Monetary Policy after the Fall from Grace

PhD Conference in Monetary and Financial Economics at UWE

Jagjit S. Chadha

Kent, Cambridge and Gresham

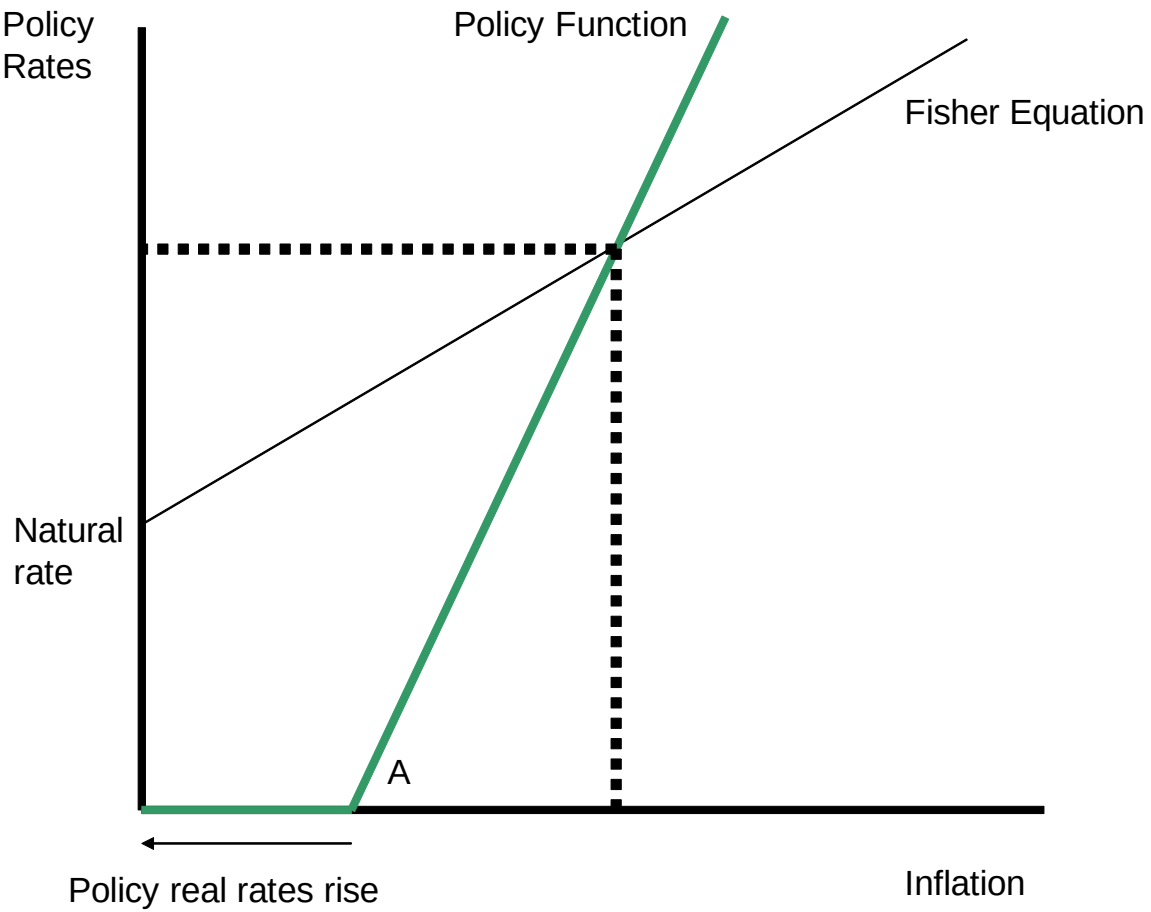
Kent

29th June 2015

Outline of Arguments

- Monetary policy turned out to be constrained at the zero lower bound leading to rediscovery of the importance of open market operations
- Fiscal policy helped aggregate demand but also to recapitalise banks i.e. fiscal 'backstop' s.t. borrowing constraints
- Banks are maturity transformers and have insufficient liquidity/capital in the event of risk aversion and may require control via macro-prudential instruments
- Balance sheet operations expand the size and composition of the central bank balance sheet and reduce the duration of financial markets' bond holdings and increase liquidity
- Involve the issuance of short term debt-fiscal instruments (interest rate bearing reserves or T-Bills)
- Monetary-fiscal operations hedge liquidity risk but in the presence of significant sovereign risk - not clear whether operations involve some signalling about path of short rates -
- **Question: what will the new policy nexus look like?**

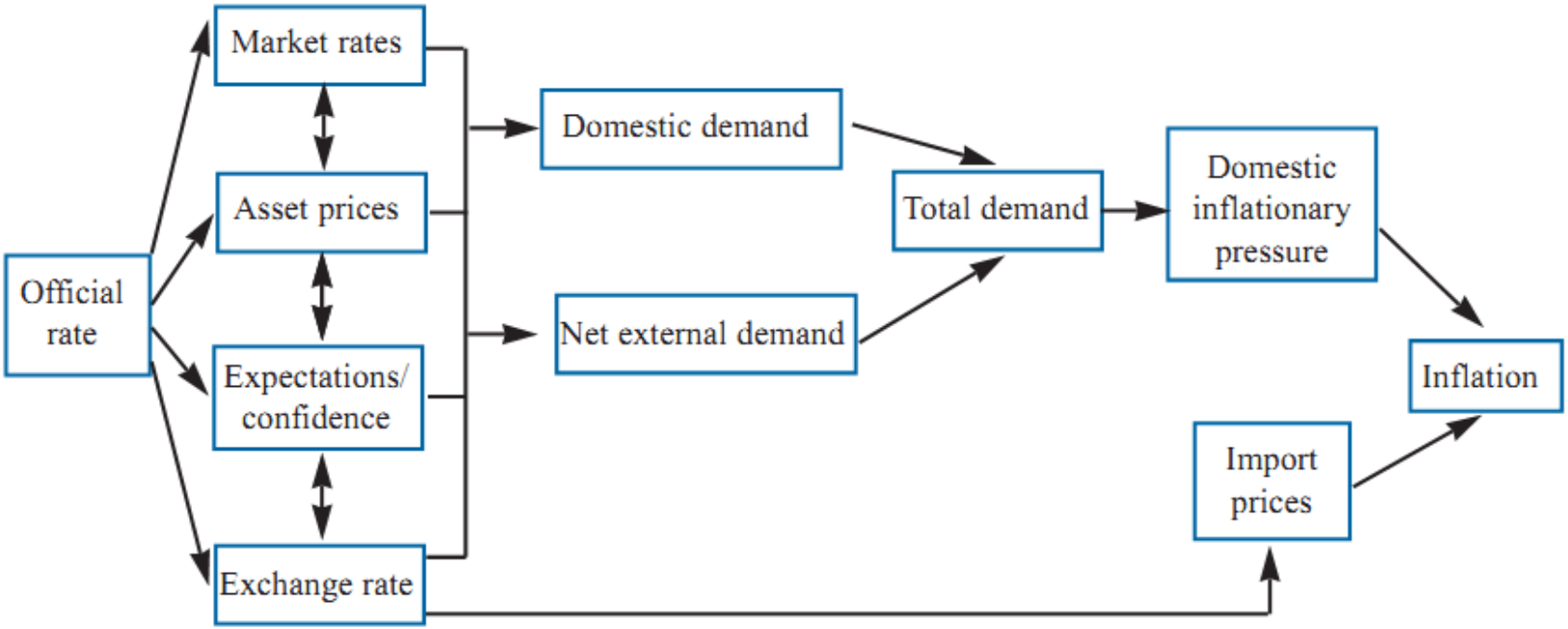
I Simple Monetary Policy and the Zero Lower Bound



- Policy Rate sufficient statistic to stabilise output and inflation
- Asset prices, bank behaviour, debt, gearing all missing - see Chadha (2010)
- Zero Lower bound expected 2% of the time, Bean (2003)

The Traditional Monetary Policy Transmission Mechanism

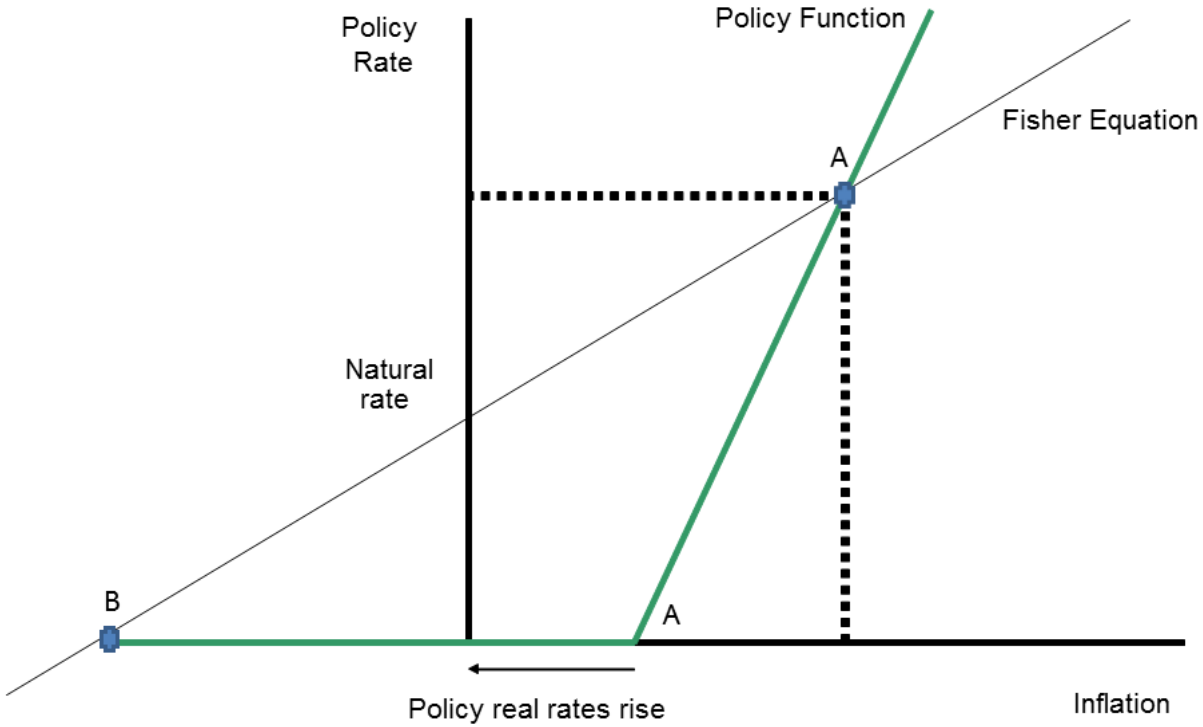
The transmission mechanism of monetary policy



Note: For simplicity, this figure does not show all interactions between variables, but these can be important.

