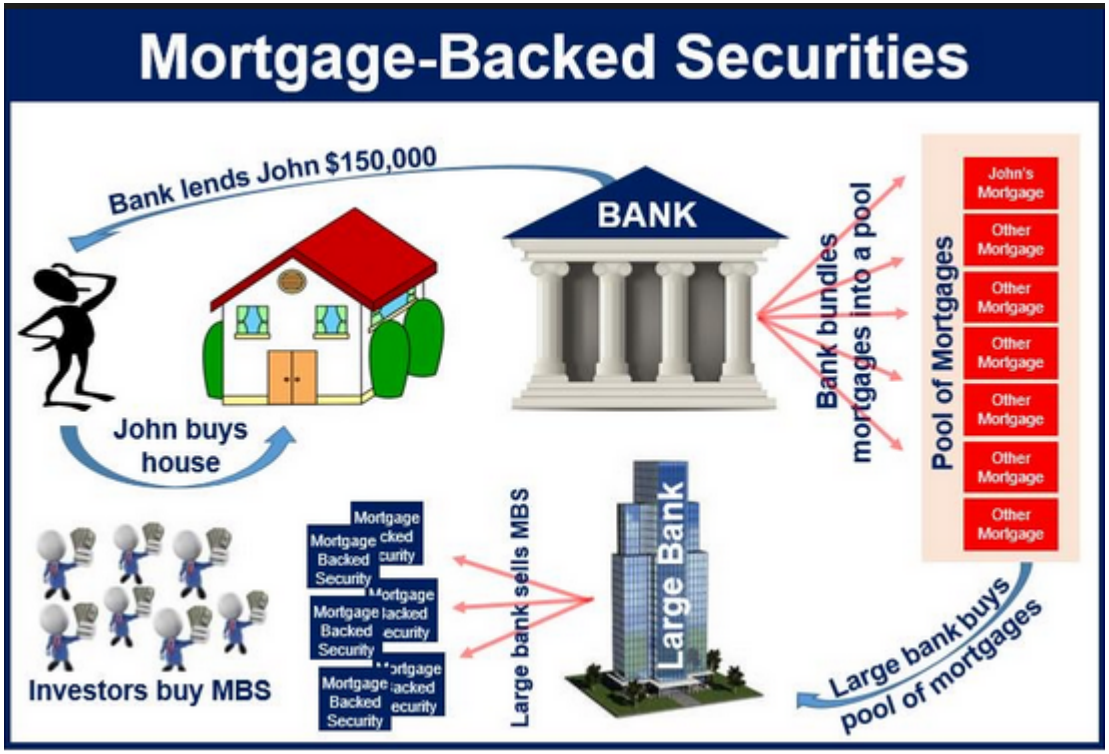
Originate and hold to originate to distribute+securitize

- Old lending model. Banks sign mortgage contracts with people who want to buy a house.
- New model: banks do the above, then sell the contract on, so that they are no longer the lender.
- Securities sold that are slices of packages of slices of mortgages. [What? Well exactly.]

Mortgage-backed security : the rough idea

- Take 1000 mortgages.
- Write a contract that entitles you to a share of the mortgage payments.
- Include complicated clauses that protect your investment up to the point when y% of them default.
- Make sure the documentation is 100s of pages long.

MBS visualized



There is very stiff competition in the market for visualizations of mortgage backed securities. See Google images.

Monitoring credit quality: hold vs distribute

- Going to hold the loan?
  - Bank checks credit history carefully.
- Going to distribute it?
  - Banks are selling the risk [and returns] on to someone else. Incentive to understate risk.
  - Investors know this, so banks get 3rd party to do credit rating=credit ratings agencies.

Credit ratings agencies: problems

- Ideal: 3rd party, expert agency with reputation for accuracy to defend.
- Investors convinced CRA's have incentive to do a good job, trust ratings, uncertainty about risk and value eliminated.
- Contention: CRA's survive from fees paid by issuers [the banks selling the loans]; banks 'shop' for the best ratings.
- Analogy: estate agents compete for business by promising valuations that are too high.

MBS problems.

- Insufficient ‘skin in the game’ led to lax lending standards by banks intent on securitising. [eg many rants by Taleb]
- Credit ratings agencies also had inadequate incentives.
- MBS novel, risks hard to assess, created to satisfy huge demand for safe assets from abroad [more of which later].

MBS defaults should have been easy for the world to suck up

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Sources: National sector balance sheet and other data; FSB calculations.

Source:
[Financial Stability Board Global Shadow Banking Report.](#) [h/t Adam Tooze]

MBS = $1trn=1/200th private sector assets

Even if all defaulted should have been easy to swallow.

US banking assets=$12Tn in 2008; 18Tn now.

Problem was not knowin g who was on the hook for what.

Uncertainty about that led to a kind of 'run' from wholesale bank funding markets, MBS markets, and ultimately banks themselves, and then sovereigns.

Causes and consequences of not knowing who was on the hook for what

EXPOSURE UNCERTAINTY

Exposure Uncertainty

- Complex securities and derivatives of securities.
- Complex organisational structures imperfectly understood by senior management.
- Displacement by banks of MBS like investments into Special Purpose Vehicles: ambiguity about parent liability.
- Not only direct exposure, but indirect exposures needed to assess credit worthiness.
- Robust response – assume the worst and try to pull out.
- Macro effect of that pull out is to aggravate losses as fire sales drive down prices. [Motivating corrective policy of some kind].

UPHILL CAPITAL EXPORTS AND THE DEMAND FOR SAFE ASSETS

Uphill capital exports as a primitive cause

- 2 proximate causes of the crisis
  - Manufacture of MBS from mortgages
  - Exposure of banks to wholesale funding
  - Mispricing of private and sovereign risk
- More upstream cause might be argued to be the export of capital uphill from emerging markets.

Uphill capital exports

- Usual dynamic of capital:
  - Flows ‘downhill’: accumulated capital goes to where capital is scarce [relative to other factors, like labour] and returns highest.
  - These are the poor countries.
- Actual dynamic pre-crisis:
  - Capital flowed out of emerging economies into already rich Western economies.
  - Risk-adjusted returns still higher in West despite capital abundance.
  - Local risk in EM countries included expropriation, regime change.

Norway's North Sea 'imbalance' = eg of 'normal' flows to the future rich

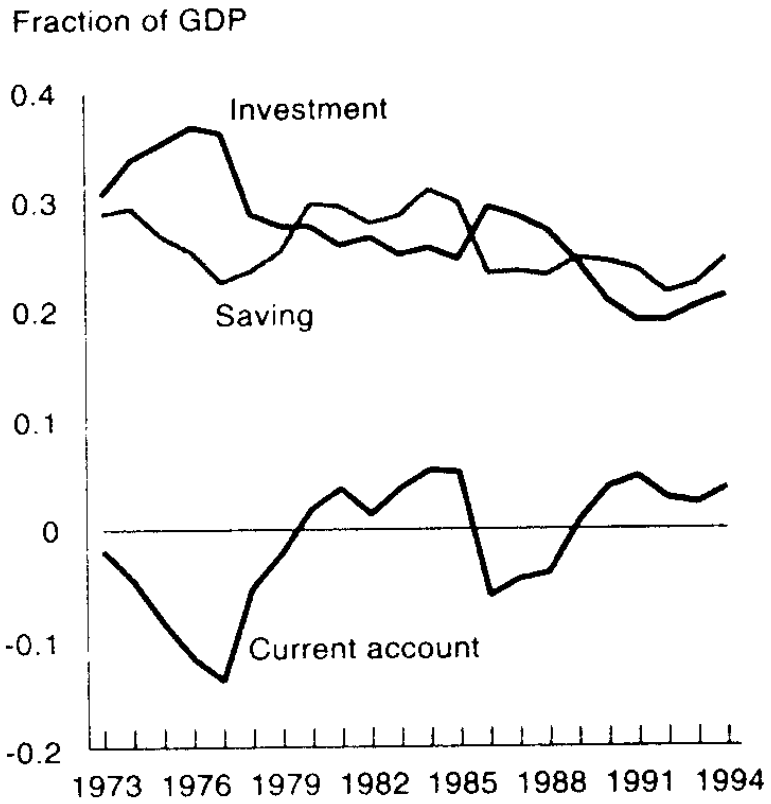


Figure 1.2
Norway's saving-investment balance, 1973–94. (*Source:* OECD)

Norway discovered North Sea Oil in the 1970s.

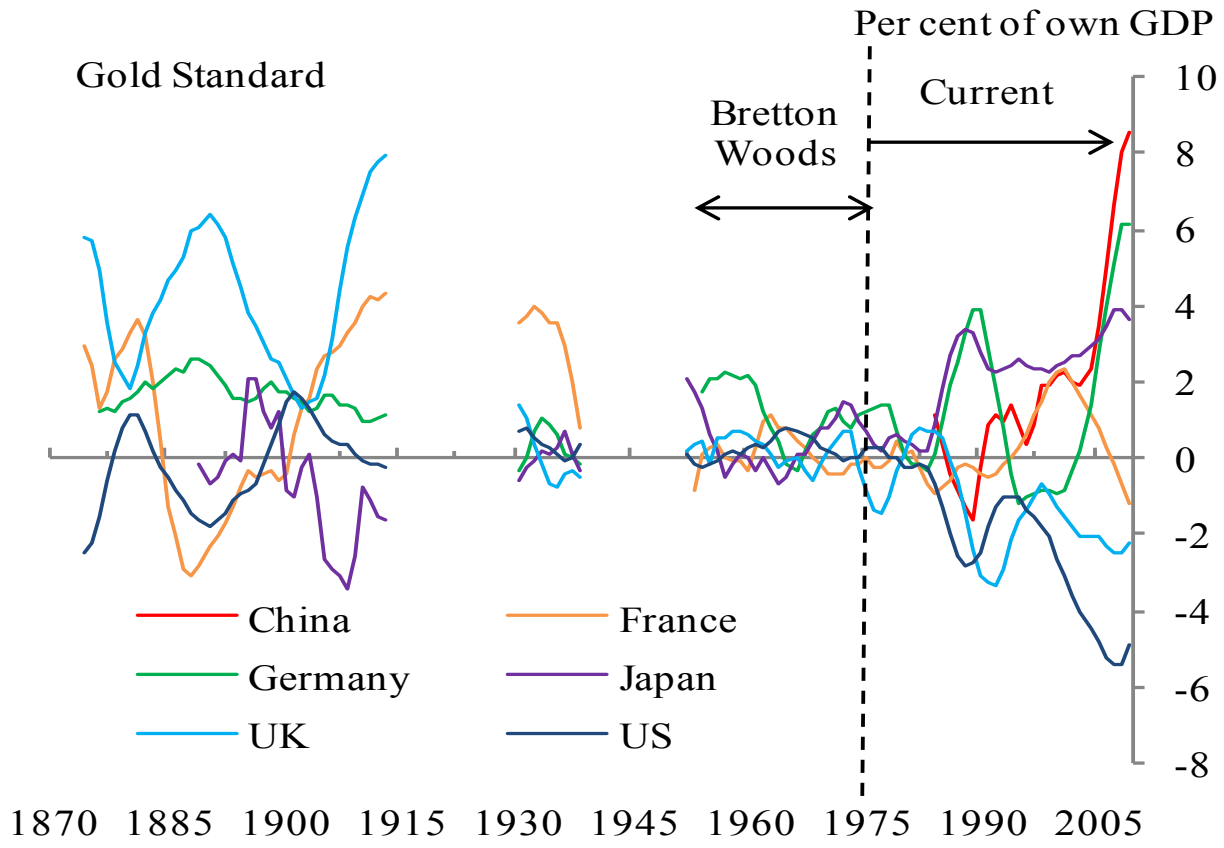
Borrowed massively to build the infrastructure and technology to extract it.

And, potentially, borrowed for consumption against future windfall.

Perfectly rational, forward-looking behaviour.

Source:
Obstfeld-Rogoff textbook on International Macro

Current account imbalances in context



Source: Bush, Farrant and Wright.

Uphill capital/ctd…

- Saving into West from China and other economies, official and private.
- Current account deficits fine if based on sound appreciation of future income, returns, and risks, and where the funding is done responsibly.
- Optimistic income expectations, mis-priced risk, poor regulatory oversight, meant that this savings glut was a crisis amplifier / causer.

POLITICAL ECONOMY OF FINANCIAL REGULATION

Political economy and financial regulation

- 3 dimensions along which politics affects financial regulation
  - Moral hazard and bail-outs / deposit insurance.
  - Actual tax revenues versus future financial stability risks.
  - Lobbying and political power.

Moral hazard and politics

- Step 1: political messages
  - To depositors: ‘careful where you deposit your money, we are not going to guarantee your desposits.’
  - To bank managers/owners: ‘careful where you invest your customer’s deposits, because we are not going to bail you out.
- Step 2: messages not believed, as both know that when the crunch comes, incumbent govt wants to avoid a crisis and get re-elected.

Financial regulation and the timing of its costs and benefits.

- Electoral /media cycle shortens the time horizon of politics.
- Tight regulation means:
  - Lower tax revenues, and smaller spending possibilities for government NOW.
  - Smaller chance of a crisis: but with a bit of luck that occurs in the FUTURE.
- Compounded by how hard it is to monitor whether risks appropriately managed.

Lobbying, politics and financial regulation

- Banks and financial services professionals use funds to exert disproportionate political pressure on legislature.
- Dodd-Franks legislation tightened up regulation in the US.
- Trump elected on promise to unravel that.
- Some also argue that UK bank capital regulation insufficiently tightened due to lobbying by banks.

INHERENT INSTABILITY OF COMPLEX SYSTEMS

Chaos [material stolen from Geoff Boeing, Berkeley U]

- A ‘shit happens’ theory.
- Or, shit happens in chaotic systems.

$$x_{t+1} = r x_t (1 - x_t)$$

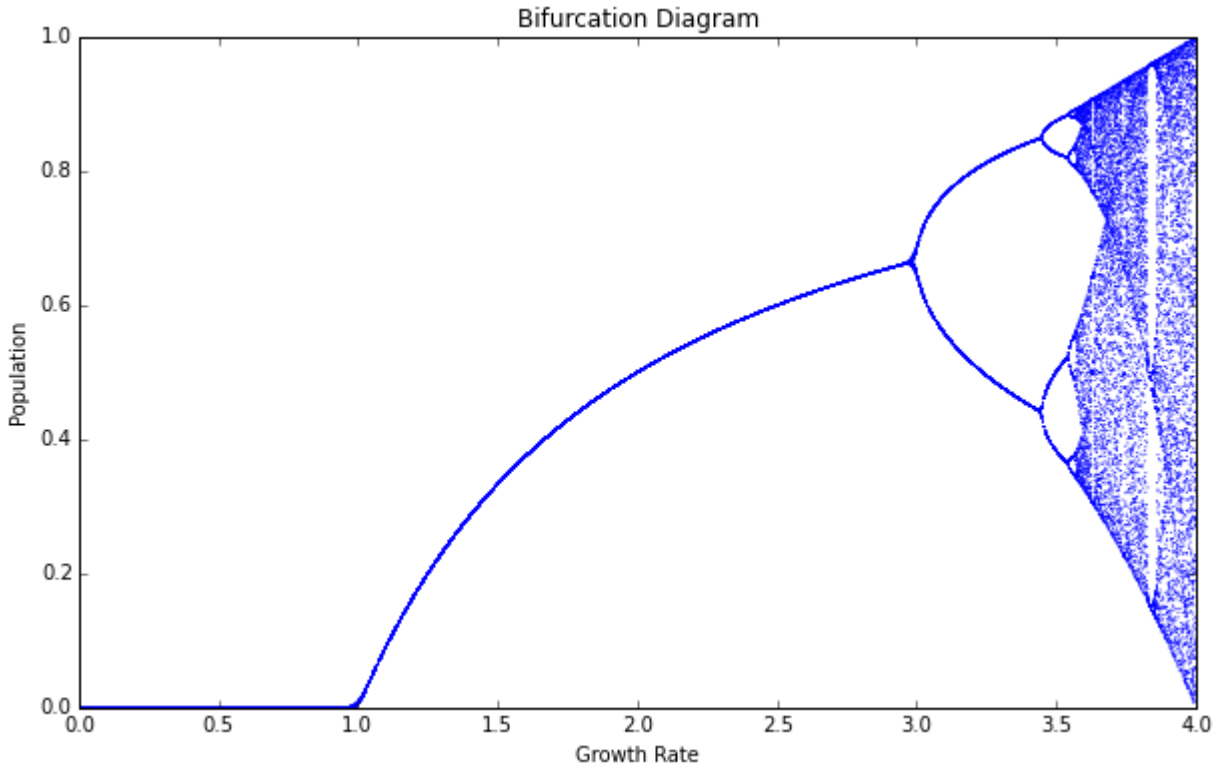
x_t is some economic variable, say ‘the value of a financial asset’.

r is its growth rate.

Lorenz discovered the strange properties of this equation accidentally while researching climate models in the late 60s.

If r is high enough, it does wonderful things that might have lessons for many dimensional economic systems.

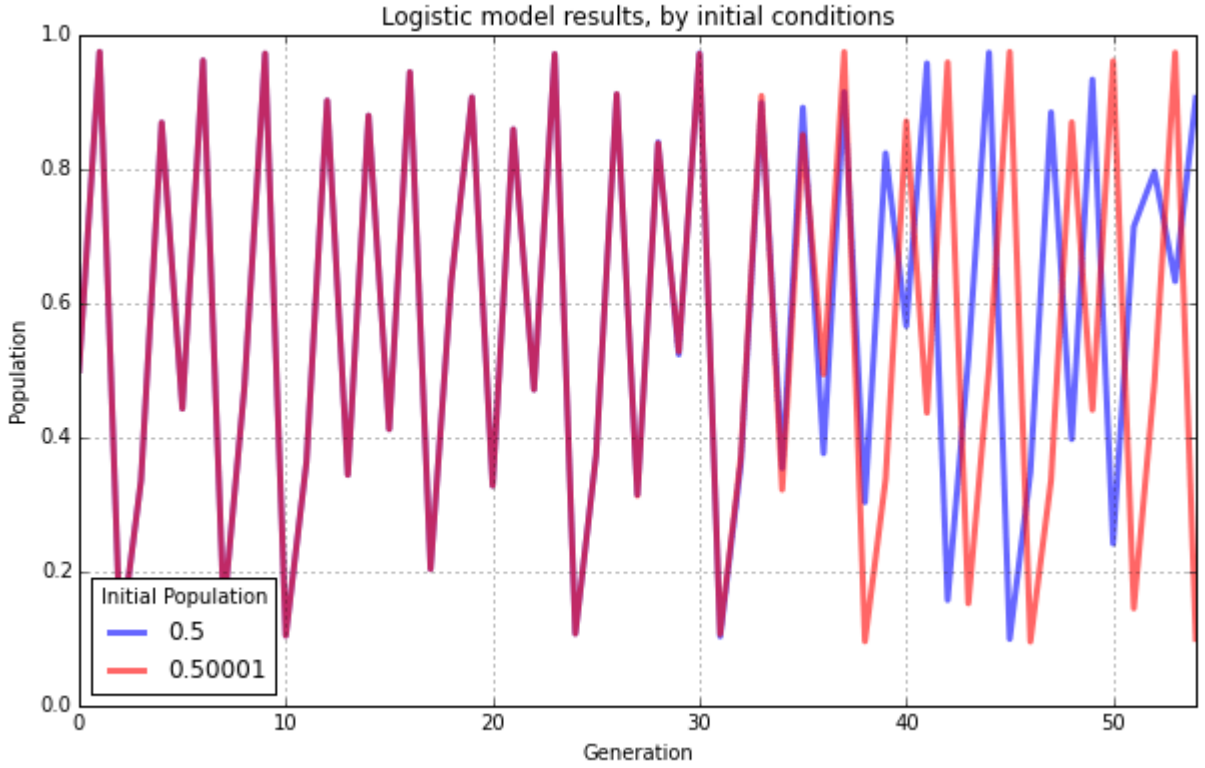
Chaos: multiple long run rest points



If the growth rate >3, population rest point gets more and more uncertain.

VERY crude analogy: long term consequences of a given financial structure, including regulatory regime, uncertain. May lead to high confidence or collapse, perhaps.

Chaos: sensitivity to small changes in initial conditions



This was Lorenz's first accidental discovery.

Analogy: if you changed policy just a little bit [here 'initial population'] you might get startlingly different paths for financial prices after some time has passed.

Lorenz and discovery of chaos

Edward Lorenz was an early pioneer of the theory. His interest in chaos came about accidentally through his work on weather prediction in 1961.[8] Lorenz was using a simple digital computer, a Royal McBee LGP-30, to run his weather simulation. He wanted to see a sequence of data again, and to save time he started the simulation in the middle of its course. He did this by entering a printout of the data that corresponded to conditions in the middle of the original simulation. To his surprise, the weather the machine began to predict was completely different from the previous calculation. Lorenz tracked this down to the computer printout. The computer worked with 6-digit precision, but the printout rounded variables off to a 3-digit number, so a value like 0.506127 printed as 0.506. This difference is tiny, and the consensus at the time would have been that it should have no practical effect. However, Lorenz discovered that small changes in initial conditions produced large changes in long-term outcome.[47] Lorenz's discovery, which gave its name to Lorenz attractors, showed that even detailed atmospheric modelling cannot, in general, make precise long-term weather predictions.

Source: Wikipedia entry for chaos theory!

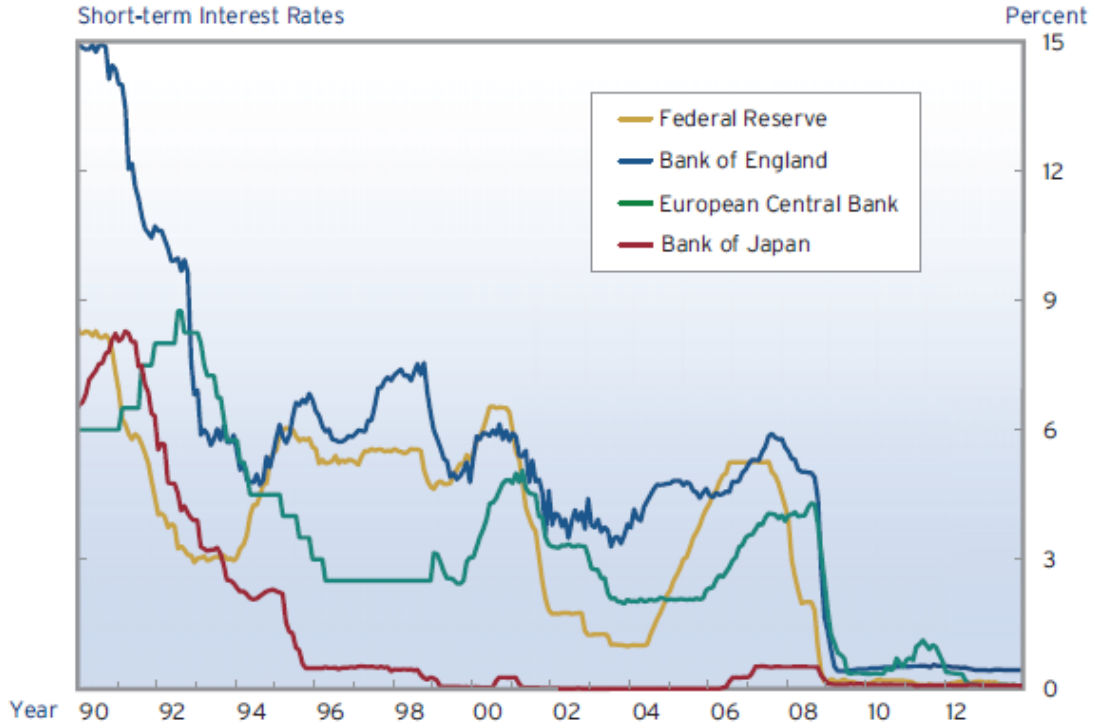
[What has the world come to when your lecturers get paid for pasting Wikipedia text into a slide?!]