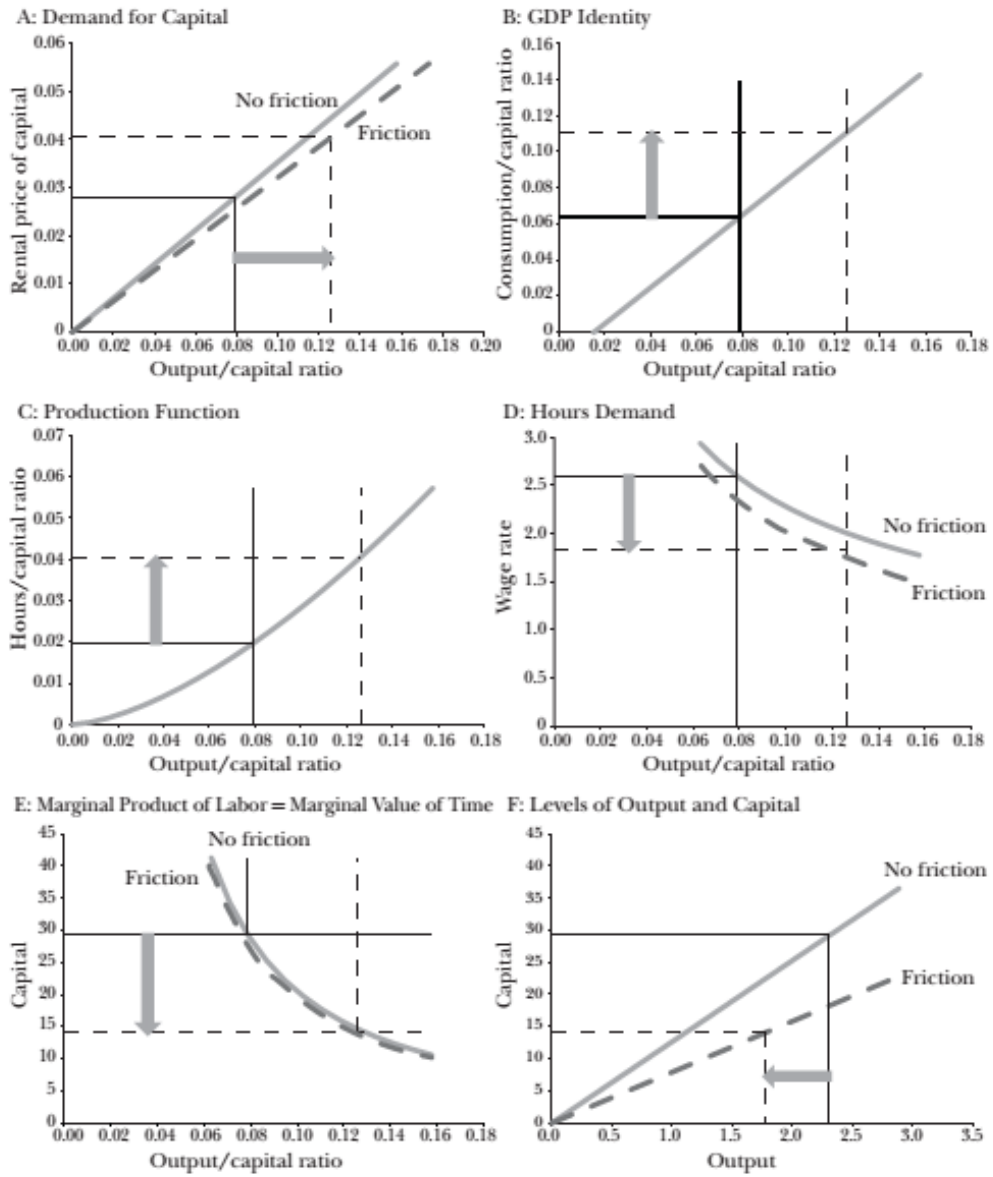
- Source: MPC 1999 report to the Treasury Committee
- Not a lot about banks, money or asset prices - key element of the MTM.

Not So Simple Monetary Policy



- Are we in the worse state (B) or does the line (AA) continue South West without truncation because of balance sheet policies?

II Finance Premia



Case Study: The UK Recession

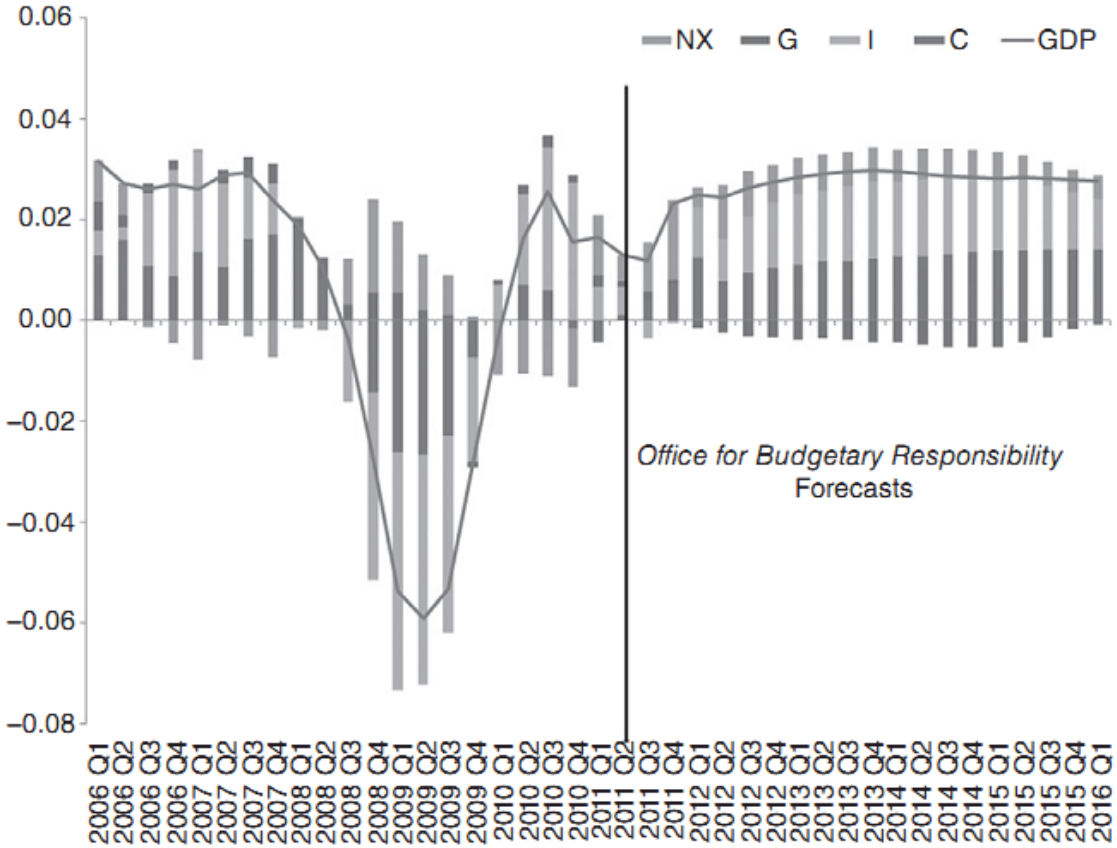


FIG. 1. Expenditure Decomposition

- Consumption and investment fall together - see Chadha and Warren (2012)

Using Wedges to Understand

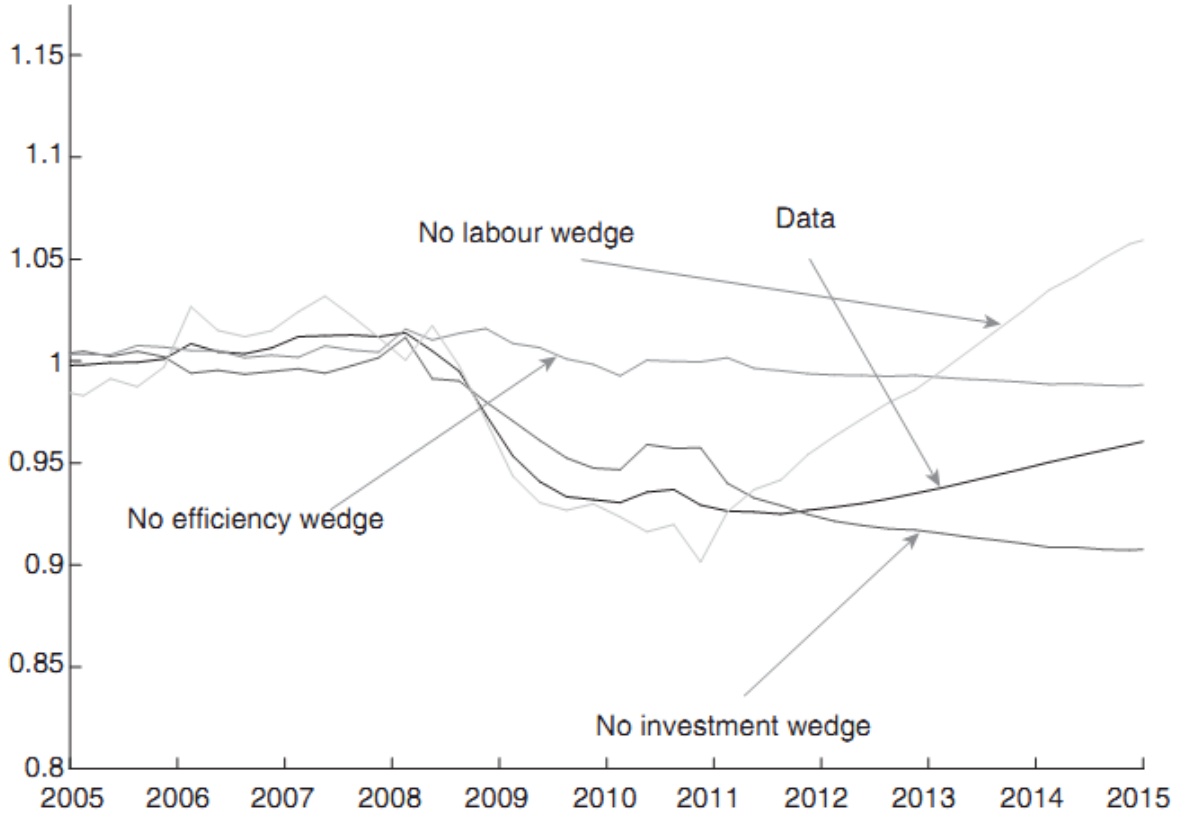
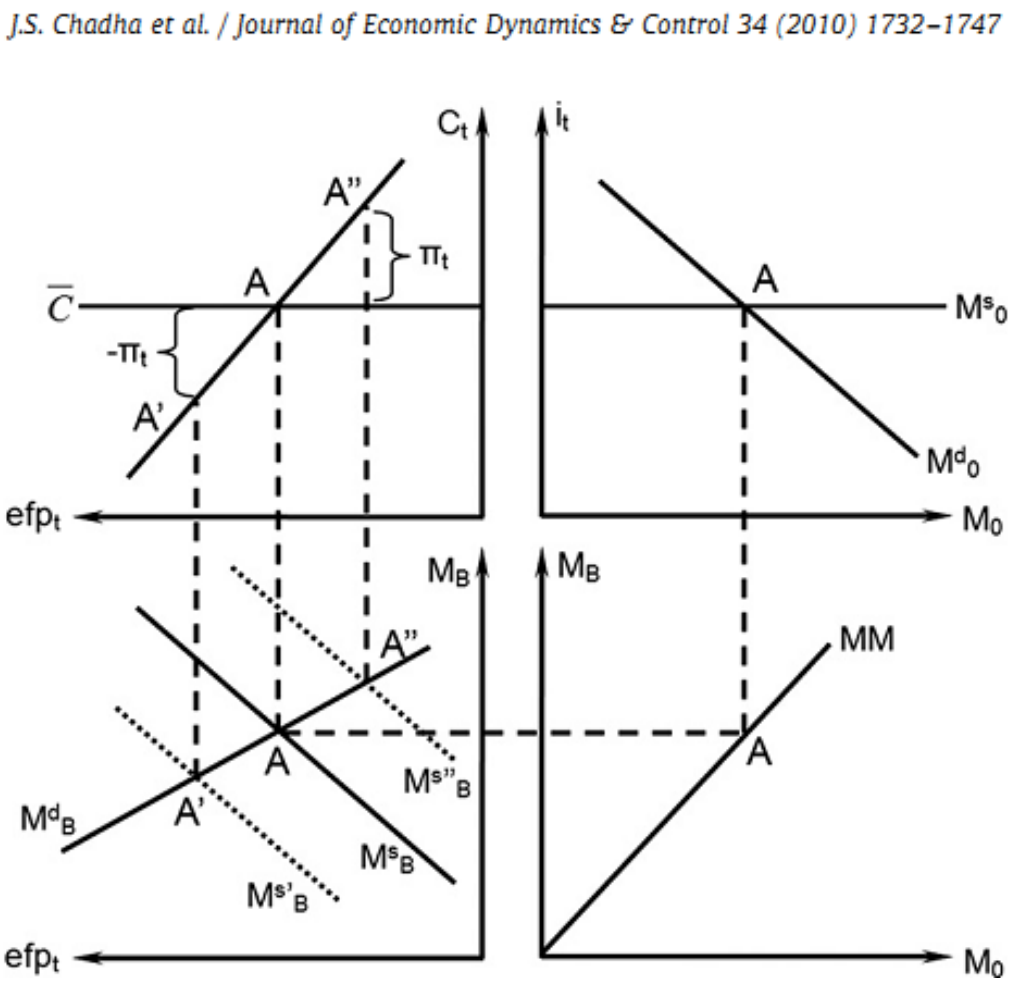