Low interest rates and risk taking and inflation target blinkeredness

OVERLY LOOSE MONETARY POLICY

Monetary policy in recent history

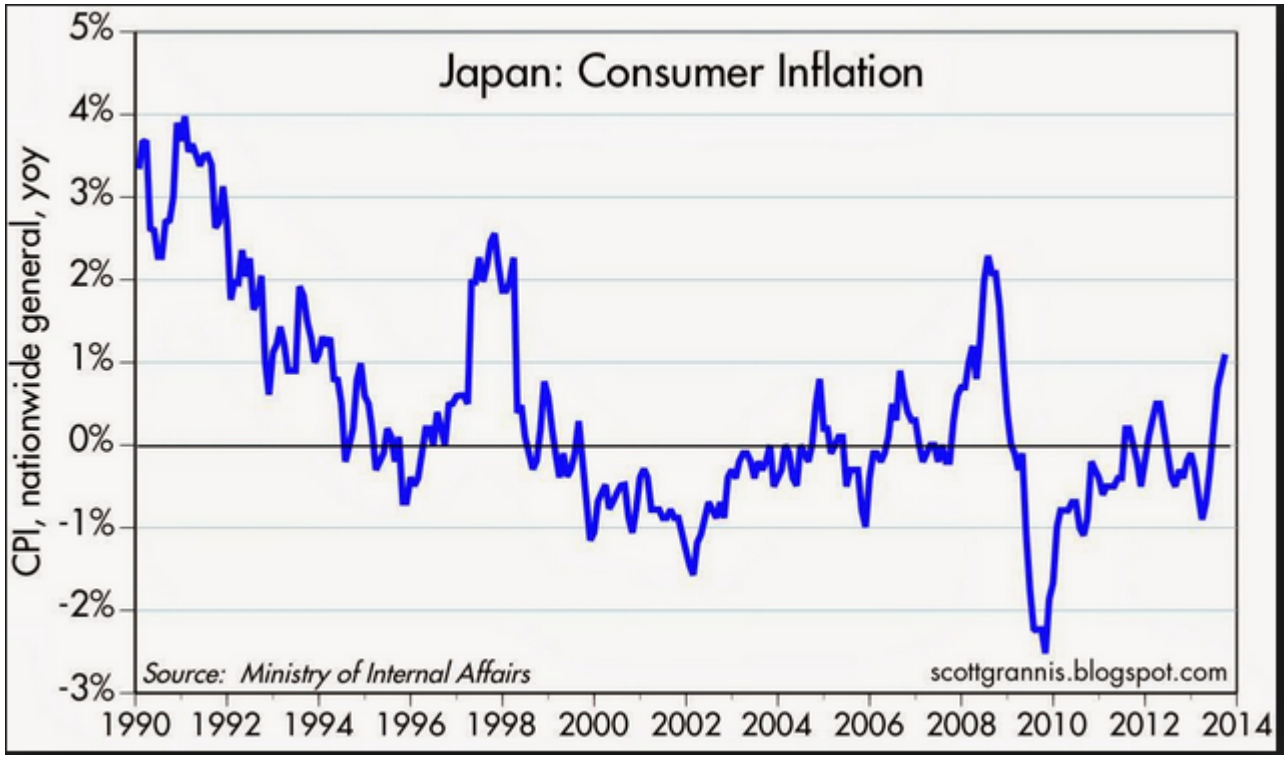
FIGURE 1. The ZLB: Not Just an Academic Concern



Sources: Board of Governors of the Federal Reserve System (2013); Organisation for Economic Co-operation and Development (OECD; 2013).

Why very low rates in early 2000s?

- Fed+other central banks alert to the Japanese boom, bust and deflation and zero bound episode.
- Seen as a result of insufficient concern about deflation, lack of clarity and symmetry in their inflation target.
- 1998 LTCM crisis, plus tech stocks crash: determination to prevent a recession and deflation.



Aggressive cuts in Fed policy rates was to avoid a repeat of the Japanese deflation and losing control of policy at the zero bound. [Mixed results in this regard obviously!]

The critique of central bank policy post 2000

- Critique from eg Bank for International Settlements [Borio, Lowe, White…]
- Low nominal rates encouraged excessive risk taking to boost nominal returns.
- Too narrow focus on inflation targets, missing elevation in asset prices.
- Stoked up credit boom, leading to inevitable bust.

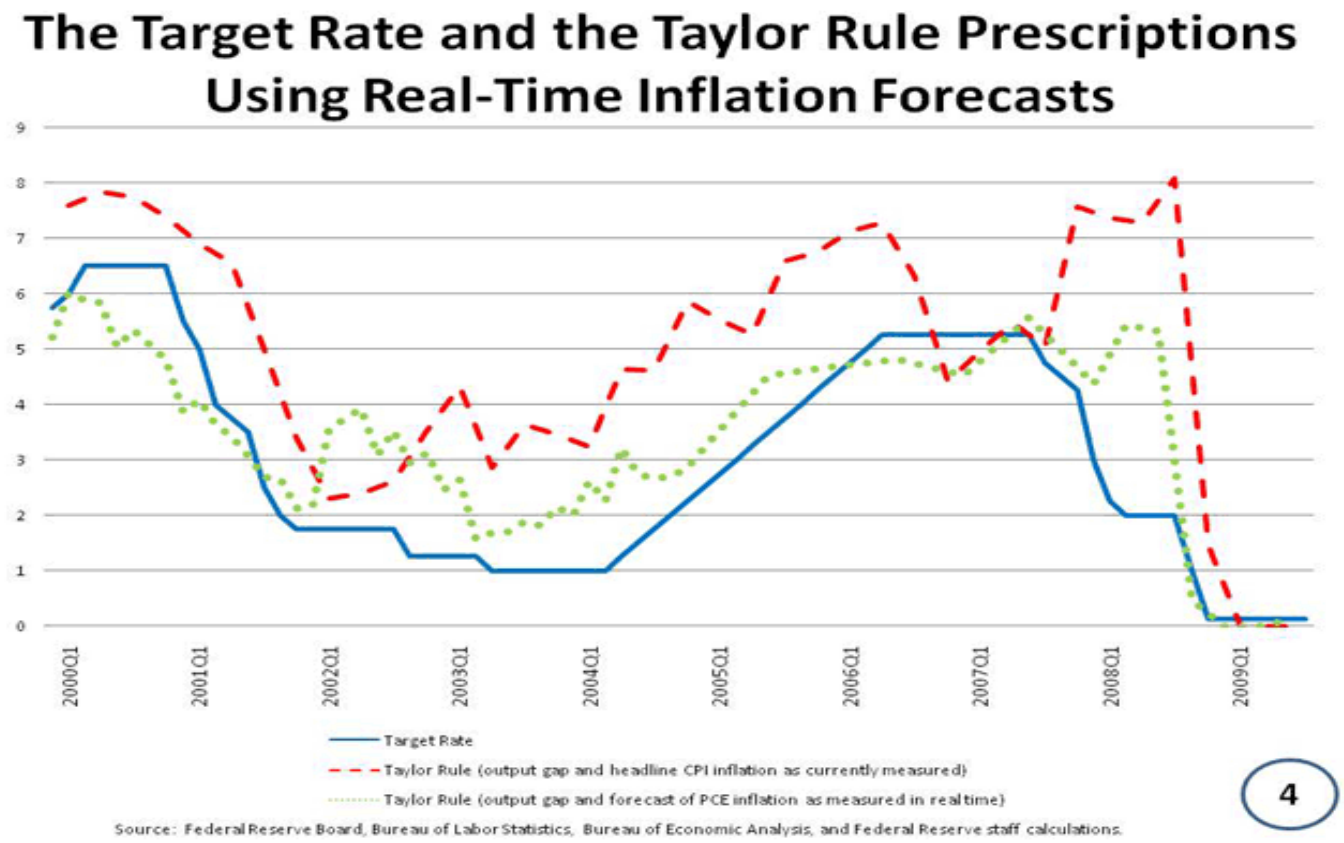
‘Taylor rule’

$$i_t = 2 + \pi^T + 1.5 * (\pi_t - \pi^T) + 0.5 * (y_t - y^n)$$

Raise rates if inflation rises, and/or the output rises.

Made famous in John Taylor’s 1993 paper
‘Discretion versus policy rules in practice’

Rule i) fit historical interest rates well and ii) stabilised inflation and output gap well in macro-models.



Blue line [actual Fed policy rate] is below the red [recommendation of Taylor Rule]= policy too weak?

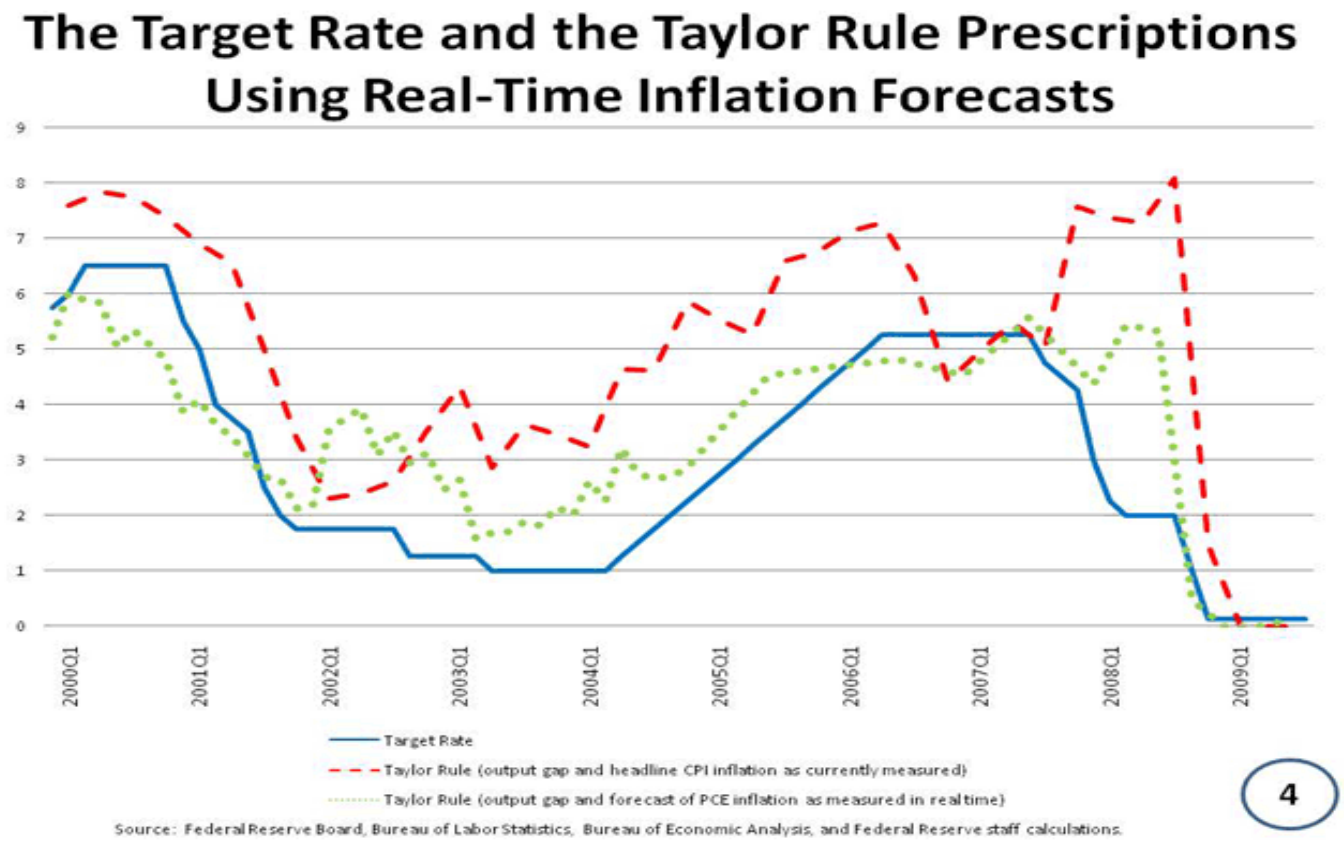
Source: Bernanke, 2010

Forecast-based Taylor rule

$$i_t = 2 + \pi^T + 1.5*(\pi_t^F - \pi^T) + 0.5*(y_t^F - y^n)$$

Bernanke's (2010) response was to point out that the Fed was (and should) respond to deviations of forecasts, not actual inflation.

At any date t, Fed only has lagged information anyway, as data takes time to collect and aggregate, process and check.



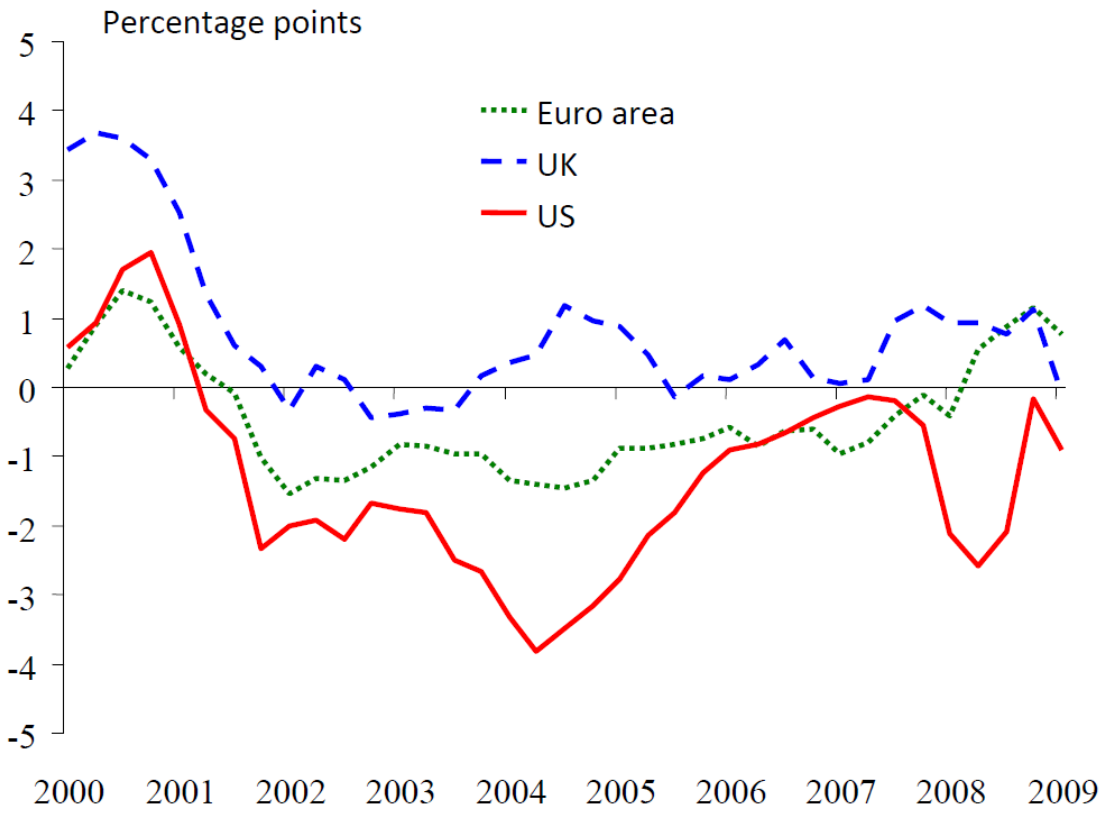
Blue line [actual FFR]=green line [Taylor rule using forecasts of inflation]. By this measure not that much difference.

Source: Bernanke, 2010

Comments on the Taylor Rule and the crisis debate

- Krugman: Taylor Rule is 'made up'.
  - Not fair. Fits history, when policy did well. And does well in models of monetary policy.
- Monetary policy just not strong enough, and the effects are not persistent enough, to cause large and long lasting real problems.
- Taylor rule 'mistakes' don't line up with cross country evidence on asset boom...

Deviation of Policy Rates from Taylor Rule



Relative to Taylor Rule, policy loose in the US, but tight in the UK…

Source: Bean *et al*, 2010

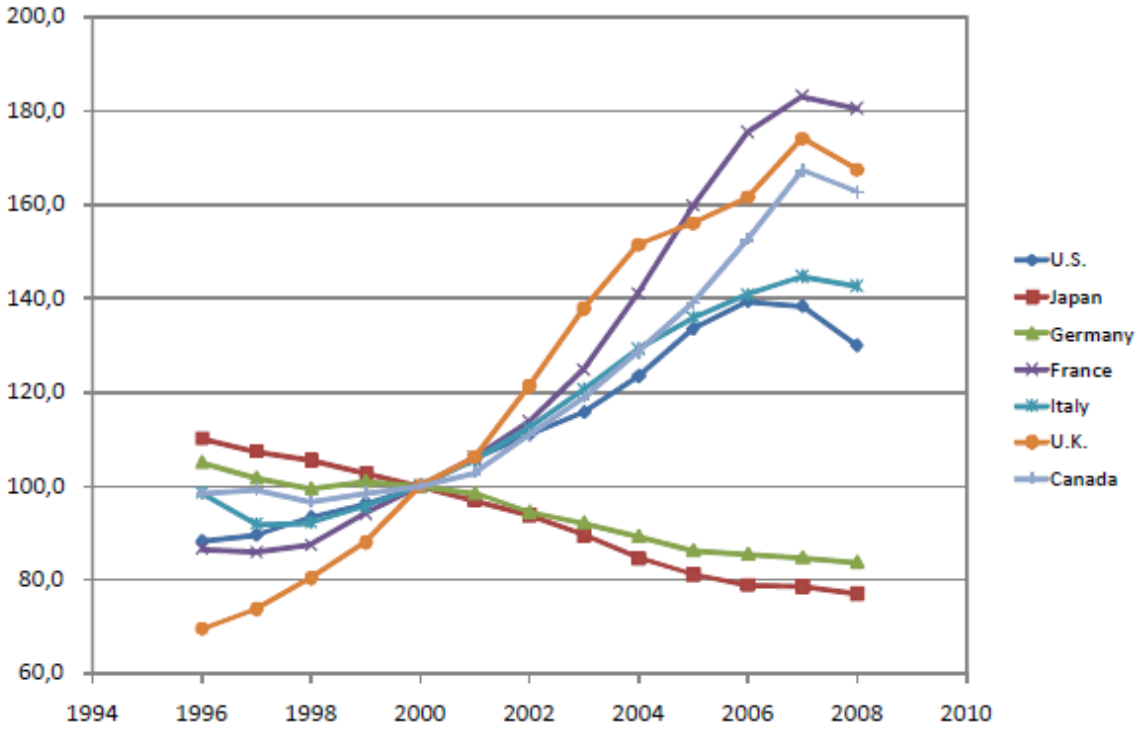


Figure 5: Real House Prices in the G7 (Indices, Normalized to 100 in Year 2000)

At the same time, the housing boom was LARGER, the opposite of what you would expect if Taylor was right, other things equal.

[To be fair to Taylor, other things aren't equal].

Source: Adam and Marcet, 2010

Did low nominal rates cause crisis through ‘nominal illusion’?

- Low nominal rates mistaken for low real rates
- Low real rates judged to imply portfolios no longer efficient
- Investors seek to raise real returns, end up (unintentionally) taking on more risk

Survey evidence of nominal illusion

A10. Try to imagine how things would be different if the United States had experienced higher inflation over the last five years, so that prices of things you buy had risen to higher levels than we actually see today. How different do you think your income (the total dollars you earn in a month) would be now, in comparison with your actual income now, if we had had the higher inflation? [Circle one number]

1. My income (in dollars per month) would be lower	[28%]	[n = 114]
2. My income (in dollars per month) would be about same.	[35%]	
3. My income (in dollars per month) would be higher.	[31%]	
4. No opinion.	[6%]	

Respondents think that if the price level were higher, their real income would be lower.

Apart from in hyperinflationary situations, in general nominal wages rise to compensate for inflation, so this is not true, and taken as evidence of nominal illusion.

Source: Shiller (1997)

Money illusion...

B9. Which of the following comes closer to your biggest gripe about inflation:

1. Inflation causes a lot of inconveniences: I find it harder to comparison shop, I feel I have to avoid holding too much cash, etc.
2. Inflation hurts my real buying power, it makes me poorer.
3. Other:

	1	2	3	
US All	7%	77%	15%	n = 110
Economists	49%	12%	40%	n = 78

Again, inflation does not, except at very high rates, tend to 'hurt real buying power'.

So evidence of nominal illusion.

Source: Shiller (1997)

The ‘risk taking channel’ of monetary policy

- Jiménez et al. (2009) investigate the impact of the stance and path of monetary policy **on the level of credit risk of individual Spanish bank loans**. They find that lower short-term interest rates prior to loan origination result in banks granting more risky *new* loans. Lower interest rates, by contrast, reduce the credit risk of *outstanding* loans (i.e. since clients pay a reduced rate on their variable rate loans their probability to default declines)

- Ioannidou et al. (2009) analyze the link MP-bank risk **on the side of loan pricing using Bolivian data**. When interest rates are low, not only do banks take on higher risk but they also reduce the loan rates of risky vis-á-vis riskless borrowers

Source: Altunbas, Gambacorta and Marques-Ibanez, 2009

Inflation vs asset prices

- Monetary policy tool not appropriate to deal with real asset price increase.
- That is caused by
  - poor regulation
  - low *real* rates.
- Central banks don't control real rates over anything but very short run.
- Low real rates instead caused by
  - excess saving [in turn caused by demographics, debt hangover, distribution of income towards those with low mpc]…

THEFT, BAD PEOPLE

Evil bankers….

- Hypothesis on left and right: crisis caused by bad people in the financial sector.
- 2 problems with this explanation:
  - There are bad people everywhere, and at all times, so why was the crisis in banking, and in 2008?
  - Begs q why public policy framework, and the economic system, allowed a particular bunch of bad people [that is IF they were unusually ‘bad’] to have the effect that they did.