FIG. 3. BCA Decomposition with All but One Wedge to Vary over Time

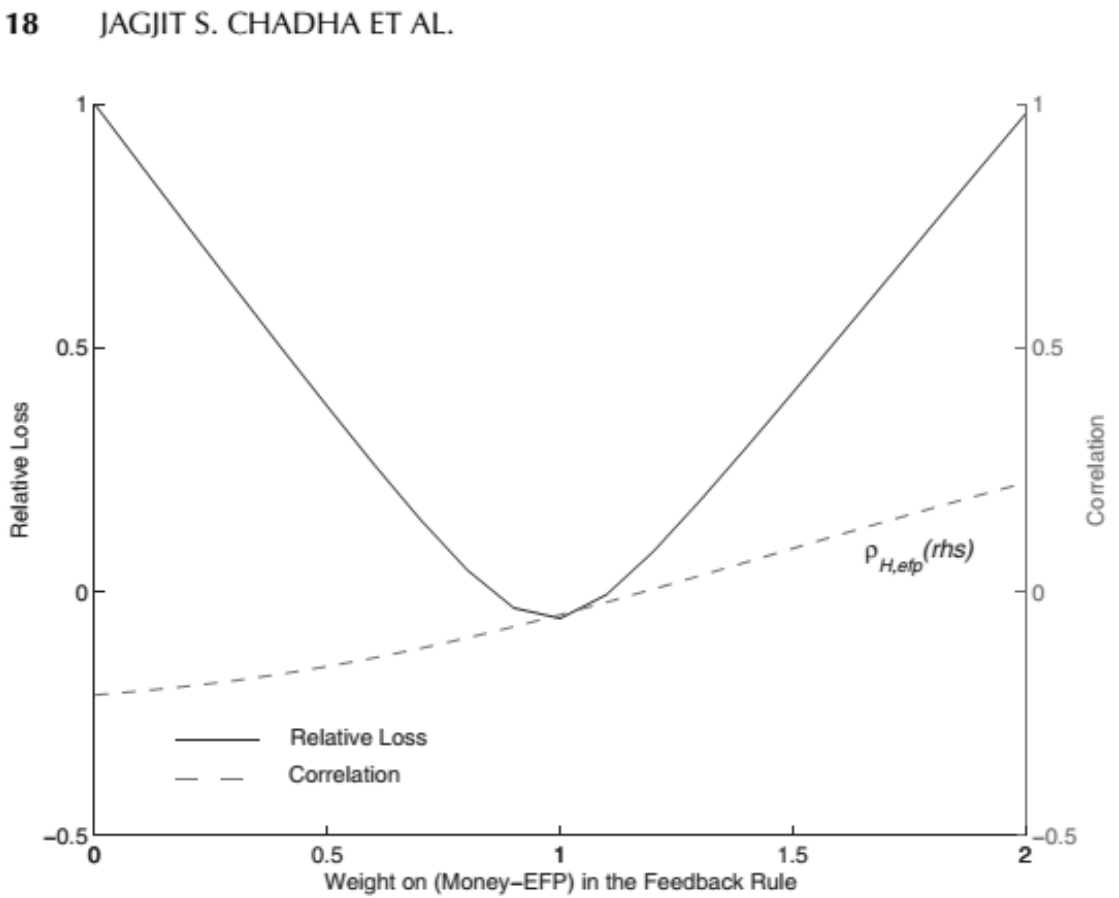
- It is all efficiency and if we simulate a BGG - financial accelerator model - and run a decomposition it is demand or supply?

III External Finance Premia



- Asset prices, money and demand can have a life of their own! See Chadha at al. (2010) and feedback to the economy.

Money and the EFP



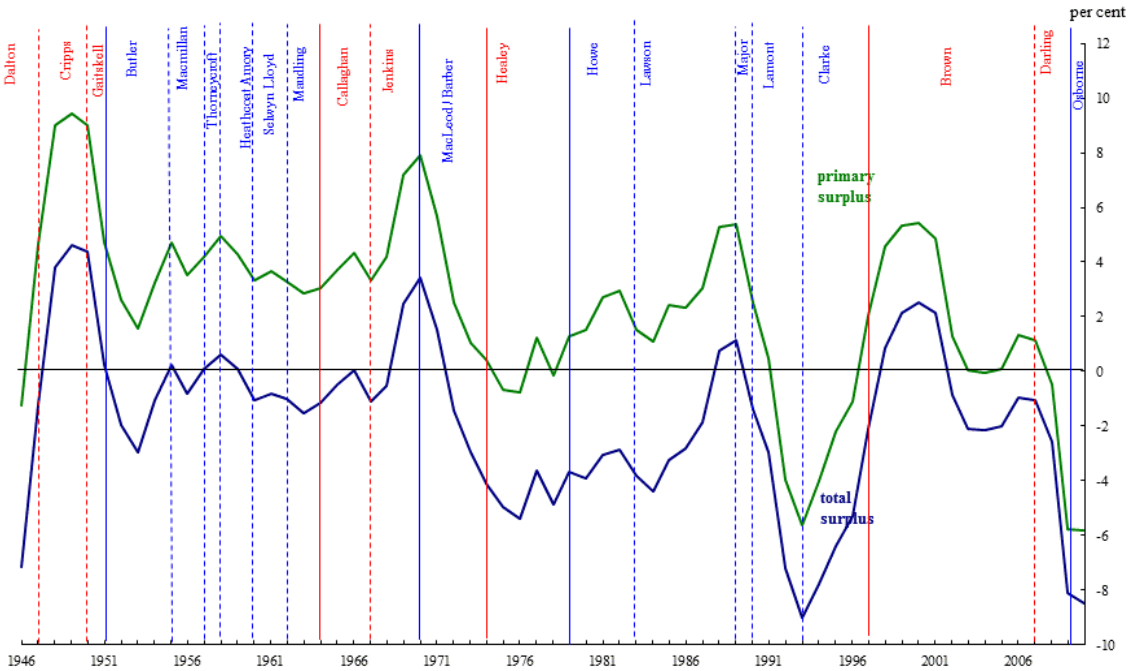
- Welfare losses are minimised when information from deposits are squeezed out. See Chadha et al. (2013). But more importantly feedback from market interest rates changes the path of Bank Rate.

IV: Fiscal Policy and Debt Management

- Fund public expenditures with portfolio mixture of short-long-nominal-real debt ∴
- Too short - then debt st interest rate risk
- Too long - then debt pays term premium and faces lumpy rollover
- Too nominal - then face real payments uncertainty
- Too real - then face nominal payments uncertainty
- $\Rightarrow$ Also offset bank liquidity risk by temporary swap of more illiquid govvies for reserves
- Consider optimal allocation of debt. Now increase liquidity risk for private sector. Illiquid asset prices fall and liquid ones rise. Selling reserves and buying illiquid assets offsets the liquidity shock.

Coalition versus New Labour

General government financial surplus 1946-2010
(% of GNP)



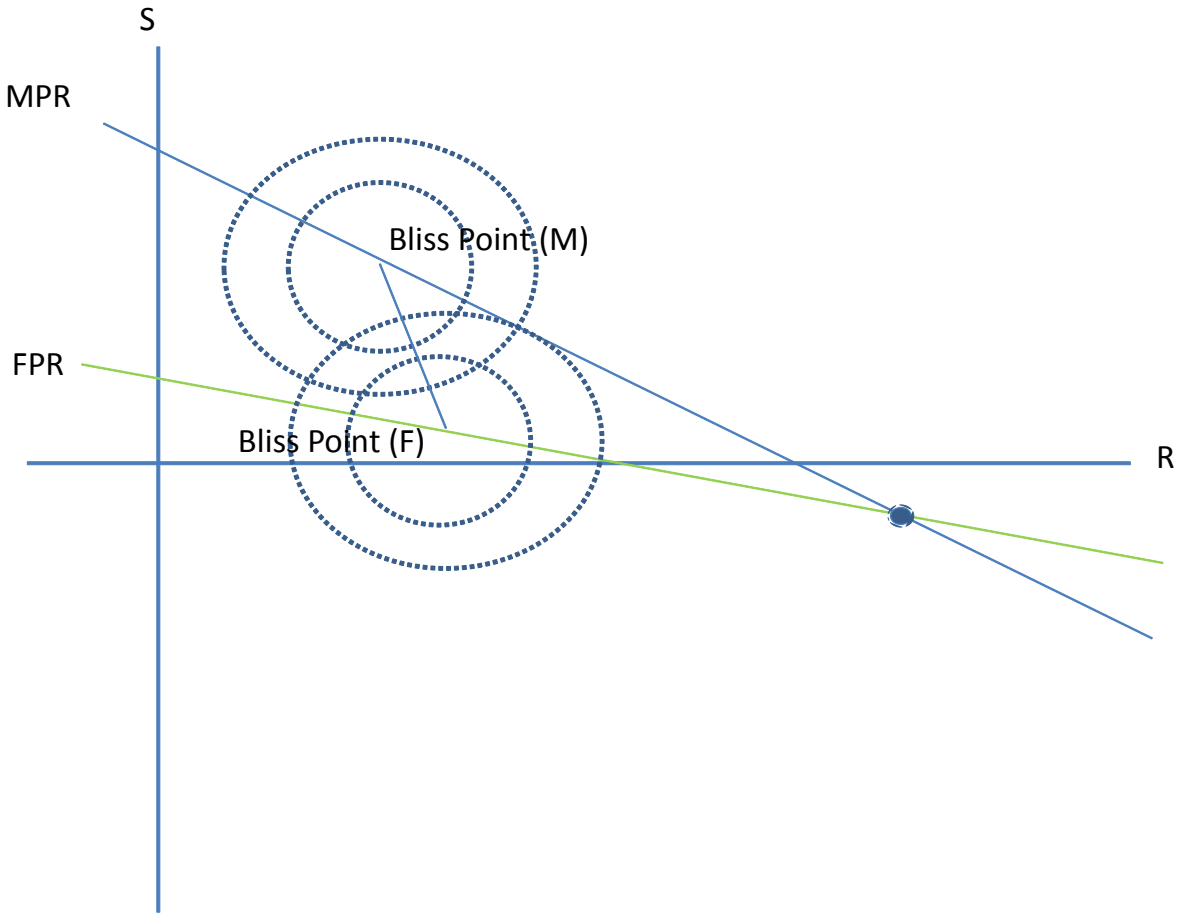
- Note the response to the 'debt overhang' after WWII.

Debt Reduction Strategy

UK and United States: Debt Dynamics after World War II							
(Percent of GDP)							
		Interest	Inflation	GDP growth	Primary balance	Residual	Change in Debt
1946–51	USA	2.02	-6.57	-3.61	-4.01	2.97	-9.2
	UK	5.32	-3.78	-1.60	-5.93	-0.73	-6.71
1951–56	USA	1.67	-0.65	-2.44	-1.73	0.56	-2.58
	UK	4.49	-5.50	-2.61	-3.39	-4.76	-11.77
1956–61	USA	1.83	-1.13	-1.52	-0.64	-0.4	-1.86
	UK	4.30	-2.80	-2.54	-3.98	-2.00	-7.01
1946–61	USA	1.84	-2.78	-2.52	-2.13	1.04	-4.55
	UK	4.45	-3.41	-2.19	-4.21	-2.31	-7.67

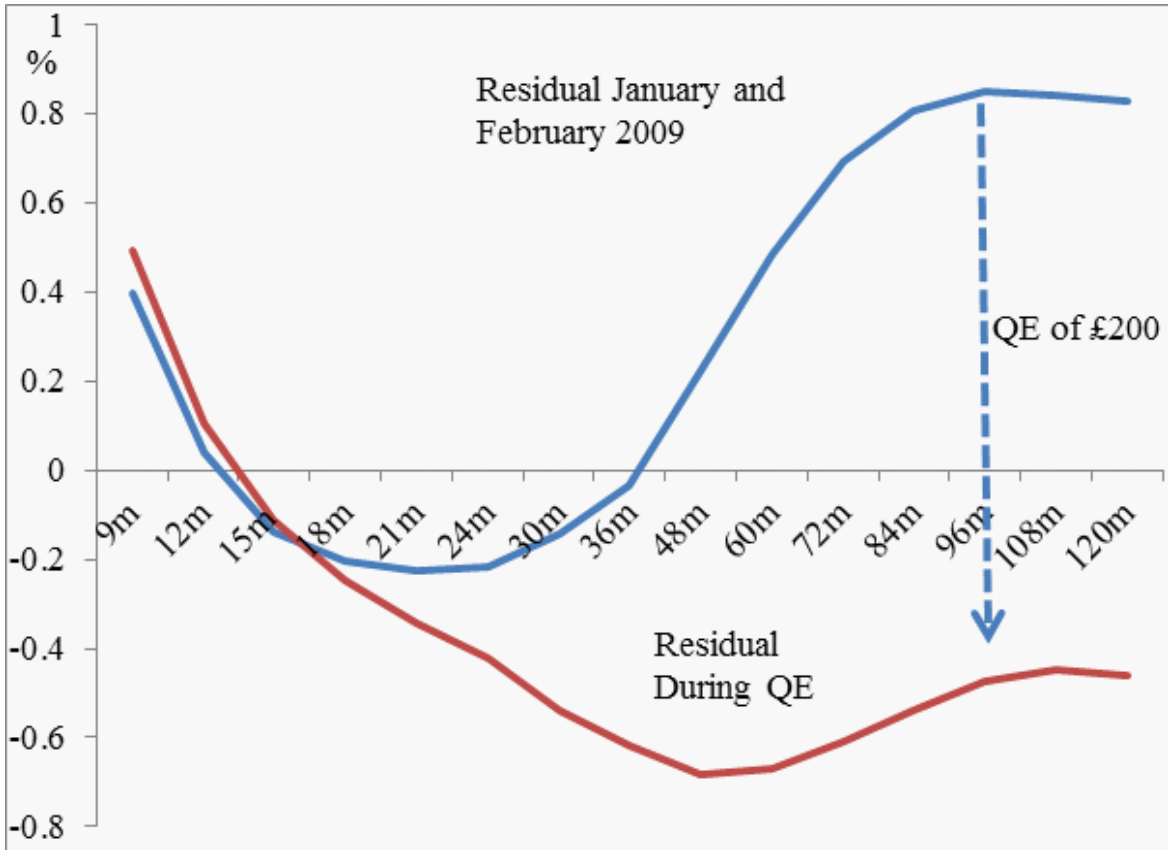
- Even at low interest rates of 2% under financial repression, debt was halved in 15 years
- Low interest rates of 2%, nominal GDP growth of 5% and 2% primary surplus will get debt to 60% of GDP in 10 years.

The Monetary-Fiscal Case



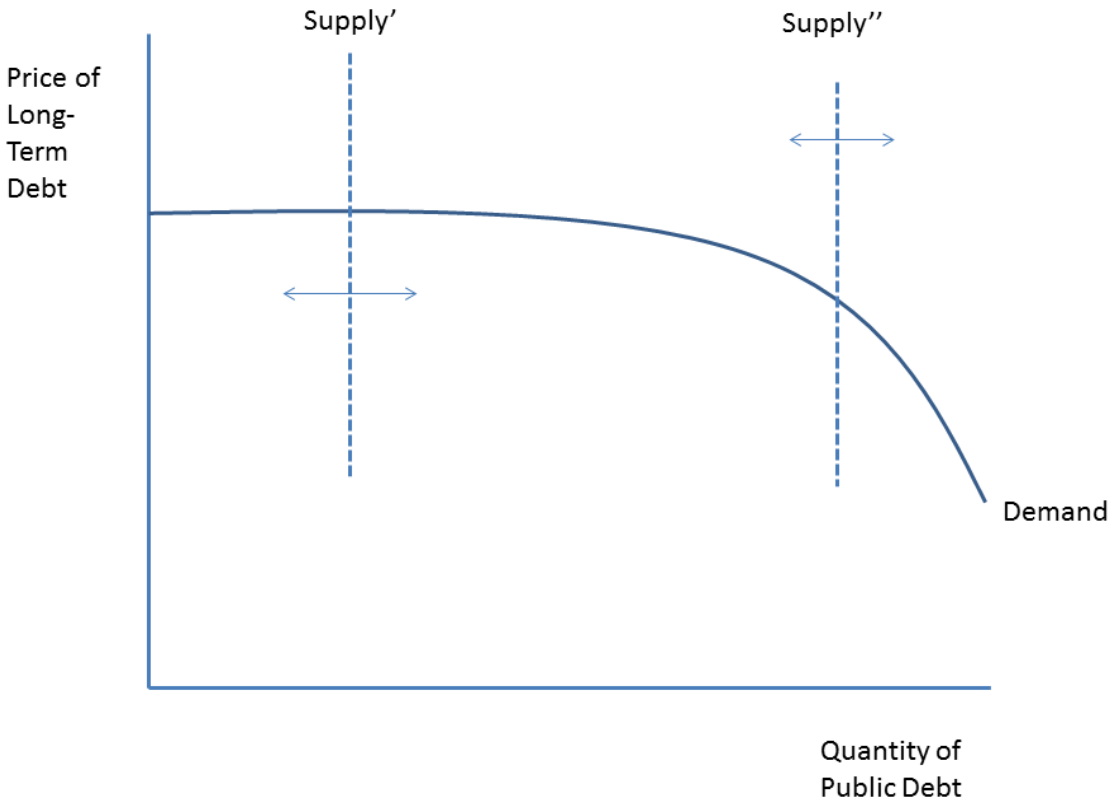
- Nordaus (1994): suggests equilibria under co-ordination on the contract curve OR under Nash with higher rates (R) and lower fiscal surplus (S)
- Monetary (MD) or Fiscal Dominance (FD) will determine where we lie on

V Long Rate Policies



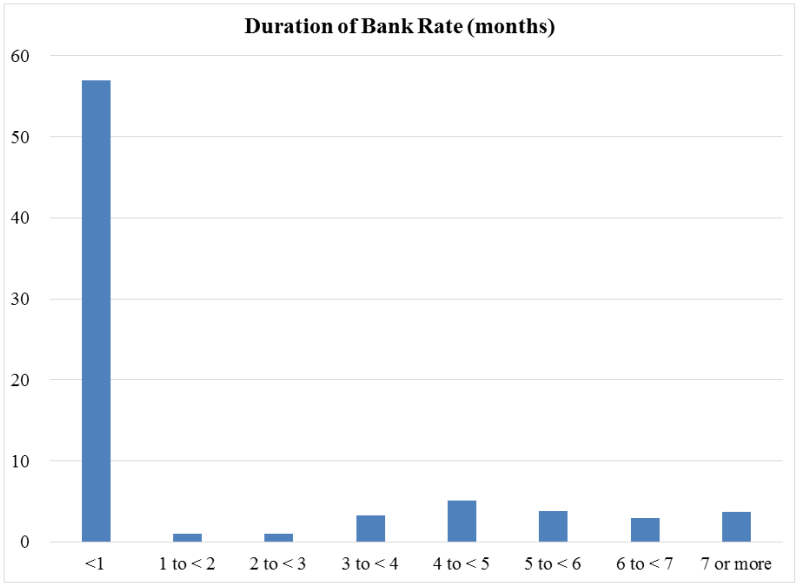
- Expansion of balance sheet - showed that it is possible to influence medium term bond rates - underprediction turned into overprediction of bond rates - impact of 20-100bp.