Factors affecting the Eurozone sovereign debt crisis of 2010-12 [well, perhaps it is not over yet]

EUROZONE CRISIS CAUSES

Unusual aspects of the Eurozone crisis

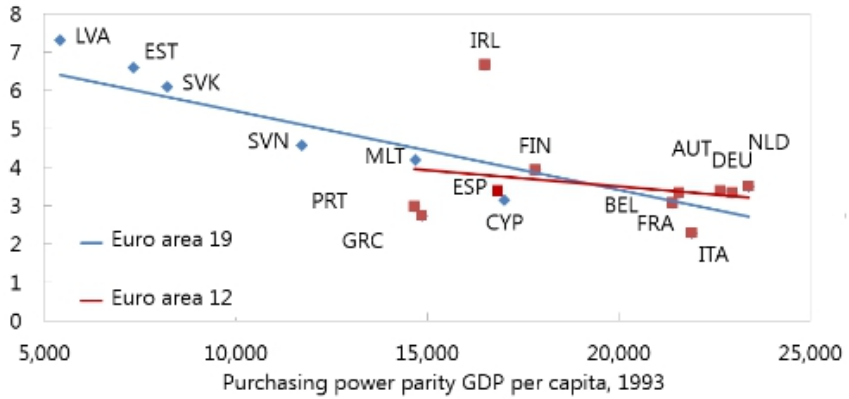
- Sovereign debt crisis [unlike UK and US]
- One central bank, many countries.
- Crisis became about the existence of the Euro [no-one was questioning the durability of the US or UK currency union]
- [Scottish #indyref but was orthogonal to the financial crisis.]
- Disparities between peripheral catching-up countries, and the Northern, richer core.

Mispricing of risk, EZ style

- Outside and inside the EZ, global issue of mispricing asset specific and systemic risk: MBS and other asset prices too high.
- Inside: additional issue of mispricing of sovereign risk.
- Two components
  - Over optimism about destination of the income catch up.
  - Optimism about the amount of implicit risk pooling in EZ institutions.

Lower-income founding members of the euro did not grow faster than those with higher incomes. By contrast, countries adopting the euro after 2002 have been converging with richer euro area peers.

(average purchasing power parity GDP growth, 1994-2015)



Sources: *World Economic Outlook database* and IMF staff calculations.
Note: Euro area 19 excludes Luxembourg and Lithuania.
Euro area 12 excludes Luxembourg.
AUT=Austria, BEL=Belgium, CYP=Cyprus, DEU=Germany, ESP=Spain, EST= Estonia, FIN=Finland, FRA=France, GRC=Greece, ITA=Italy, IRL=Ireland, LVA=Latvia, MLT=Malta, NLD=The Netherlands, PRT=Portugal, SVK=Slovakia, and SVN=Slovenia.

Source: Franks + Scholermann, 2017.

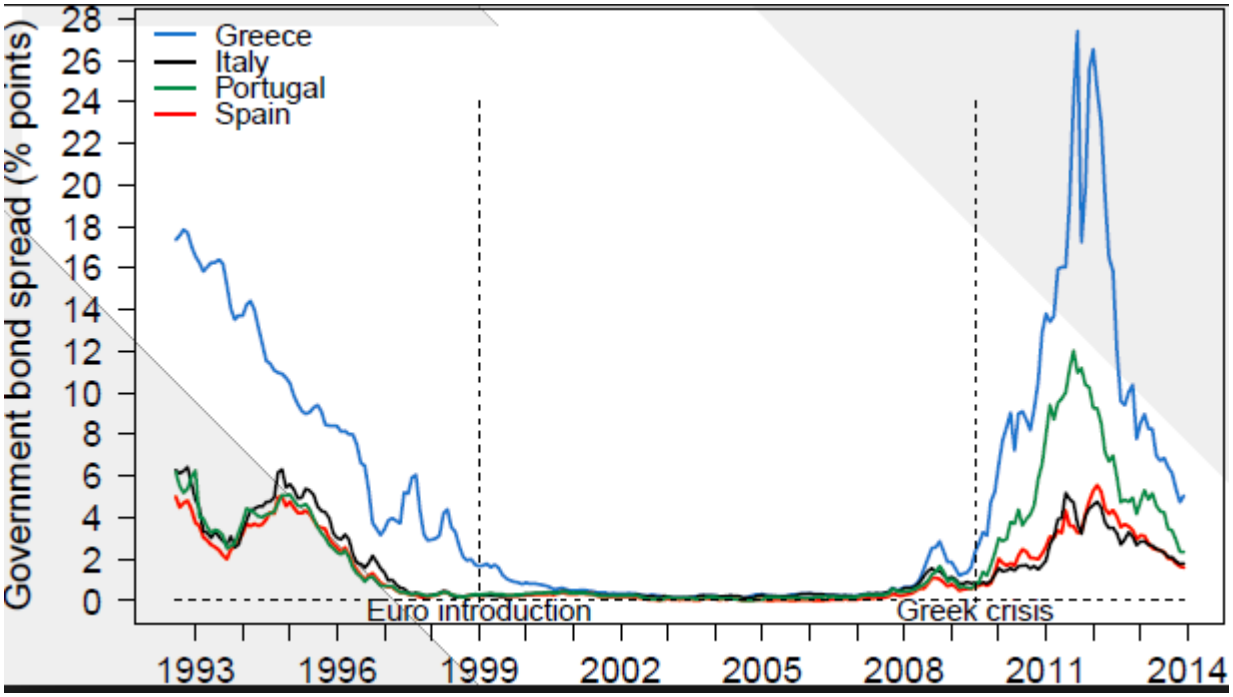
Expectation that institutional harmonisation and opening of markets would facilitate convergence in income per head to rich country levels.

Not validated for Greece/ Portugal/Spain.

Better description of experience of iron curtain countries who joined EZ later.

Current account deficits that accompanied high expectations of future income therefore reflected unwarranted borrowing, ex post.

Mis-pricing of risk, EZ style



Source: Kobierlaz, Urlas and Eijffinger (2015)

'Spread' means yield-yield on German government bonds.

High spread means markets either think risk free rate will be higher due to higher interest rates and inflation, or default risk is higher, or both.

Causes of high bond yields

- A high bond yield [low bond price relative to face value] due to:
  - High expected inflation
  - High uncertainty of bond price in the future, in turn due to uncertainty about central bank interest rates and inflation
  - High chance of outright default.

Peripheral EZ country yield compression

- Expectation that stability and growth pact rules would induce fiscal discipline
- Credibility problem with monetary policy solved [partly because of the above, ie no need to monetise debt]
- Expectation that residual risk would be shared out amongst members.
- All of these expectations to some degree invalid.

Re-emergence of peripheral EZ yield dispersion

- Fiscal discipline not as good as thought; aggravated by very low interest rates.
- Fiscal discipline anyway inadequate in face of large banking sector risks.
- Banking sector/govt risk divergence ignored by eg equal treatment by ECB of member state govt bonds as collateral.
- Possibility of EZ exit became real again, so crediblity of monetary and fiscal policy doubted.
- Realisation that fiscal risk sharing across EZ would be limited and may not prevent exit.

Rate cuts, QE, credit easing, forward guidance, bank regulation, EZ risk sharing, fiscal loosening….

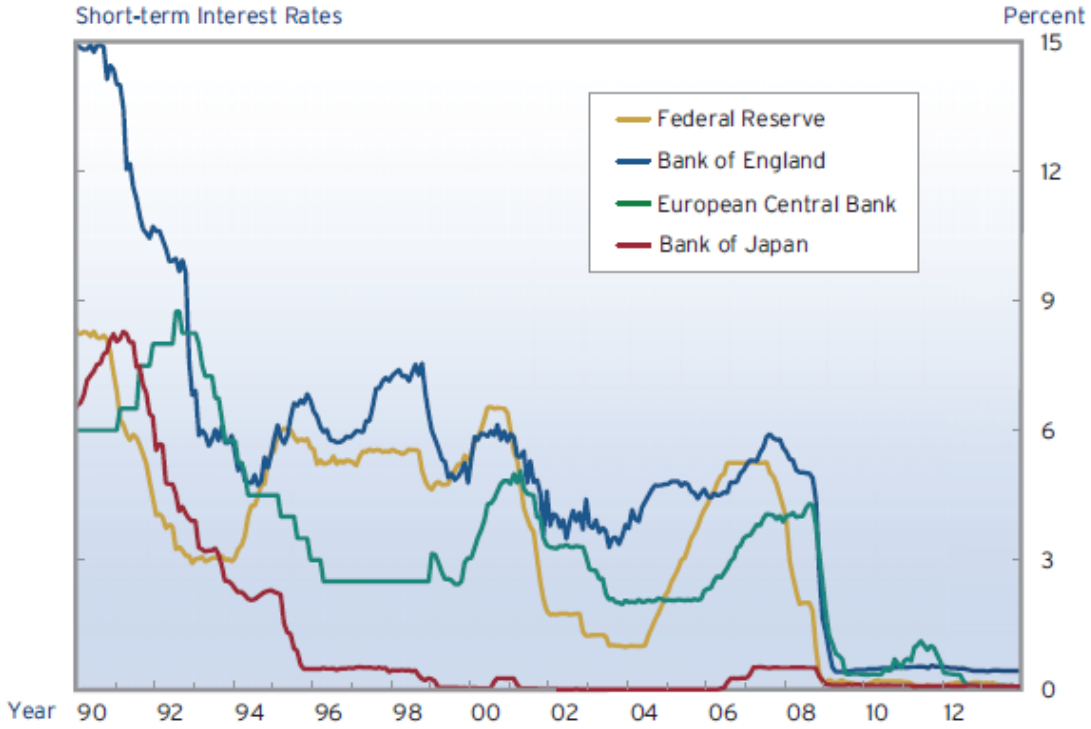
POLICY RESPONSES TO THE CRISIS

Crisis: responses

- Interest rates and the zero, or <0 bound!
- Quantitative easing
- Credit easing
- Forward guidance
- Discretionary fiscal stimulus
- Financial regulation
- Eurozone: breaking the doom-loop with fiscal union steps, banking union.

INTEREST RATES AND THE ZERO BOUND

FIGURE 1. The ZLB: Not Just an Academic Concern



Sources: Board of Governors of the Federal Reserve System (2013); Organisation for Economic Co-operation and Development (OECD; 2013).

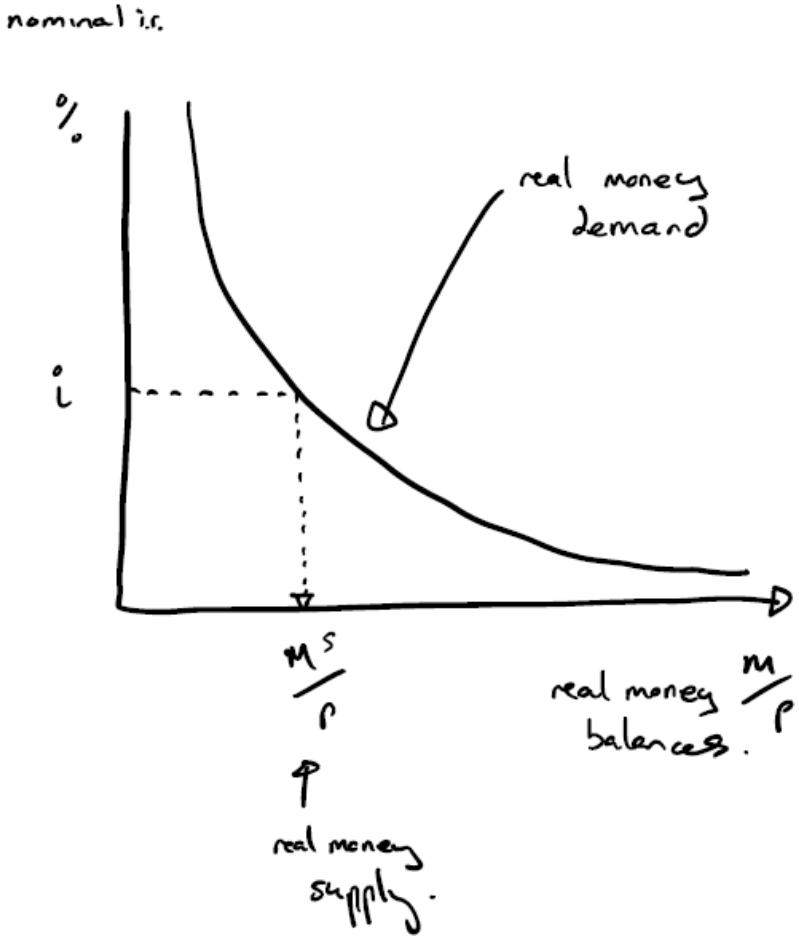
Central banks scrambled to cut their interest rates to the floor of 0.