Sovereign Debt Management and Liquidity



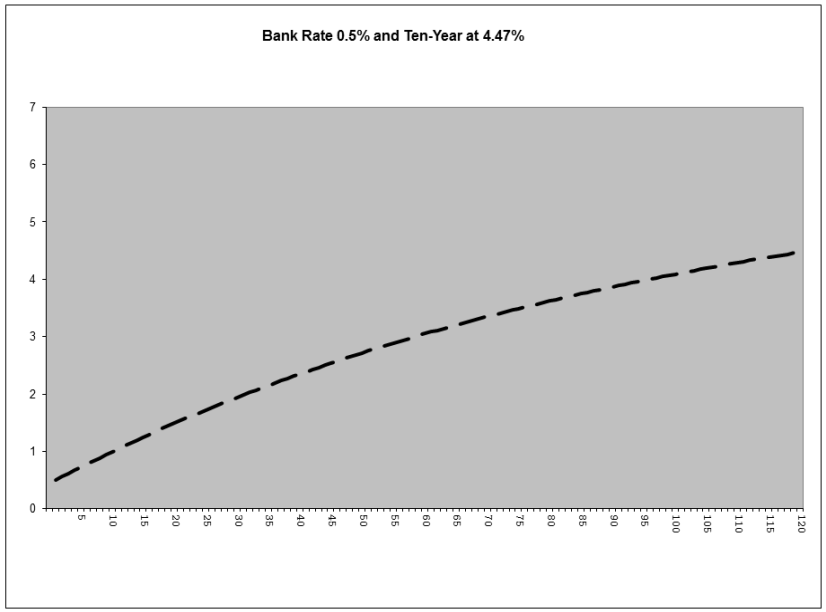
- Shocks to net supply of debt may impact on prices (yields) if demand in inelastic e.g. in bad times (Supply'') vs good times (Supply')
- Price of Long Term Debt may not only reflect risk in CAPM-world.

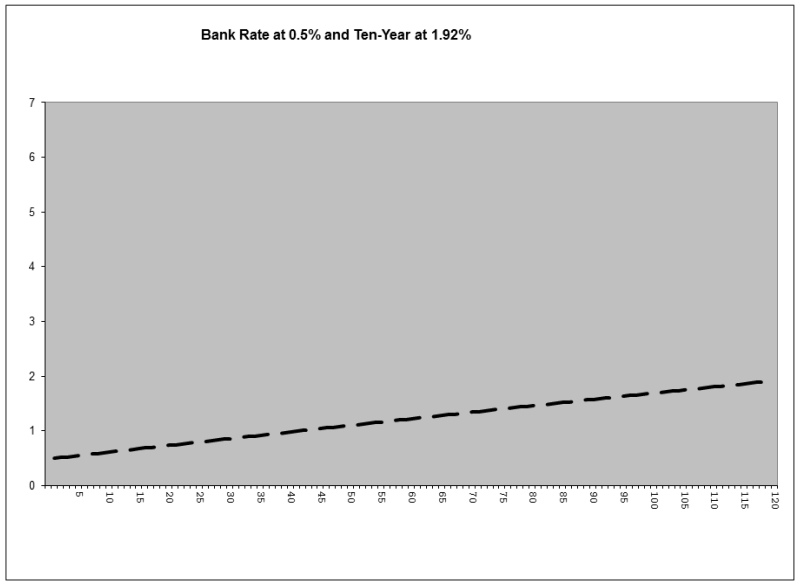
Stuck in the ZLB



- Bank Rate has got stuck and an important part of plotting a route of the doldrums is a compass
- Low probability (long duration) of rate change implies different regime

Long Rates and Signalling





- Moving from 5-year half life to 10-year half life: up to 250bp off 10-year bonds (using standard CIR model). Could reverse of its own accord - if signalling is not smoothed

Impact of US QE on 10-year Yields

Table 4: Potential effects of central bank purchases of Treasuries since November 2008

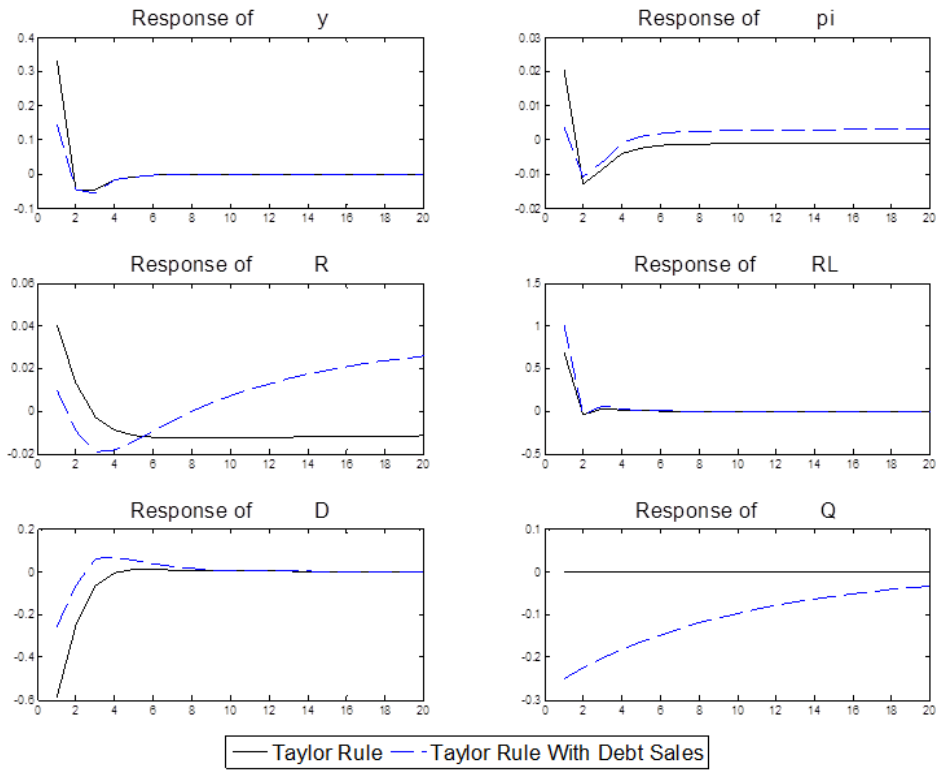
		5y forward 10y rate				10y term premium			
	Change	Marginal effect (range)		Total effect (range)		Marginal effect (range)		Total effect (range)	
Privately-held debt (% of GDP)	7	*1.7*	*2.1*	12	15	*0*	*1.2*	0	8
Average maturity (months)	7	*11.6*	*14.3*	81	100	*9.6*	*12.7*	67	89
Total effect (bps)				93	115			67	97

Notes: Change in the first column refers to changes in privately-held debt which could be attributed to central bank interventions since November 2008. The range is selected by taking the min and max estimated coefficients in Table 1-2 (forward rate) and Table 3 (term premium).

- Quantity and maturity effects on long term rates.

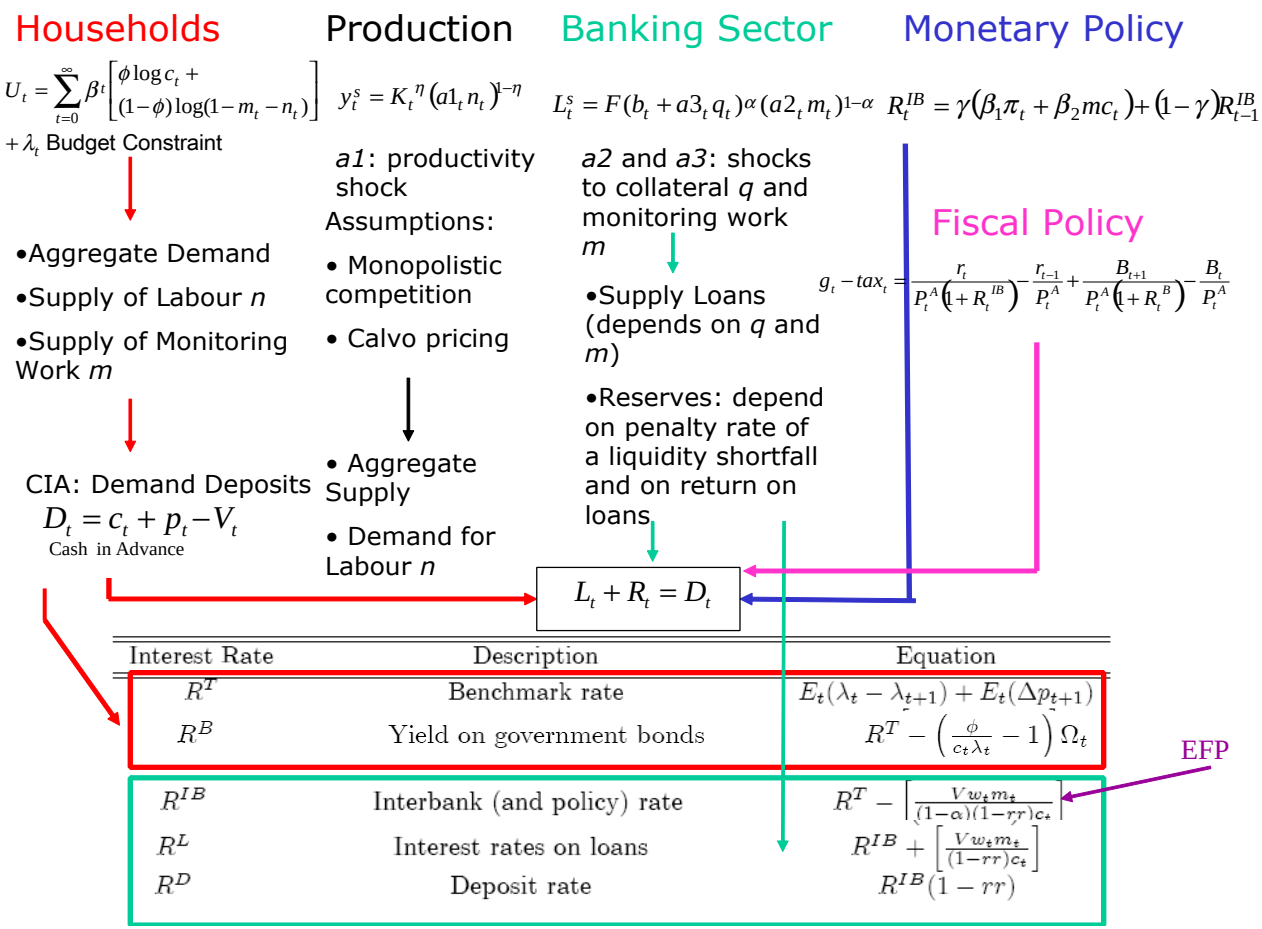
Source: Chadha, Turner and Zampolli (2013)