Actually, subsequently they were cut to a little below zero.

Table 2: Effect of Altering the Shock-Process Sample Period on Estimated Probabilities of ZLB Events and Confidence Intervals for Projections of Interest Rates, Inflation and Real Activity, Hopping off from Conditions in 2007Q4[1]

	FRB/US	EDO	SW	LW	TVP-VAR	GARCH
Based on long sample ending in 2007[2]						
Probability of a ZLB event on or before 2012Q4	0.03	0.10	0.19	0.09	0.09	0.29
Probability of a 4-quarter ZLB event on or before 2012Q4	0.01	<0.01	<0.01	0.05	0.04	0.12
Probability of a 8-quarter ZLB event on or before 2012Q4	<0.01	<0.01	<0.01	0.01	0.01	0.03
95 percent confidence intervals for conditions in 2012Q4						
Federal funds rate	0.9, 8.8	0.3, 9.8	0.3, 9.3	0.2, 10.1	-0.1, 7.7	-1.6,10.2
Inflation rate	0.6, 4.0	-1.1, 6.2	-1.9, 6.4	-0.7, 5.7	-0.7, 5.7	
Output gap	-4.8, 4.9	-3.3, 2.9	-3.6, 5.1	-6.2, 4.6		
Unemployment rate	2.3, 7.8				2.9, 6.4	
Based on long sample ending in 2010[2]						
Probability of a ZLB event on or before 2012Q4	0.09	0.23	0.25	0.09	0.24	0.36
Probability of a 4-quarter ZLB event on or before 2012Q4	0.04	0.02	0.01	0.05	0.12	0.18
Probability of a 8-quarter ZLB event on or before 2012Q4	0.01	<0.01	<0.01	0.01	0.03	0.05
95 percent confidence intervals for conditions in 2012Q4						
Federal funds rate	0.2, 9.0	0.3, 9.4	0.3, 8.6	0.1, 10.2	-2.3, 9.8	-2.5,10.4
Inflation rate	0.4, 4.2	-1.7, 5.8	-2.3, 5.9	-0.7, 5.7	-1.6, 6.2	
Output gap	-5.3, 5.0	-3.4, 3.3	-4.5, 5.2	-6.4, 4.7		
Unemployment rate	2.1, 8.1				1.4, 8.2	
Based on 1984-2007 sample						
Probability of a ZLB event on or before 2012Q4	0.01	0.02	0.02	0.05		
Probability of a 4-quarter ZLB event on or before 2012Q4	<0.01	<0.01	<0.01	0.02		
Probability of a 8-quarter ZLB event on or before 2012Q4	<0.01	<0.01	<0.01	<0.01		
95 percent confidence intervals for conditions in 2012Q4						
Federal funds rate	1.3, 8.1	0.8, 7.0	1.7, 7.2	0.1, 9.1		
Inflation rate	0.8, 3.7	0.9, 3.7	0.1, 3.7	0.0, 5.0		
Output gap	-3.8, 3.9	-2.7, 1.5	-3.6, 4.4	-5.3, 3.8		
Unemployment rate	2.9, 7.3					

1. In all models, the federal funds rate follows an estimated equation. Estimates do not include the effects of uncertainty about parameters and latent variables.
2. The sample starts in 1968 except for LW, in which case the sample starts in 1961.



We saw this slide when thinking about how central banks used their monopoly control over the money supply to dictate the interest rate.

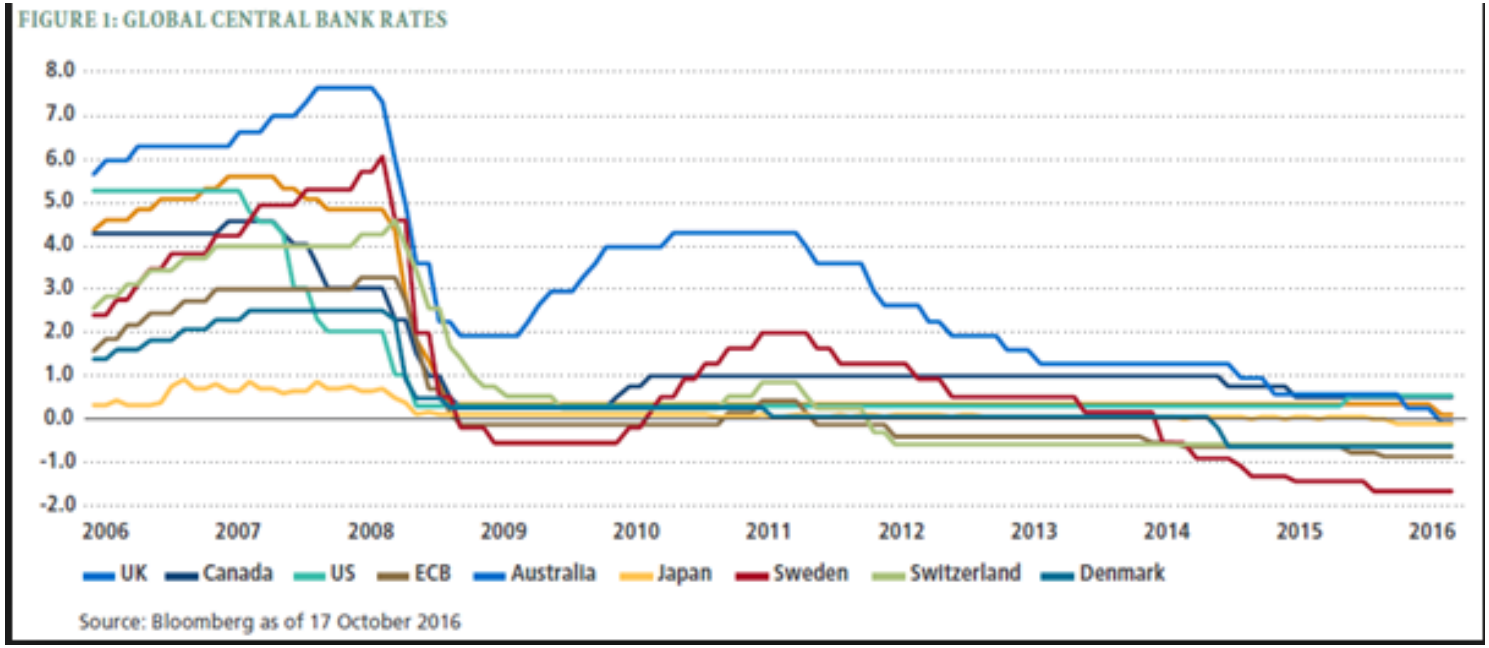
Note we drew the real money demand curve so it asymptoted at zero rates.

This is equivalent to saying ‘no matter how hard the central bank tries to expand the money supply, it can’t generate negative interest rates on risk free bonds.

Why is the zero bound zero?

- Central banks could lend at <0 interest rates. I would borrow from them at that. But it would be a gift.
- No bank would lend on at negative rates because they could get a better deal holding wealth as cash. [0%]
- Leads to one proposed solution: taxing cash. But that could cause chaos as notes trade at less than par, and by variable amounts.

But some rates did go <0!



Source: PIMCO 'Investing at negative interest rates'.

Managing large cash balances is costly. Needs security, space. Floor on rates is = the cost of managing cash balances.

Cash vaults cost money. Rent, or the opportunity cost of the rent.

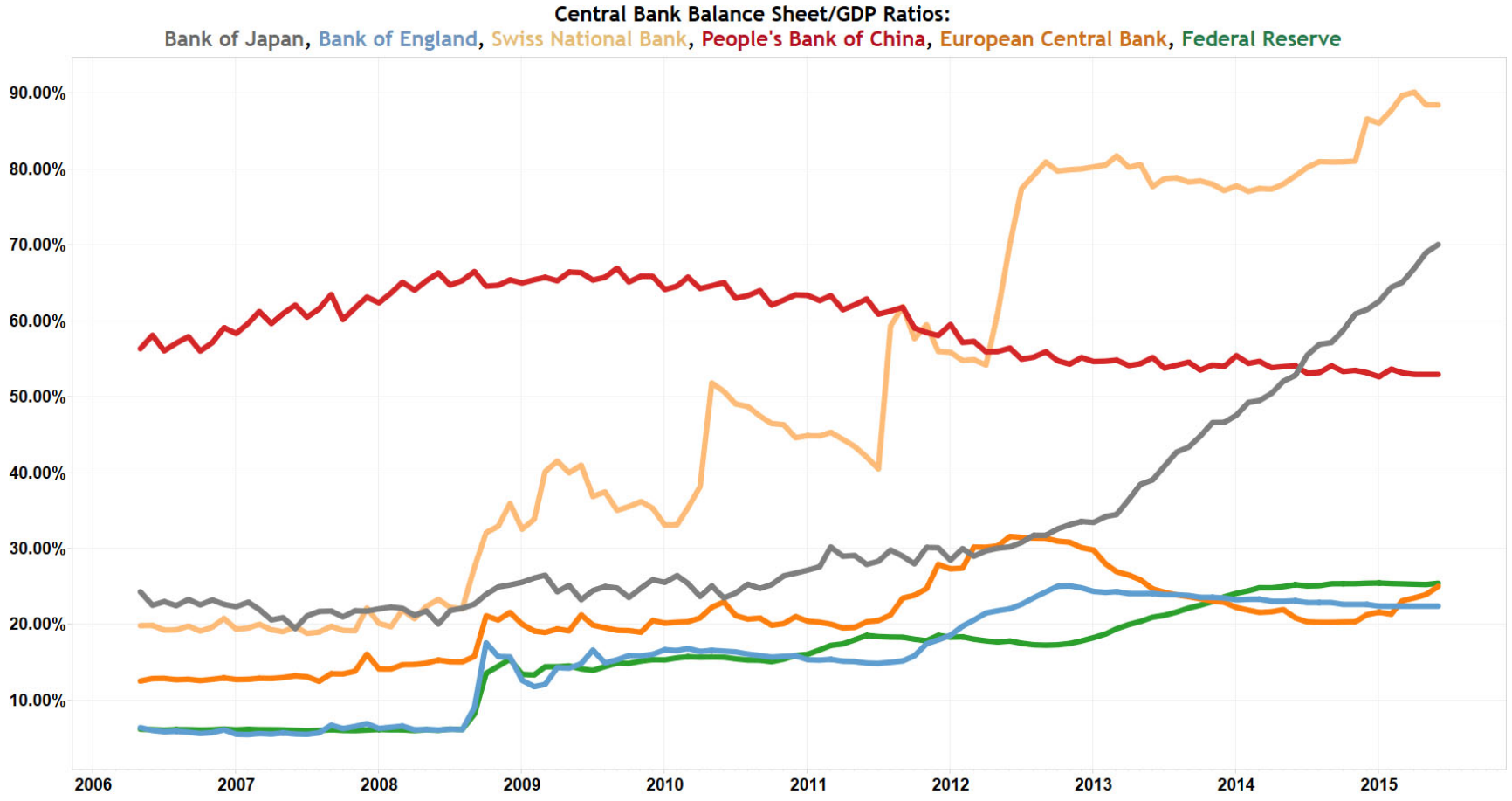
Cash management and trucking also costs money.

Why rates can go <0 again.

- Alternative banking system.
- To avoid negative interest rates, customers get out of ‘deposits’ and into ‘cash’ managed by banks.
- But the ‘cash managers’ [the new ‘banks’!] have to pass on the cash vault and security van charges.
- So rates can go <0 before this is an attractive option.

QE AND CREDIT EASING

Cbs improvise QE,etc



Source: 'National Inflation Association', which is 'preparing Americans for hyperinflation' (!)