Future Debt Sales

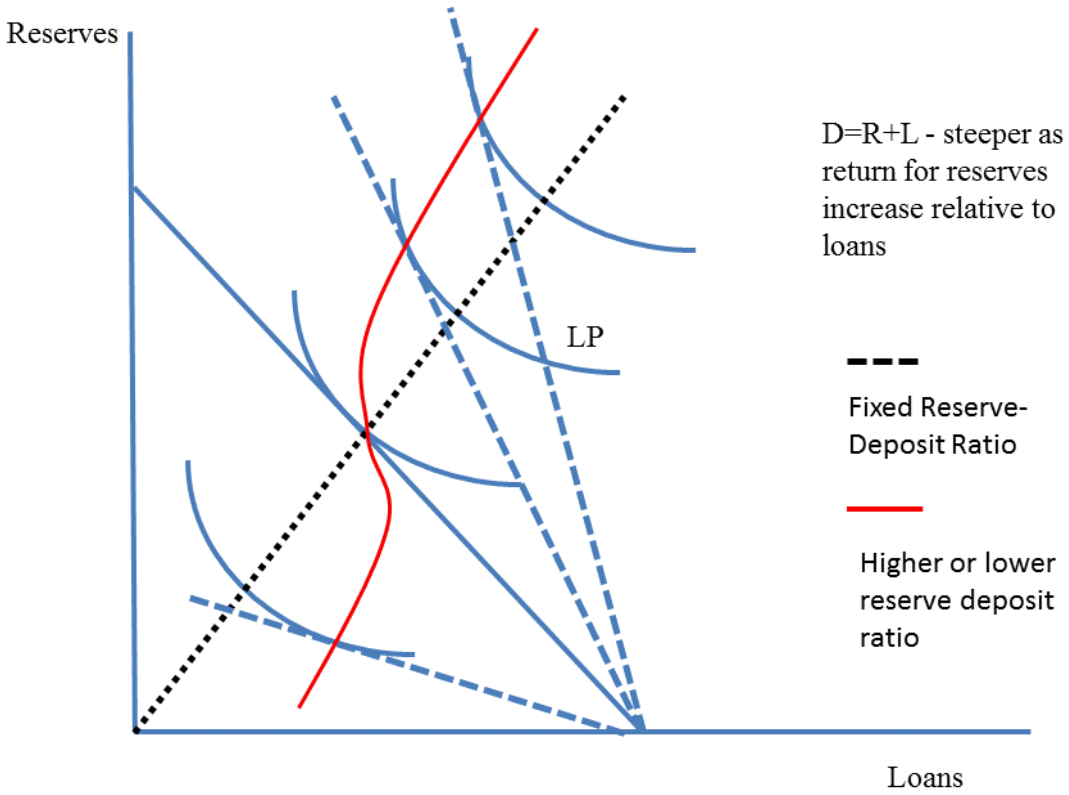


Source: Chadha, Turner and Zampolli (2013)

VI: DSGE Banking Model with Fiscal and Monetary Co-operation

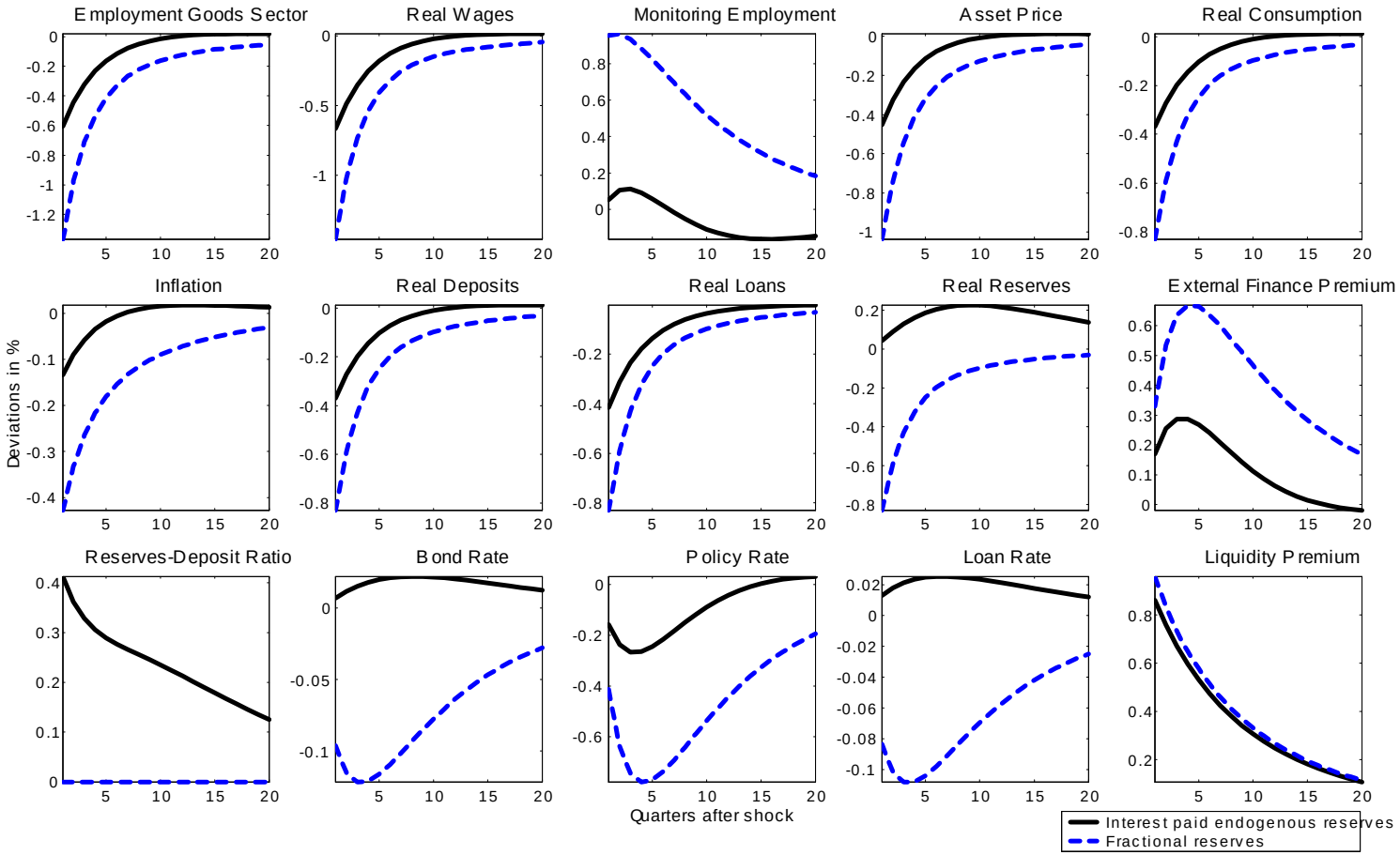


Inducing More Liquidity



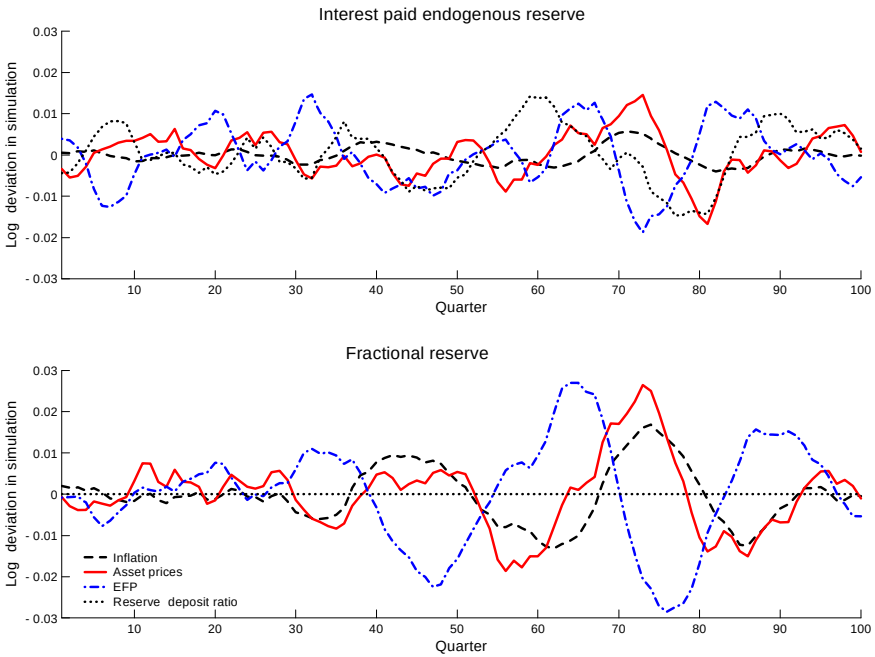
- Providing reserves through monetary-fiscal instrument induces more reserves in an upswing and more loans in a downswing by increasing (reducing) rate of return on reserves relative to loans

Model Results: Collateral Shock with Endogenous/Fractional Reserves

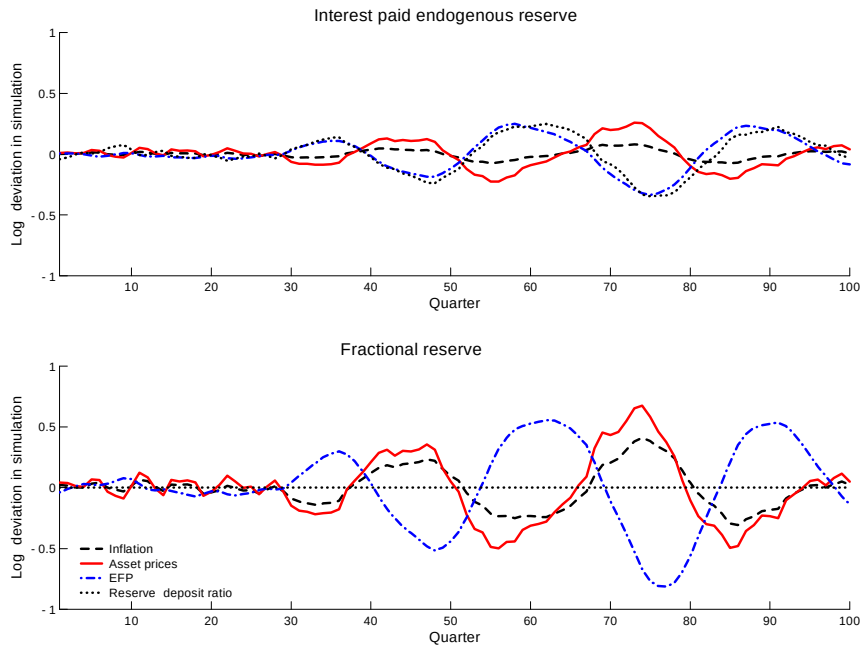


Impulse Responses to Negative Collateral Shock

Simulation of Consumption, Asset Prices, EFP and Reserve-Deposit Ratio



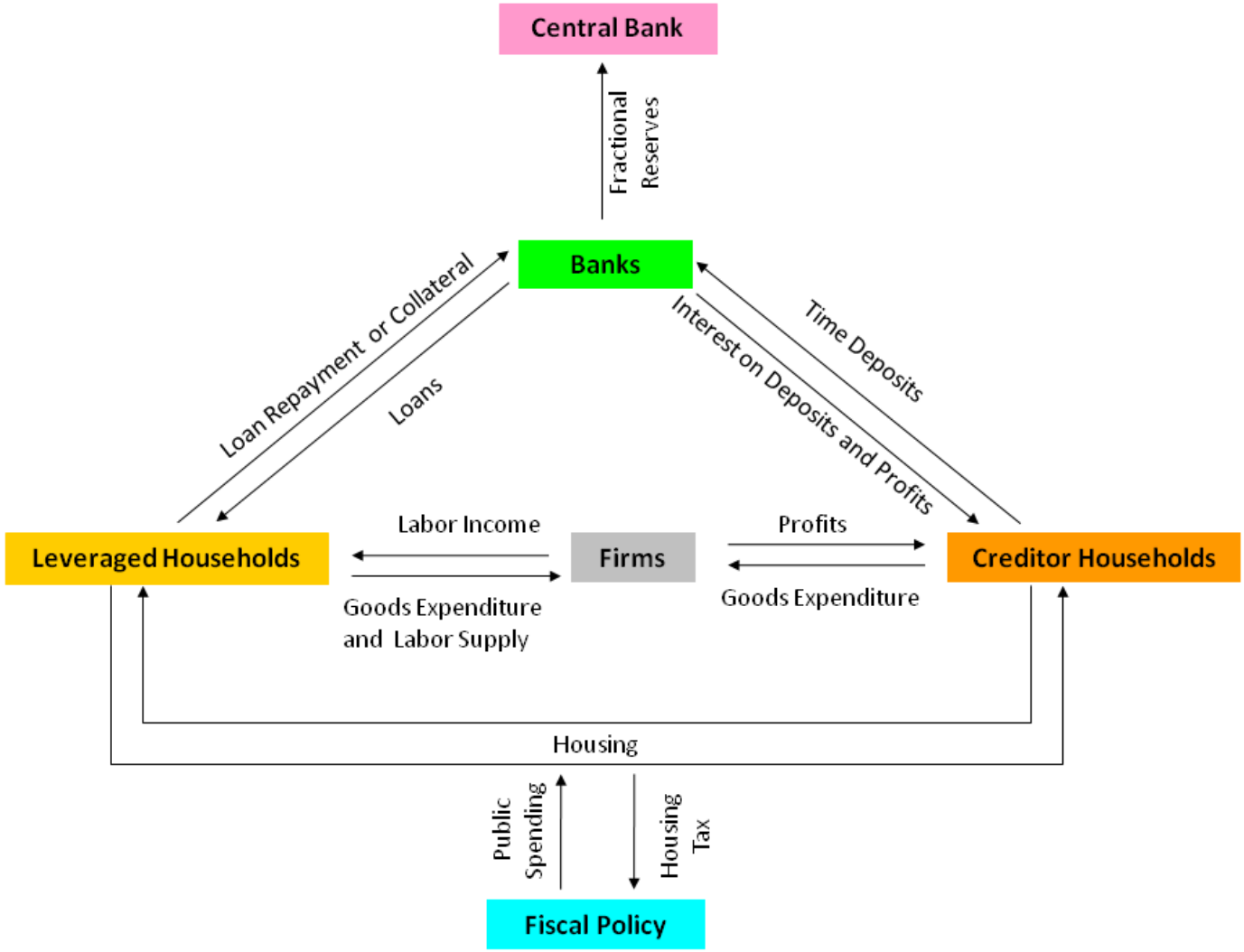
Equal Weight All Shocks



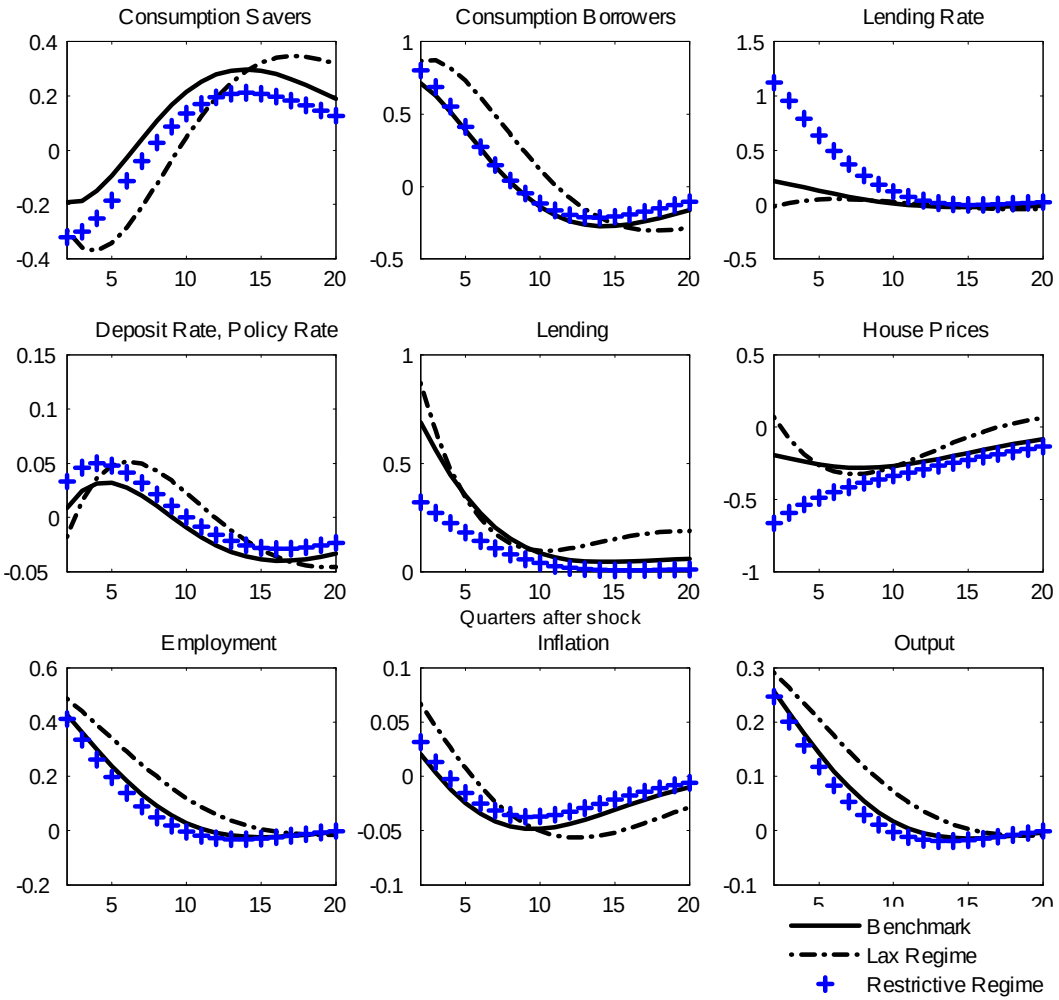
Banking Shocks Dominant

- Endogenous Reserves: countercyclicality of reserve/deposit ratio so less gearing and EFP, inflation and asset prices less volatile

VII: MPI, Fiscal-Monetary Model Structure



Loan to Value



Welfare Losses

Table 6. Welfare Losses

		Loss
Lax Regime		$\lambda = 1, \delta = 0.9, \kappa = 0.9$
	Benchmark Policy	0.0628
	Monetary Policy	0.0586
	Fiscal Policy	0.0631
Restrictive Regime		$\lambda = 5, \delta = 0.2, \kappa = 0.4$
	Benchmark Policy	0.0531
	Monetary Policy	0.0529
	Fiscal Policy	0.0543

$1/\lambda$ (loan repayment prob), δ (seizablecapital), κ (ss LTV ratio)

- Optimising optimal policy in more restrictive regimes seems to lead to better outcomes.

VIII: The Lucas Costs of Business Cycles

$$U(\bar{c}) = \frac{\bar{c}^{1-\rho}}{1-\rho}$$

where $\bar{c} = c + c^b$ and ρ is the CRRA parameter.

$$E\left[U(\bar{c})\right] \approx \frac{\tilde{c}^{1-\rho}}{1-\rho} - \frac{\rho}{2}\tilde{c}^{-\rho-1}\sigma^2_{\bar{c}}$$

$$\frac{\rho}{2}\left(\frac{\sigma_{\bar{c}}}{\tilde{c}}\right)^2 = \frac{\rho}{2}\frac{\sigma^2_c + \sigma^2_{c^b} + 2\sigma_{c,c^b}}{\tilde{c}^2}$$

- aggregate business cycle costs are small *if* covariances are negative
- financial frictions may involve a trade-off between levels and variance

Costs of Regulation

Parameters			Capital (%)	1	2	3	4	5
alpha	sigma	elasticity	Funding Cost (%)	0.2	0.4	0.6	0.8	1
0.3	0.4	-0.171	Output Loss	-0.034	-0.069	-0.103	-0.137	-0.171
0.3	0.5	-0.214		-0.043	-0.086	-0.129	-0.171	-0.214
0.3	0.6	-0.257		-0.051	-0.103	-0.154	-0.206	-0.257
0.4	0.4	-0.267		-0.053	-0.107	-0.160	-0.213	-0.267
0.4	0.5	-0.333		-0.067	-0.133	-0.200	-0.267	-0.333
0.4	0.6	-0.400		-0.080	-0.160	-0.240	-0.320	-0.400
0.5	0.4	-0.400		-0.080	-0.160	-0.240	-0.320	-0.400
0.5	0.5	-0.500		-0.100	-0.200	-0.300	-0.400	-0.500
0.5	0.6	-0.600		-0.120	-0.240	-0.360	-0.480	-0.600

- Percentage increase in capital requirement (or funding costs) and impact on output as a function of the elasticity of output with respect to the costs of capital
- Small permanent impact on GDP.

IX Macroprudential Instruments

- 'One Club' monetary policy has not only insufficient to prevent booms and busts but may have played a role in nurturing volatility.
- The newly formed FPC at the BoE has asked for extra instruments countercyclical capital, sectoral capital, leverage ratio and LTIs.
- No liquidity or LTVs, yet...