QE and ‘credit easing’

- Central banks create electronic money, entries on equivalents to spreadsheets….. and use it to buy:
  - Longer term government bonds. [QE]
  - Debt issued by state-backed mortgage agencies in US.
  - Debt issued by private companies.
  - Shares.

QE and debt management

- Governments issue debt to finance expenditure they can't / won't cover out of tax revenues.
- But at what maturity?
- Debt management = choosing the maturity mix to minimise funding costs subject to other objectives, perhaps easing shortages.
- Govt debt= relatively safe asset=insurance for entities like pension funds who have to match pension liabilities.

QE and debt management

- DM=swapping short for long term government debt [or vice versa].
- QE=swapping electronic money for government debt.
- Similarity between the two, and view that DM did not have large effects [old research on ‘operation Twist’ in the US in the 1960s], meant we thought QE would have only a small effect.

QE transmission

- Not ‘pumping money in’ to raise prices. Note PT=MV working differently at the zlb.
- Cb buys government bonds and bids up their price, lowering the interest rate.
- Former holders shift money into other assets, bidding up their price.
- Cost of finance for companies and individuals falls.

QE of uncertain, moderate impact

TABLE 1. **Estimates of LSAP Effects on Longer-Term Interest Rates**

Study	Sample	Method	Representative estimates of effect of $600 billion LSAP (+2 std errors if avail.)
Modigliani-Sutch (1966, 1967)	Operation Twist	time series	0 bp (±20 bp)
Bernanke-Reinhart-Sack (2004)	Japan, United States	event study	400 bp (±370 bp), 40 bp (±60 bp)
Greenwood-Vayanos (2008)	postwar United States (precrisis)	time series	14 bp (±7 bp)
Krishnamurthy–Vissing-Jorgensen (2011, 2012)	postwar U.S., LSAP1, and LSAP2	time series	15 bp (±5 bp)
Gagnon-Raskin-Remache-Sack (2011)	LSAP1	event study, time series	30 bp (±15 bp), 18 bp (±7 bp)
D'Amico-King (2013)	LSAP1 Treasury purchases	security-specific event study	100 bp (±80 bp)
Hamilton-Wu (2011)	U.S., 1990–LSAP2	affine no-arbitrage model	17 bp
Hancock-Passmore (2011)	LSAP1 MBS purchases	time series	30 bp
Swanson (2011)	Operation Twist	event study	15 bp (±10 bp)
Joyce-Lasaosa-Stevens-Tong (2011)	U.K. LSAPs	event study, time series	40 bp
Neely (2013)	effect of U.S. LSAP1 on foreign bond yields	event study	17 bp (±13 bp)
Christensen-Rudebusch (2012)	LSAP1, LSAP2, and U.K. LSAPs	event study, affine no-arbitrage model	10 bp
D'Amico et al. (2012)	United States, precrisis	weekly time series	45 bp
Bauer-Rudebusch (forthcoming)	LSAP1, LSAP2	event study, affine no-arbitrage model	16 bp
Li-Wei (2013)	United States, precrisis	affine no-arbitrage model	26 bp

Note:
bp = basis point
LSAP1, LSAP2, etc. = large-scale asset purchase (LSAP) program 1, 2, etc.
MBS = mortgage-backed securities

Median effect is to reduce 10 year yields by 15-25 basis points=cut in FFR of 0.75-1pp.

This is for $600 billion.

But harder to tell if the impact was permanent.

Also some argue effect was 'signalling' about future rates, not 'portfolio balance'.

‘Credit easing: definition’

- Central bank takes private sector assets onto its balance sheet.
- Could be outright purchases.
- Or temporary.
- Distinct from QE= public sector assets.
- Ambiguity in the case of private sector bodies with implicit but ambiguous state backing, eg banks or very large corporates [General Motors].

Credit easing and 'Ricardian Equivalence'

- Public sector assumes private sector risk.
- Making good the risk requires future stream of tax and spending changes. [eg if a corporate bond defaults, need to tax someone to make good government accounts].
- If people perfectly anticipated this, and were indifferent to when and where taxes levied, credit easing would have no effect.
- [Which is why in real life it works!]

Credit easing

- Trade off:
  - A) impact: private sector assets are less good substitutes for money, so impact of buying them on prices is greater. Involves risk transfer which may be stimulative for private sector.
  - B) involves the central bank in credit allocation. Accusations of cronyism; balance sheet risk involves government and may compromise independence.

Credit easing and the ECB

- ECB did credit easing [buying corporate bonds] in preference to government bonds.
- Turned to govt bonds when it ran out of the former.
- Avoided political economy and constitutional problems of buying member state bonds [eg some sovereigns like Greece not considered safe].

Eg: BoE Special Liquidity Scheme

- Swap high grade mortgage backed securities for short term government bonds 'Treasury Bills'
- Risk of default on the MBS stayed with banks.
- But BoE exposed if the bank itself goes under.
- Swap would be unwound after a maximum of 3 years.
- =temporary credit easing.

Eg Fed TALF

- Term Asset Backed Securities Loan Facility
- Fed lends money to those willing to buy Asset Backed Securities backed by new auto loans and those guaranteed by Small Business Administration.
- ABS markets had closed during the early phase of the crisis due to uncertainty about quality.

Forward guidance

- If interest rates stuck at 0, instead lower longer term rates by making promises about short term rates being lower for longer.
- Involves corresponding inflation target overshoot.
- Credibility problem: later on, when overshoot threatens, backtrack.

2 types of Forward Guidance

- Odyssian
  - Commitment to lower rates than would otherwise be rational for the cb.
- Delphic
  - Clarification about what will happen to future rates if things evolve as cb currently sees it.

UK forward guidance chaos

- =A mess!
- HMT asks BoE to review its use in early 2013.
- When Carney assumes BoE role, economy has heated up and MPC no longer want any stimulus.
- Carney persuades MPC to use FG anyway.
- No rate increases until u/e<7%.
- Confusion: it will ‘secure the recovery’, but declared not stimulative. Just clarifying.
- Confused further by rapid falls in u/e without improved inflation outlook. [due to natural rate falls?].

Automatic stabilisers and discretionary fiscal stimulus

FISCAL STIMULUS

Automatic stabilisers vs discretionary stimulus

- Automatic stabilisers
  - Given existing tax and spending laws, tendency for recession to hit tax revenues [incomes, spending and profits fall] and boost benefit spending [unemployment, low income benefits rise]
- Discretionary fiscal stimulus
  - Change in laws/plans to increase spending and or cut taxees.

Table 1.1a. Fiscal Balances, 2008–15: Overall Balance

(Percent of GDP)

	2008	2009	2010	2011	2012	2013
World[1,3]	–2.2	–7.3	–6.0	–4.3	–3.9	–3.2
Advanced Economies[1]	–3.6	–9.0	–7.8	–6.5	–5.8	–4.3
United States[1]	–7.0	–13.5	–11.3	–9.9	–8.6	–5.8
Euro Area	–2.1	–6.3	–6.2	–4.1	–3.7	–3.0
France	–3.2	–7.2	–6.8	–5.1	–4.9	–4.2
Germany	–0.1	–3.1	–4.2	–0.8	0.1	0.2
Greece	–9.9	–15.6	–11.0	–9.6	–6.4	–3.2
Ireland[2]	–7.1	–13.2	–29.3	–12.5	–7.8	–6.7
Italy	–2.7	–5.4	–4.4	–3.6	–2.9	–3.0
Portugal	–3.7	–10.2	–9.9	–4.3	–6.5	–5.0
Spain[2]	–4.5	–11.1	–9.6	–9.6	–10.6	–7.1
Japan	–4.1	–10.4	–9.3	–9.8	–8.7	–8.2
United Kingdom	–5.0	–11.3	–10.0	–7.8	–8.0	–5.8
Canada	–0.3	–4.5	–4.9	–3.7	–3.4	–3.0
Others	2.5	–0.9	–0.2	0.4	0.4	0.1

Western countries allow spending to exceed revenue by more and more, consolidating afterward.

Source: IMF(2014), ‘Back to work: how fiscal policy can help’, fiscal monitor 2014,2, p2

Table 1.2. General Government Debt, 2008–15

(Percent of GDP)

	2008	2009	2010	2011	2012	2013
Gross Debt						
World[1]	65.5	75.9	78.3	79.2	81.1	79.7
Advanced Economies	79.4	92.8	99.3	103.3	107.6	106.2
United States[2]	72.8	86.1	94.8	99.0	102.5	104.2
Euro Area	70.3	80.2	85.9	88.3	92.9	95.2
France	67.0	78.0	80.8	84.4	88.7	91.8
Germany	66.8	74.6	82.5	80.0	81.0	78.4
Greece	112.9	129.7	148.3	170.3	157.2	175.1
Ireland	42.6	62.2	87.4	98.9	111.4	116.1
Italy	106.1	116.4	119.3	120.7	127.0	132.5
Portugal	71.7	83.7	94.0	108.2	124.1	128.9
Spain	40.2	54.0	61.7	70.5	85.9	93.9
Japan	191.8	210.2	216.0	229.8	237.3	243.2
United Kingdom	51.9	67.1	78.5	84.3	89.1	90.6
Canada[2]	70.8	83.0	84.6	85.9	88.1	88.8

Source: IMF(2014), 'Back to work: how fiscal policy can help', fiscal monitor 2014,2, p4

UK: debt/GDP almost doubles.

Greece: goes from 112 to 170 per cent of GDP.

UK ‘austerity debate’

- Deficit grew to >10% of GDP per annum by 2010.
- 2010 election: Tory-LibDem coalition took over.
- Political divide over ‘austerity’.
- Pro: concerted closing of deficit needed to avert Greek style fiscal crisis. ‘Expansionary austerity’ [Reinhardt-Rogoff / others]
- Anti: this is pro-cyclical [ie recession-amplifying]

The multiplier

- Many estimates: 0<multiplier<3.5 [!]
- This refers to: (change in GDP/change in G) calculated at or over some horizon.
- Idea: potential output slow to move, so multiplier is about change in demand.
- Very hard to measure / identify.
- Size and immediacy will vary according to the tool used.
- Evidence that it is greater in recessions than away from it.
- Theoretically-based notion that it will be higher at the zero floor to interest rates.

TABLE 4. FISCAL MULTIPLIERS OVER THE BUSINESS CYCLE

	Spending			Revenue		
	Expansion	Linear	Recession	Expansion	Linear	Recession
Auerbach and Gorodnichenko (2012a), United States, 6 quarters	0	0.4	1.7	N/A	N/A	N/A
Auerbach and Gorodnichenko (2012b), OECD, first year	–0.2	0.2	0.5	N/A	N/A	N/A
Auerbach and Gorodnichenko (2014), Japan, 4 quarters[a]	1	1.2	2.4	N/A	N/A	N/A
Batini and others (2012), 4 quarters[b]	0.82	0.93	2.08	–0.08	–0.17	0.08
Baum and others (2012), 4 quarters[c]	0.72	0.79	1.22	–0.04	0.29	0.35
Canzoneri and others, 2012, DSGE, United States, impact multiplier	0.89	1.3	2.25	N/A	N/A	N/A
Hernandez de Cos and Moral-Benito (2013), Spain, 4 quarters[d]	0.6	0.65	1.3	N/A	N/A	N/A
Owyang, Ramey, Zubairy (2013), United States, 2 year multipliers[e]	0.7	N/A	0.8	N/A	N/A	N/A
Owyang, Ramey, Zubairy (2013), Canada, 2 year multipliers[e]	0.4	N/A	1.6	N/A	N/A	N/A

[a]Using deviation of output from HP trend as measure of business cycle.
[b]Average of all countries in sample (including euro area).
[c]Average of G6 in sample.
[d]Using output gap to define expansions and recessions.
[e]Regimes reflect high and low employment.

Estimates of the multiplier vary a lot by instrument, country, time period. Often <1.

Source
: Batini et al (2014) [IMF] 'Fiscal multipliers: Size, determinants and use in Macro Projections'

Multiplier and the zero bound

- No missing stimulus → policy will tighten to offset short-run macro impact.
- If desired rates < zero floor, central bank will welcome the extra stimulus.
- Eg in 2009, Fed estimated that desired stimulus was for rates at about -8%!
- Analysis excludes QE.
- QE may have diminishing returns / increasing costs, generating a maximum, and a missing stimulus.

2 views of UK ‘austerity’

- 1: History of rule-breaking and rule-less-ness in UK fiscal policy led to fear that large fiscal stimulus in the crisis would leave us ‘like Greece’
- 2: Consolidation was opportunistic right wing attempt to shrink the state [hence focused on reducing spending, not increasing taxes].
- Remark: Delegation of macro stability to BoE ultimately futile: at zero bound, power to stimulate falls back with the Treasury.

FINANCIAL STABILITY POLICY RESPONSES

UK financial policy responses

- [See lecture 2 on current financial stability policy.]
- Institutional changes.
- Bank capital and macro-prudential policy.
- Asset side regulation.
- Resolution regime.

UK institutional changes

- Financial Services Authority disbanded; seen as complicit over Northern Rock [and everything!].
- Was created in 1997 as supervision taken off newly independent BoE [following failures over BCCI].
- New Prudential Regulatory Authority under BoE.
- Financial Policy Committee [mirroring MPC].

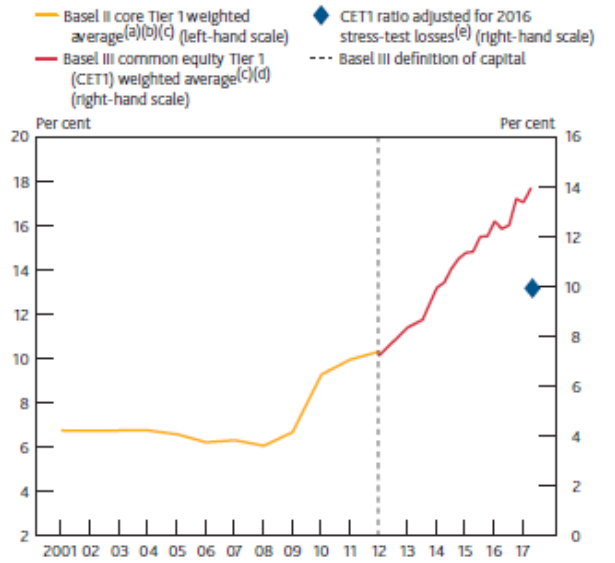
2 views of the institutional changes

- Cynical view=chair shuffling to make it look like the last govt's approach was the problem.
- Substantive view: distance between FSA and BoE inhibited informational synergies and complicated crisis management.

Increasing bank capital [equity]

Chart A Major UK banks have continued to strengthen their capital positions

Major UK banks' capital ratios



Sources: PRA regulatory returns, published accounts and Bank calculations.

(a) Major UK banks' core Tier 1 capital as a percentage of their risk-weighted assets. Major UK banks are Banco Santander, Bank of Ireland, Barclays, Co-operative Banking Group, HSBC, Lloyds Banking Group, National Australia Bank, Nationwide, RBS and Virgin Money. Data exclude Northern Rock/Virgin Money from 2008.
(b) Between 2008 and 2011, the chart shows core Tier 1 ratios as published by banks, excluding hybrid capital instruments and making deductions from capital based on FSA definitions. Prior to 2008 that measure was not typically disclosed; the chart shows Bank calculations approximating it as previously published in the *Report*.
(c) Weighted by risk-weighted assets.
(d) From 2012, the 'Basel III common equity Tier 1 capital ratio' is calculated as common equity Tier 1 capital over risk-weighted assets, according to the CRD IV definition as implemented in the United Kingdom. The Basel III peer group includes Barclays, Co-operative Banking Group, HSBC, Lloyds Banking Group, Nationwide, RBS and Santander UK.
(e) CET1 ratio less the aggregate percentage point fall projected under the Bank of England's 2016 annual cyclical stress scenario for the six largest UK banks.

Partly because of tighter international standards codified in Basel 3 agreement, large UK banks have rebuilt capital, through retained earnings.

Chart shows capital measure as a proportion of assets, weighted by riskiness.

Oversight of the 'risk weighting' also increased.

Macro-prudential policy

- In a boom, tighten capital requirements, restrict high LTV loans.
- In a slump, do the opposite.
- Spain had ‘dynamic provisioning’, a form of macro pru, but this did not help in the face of an enormous credit financed construction boom.
- Debate about how invasive it is feasible and efficient for policy-makers to be.

Resolution regime

- Property rights in a democracy preclude the government being able to expropriate your shares and direct your company.
- Resolution regime enables just that, if the regulators decide the bank is at risk, and poses a threat to the financial system.
- Intrusion counters the systemic risk externality, and the subsidies that banks extract.

EUROZONE CRISIS RESPONSES

Eurozone crisis responses

- Many of the other responses we already talked about, and…
- ‘Whatever it takes’: ECB’s Outright Monetary Transactions.
- Banking Union.
- European Stability Mechanism.
- Remember issues were: doom-loop; speculation about Euro exit; lack of risk-sharing.

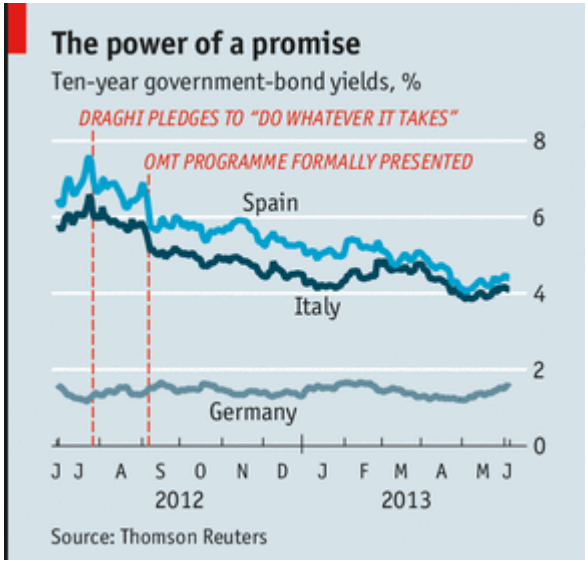
“Whatever it takes”

- Famous speech by Mario Draghi, ECB President, 26.7.2012.
- Intention to purchase in potentially unlimited quantities, short term government bonds
- If there was evidence of spurious ‘redenomination risk’ [ie pricing in chance of Euro exit
- And if country was in an ESF program.

ESF and OMTs

- European Stability Fund program was a program implying loans conditional on structural reform.
- Needed to make sure there was no residual fiscal risk taken on by the ECB
- Name ‘monetary’ in OMT emphasises this.
- Related to Libson Treaty prohibition on monetary financing.

Effect of OMTs



Source: The Economist 8.6.2013

If Spain or Italy had got caught in a Greek like doom loop, the Euro would have disintegrated.

Both countries are too big to save.

OMTs had big effect on yields in both countries, reducing estimates of a chance of exit.

Widely credited as having saved the Euro.

But, I think there is a fair argument that it was a bluff.

OMTs were a bluff IMO

- ‘Unlimited’ quantities of purchases would expose the ECB to unlimited losses.
- These would have to be made good by solvent sovereigns who stand behind ECB.
- No political support for making good those losses.
- So the promise to do unlimited q’s in any situation except one where there was no risk was not credible.
- But markets believed it.
- See my blog for more.

Super Mario who saved the Euro?

Draghi's term as President ends in 2019.

Speculation that the next Chair might be Jens Weidmann, Governor of the Bundesbank. Weidmann has highly conservative views on QE, OMTs etc.

Germans have not yet had a go at being President, yet were the original custodians of sound monetary policy in Europe.

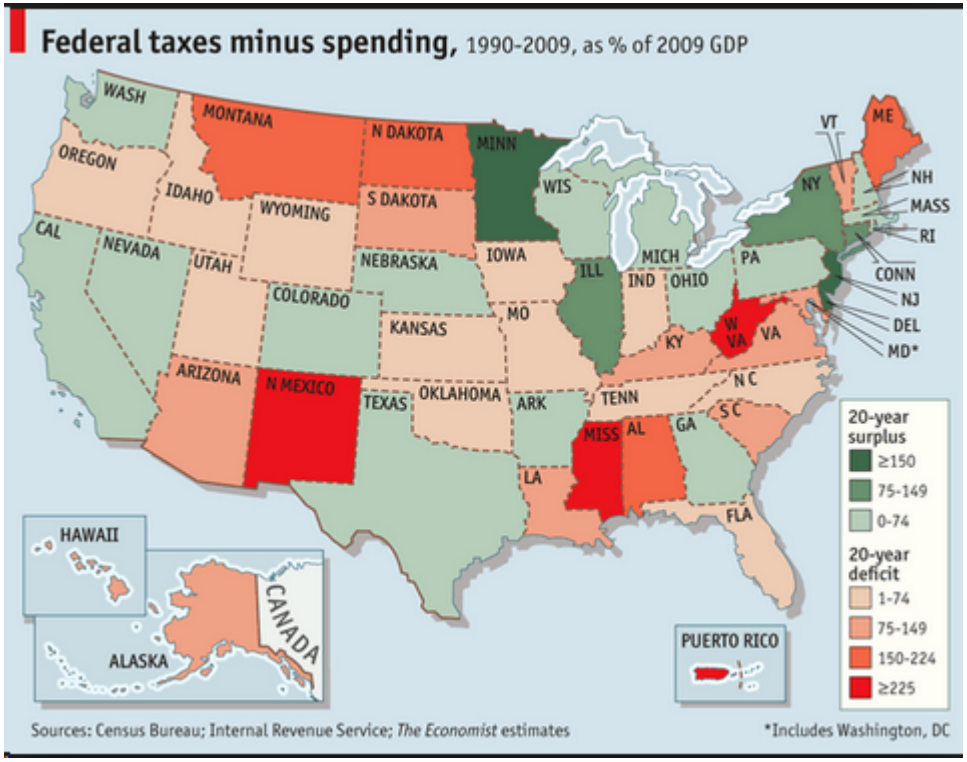
Banking Union

- Sovereign-bank doom-loop almost sank the Euro.
- Banking Union: a pot of money E5bn to which all contribute, standing behind banks, in return for delegating supervision up to ECB.
- Fund is small. <UK injections in to its own banks.
- This is partial mutualisation of some of the fiscal risks in the Euro Area.

Case for a full transfer union

- Member states denied ability to stimulate their way out of a country specific recession with monetary policy.
- Stability and Growth pact inhibits compensating fiscal response.
- In a normal currency union like US / UK centrally financed automatic stabilisers would be triggered by a recession in one region.

Federal fiscal transfers in the US currency union



Source: [The Economist 1.8.2011]

Long 20 year net Federal transfers from green states to red states in the US.

Can a currency union survive without this?

Macron wants to continue journey to ‘ever closer union’.

Germans less enthusiastic as they are the creditors.

Anti-EZ populist parties in Fr, It, Nth, Ger, Austria, Hungary, Poland.

READING, SOURCES

Reading, sources

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- Admati+Hellwig 'The bankers new clothes. What's wrong with banks and what to do about it.' Princeton University Press.
- Bank of England Financial Stability Report [various].
- Nice intro to chaos theory by Geoff Boeing.
- Does God play dice? The new maths. of Chaos by Ian Stewart

Reading

- Charles Bean [ex BoE deputy Gov] ‘Monetary policy after the fall’, 2011.
- Mark Carney ‘ The future of financial stability reform’, speech to Financial Stability Board, 2014.