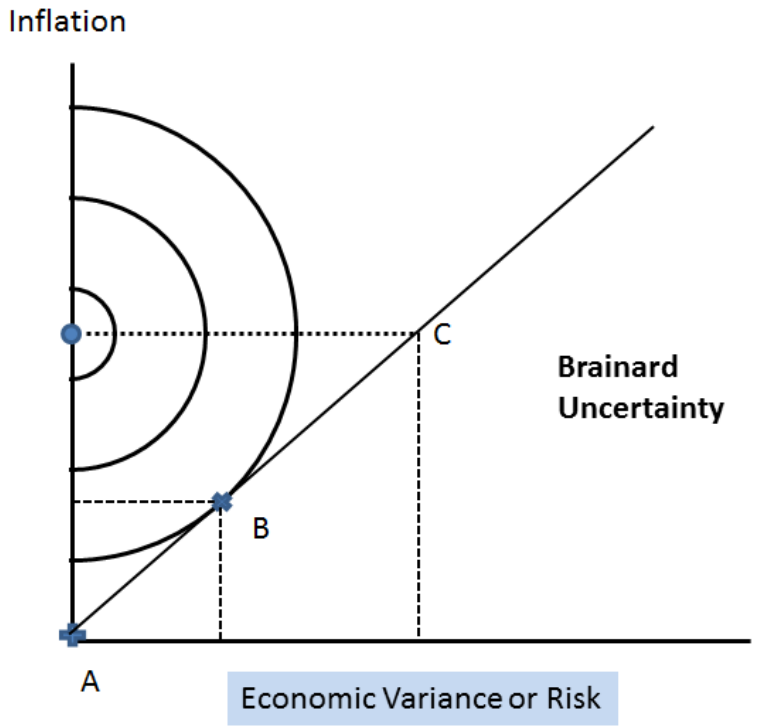
See Chadha and Corrado (JBus 2012) and Chadha, Corrado and Meaning (BIS WP 66) on welfare and output enhancing role of liquidity because it can reduce the volatility of the external finance premium.

- MPIs are 'untested and with little evidence' - no established models or data
- House of Commons Treasury Committee Evidence, see

http://www.publications.parliament.uk/pa/cm201213/cmselect/cmtreasy/writev/macropru

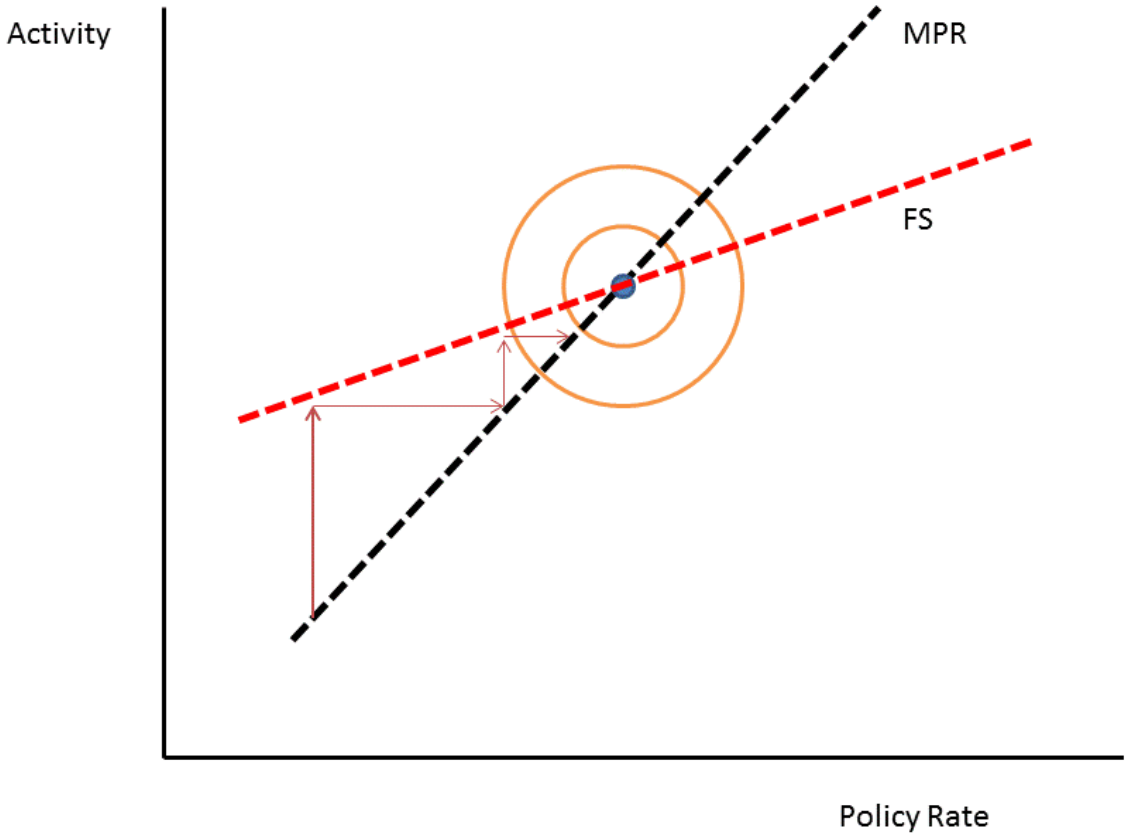
- Does the financial sector stabilise or not?

Macro Pru and Risk



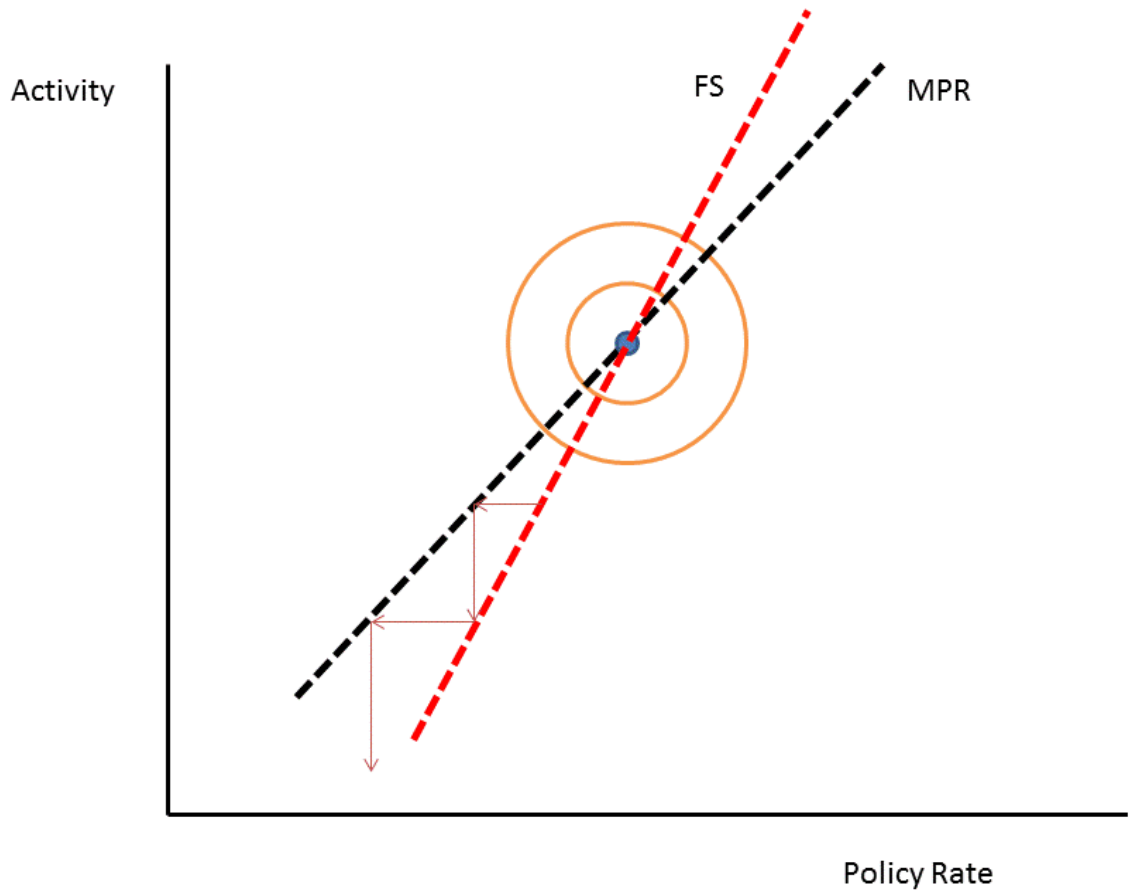
- once we start accounting for risk, we may want to miss inflation targets or find more efficient sets of instruments.

Macro-Pru and Co-ordination



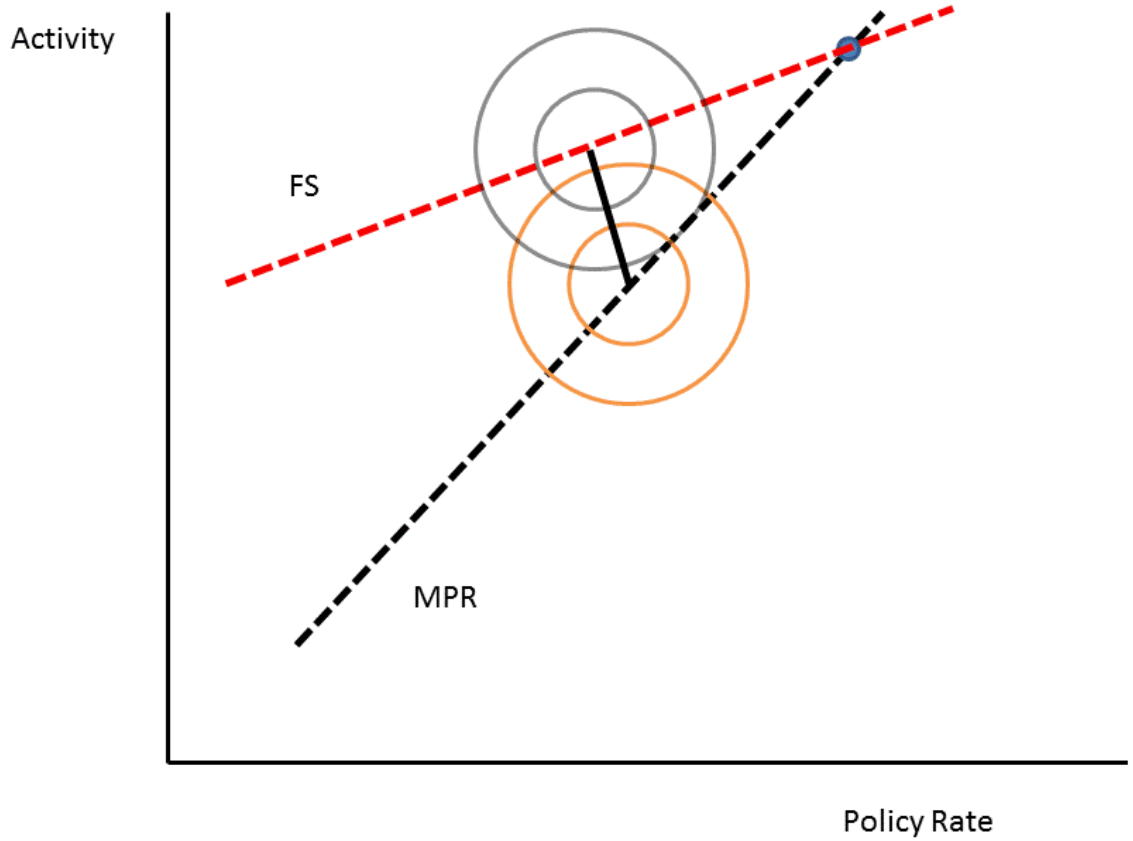
- A financial sector with the same preferences may drive the economy to the social optimum.

A destabilising financial sector



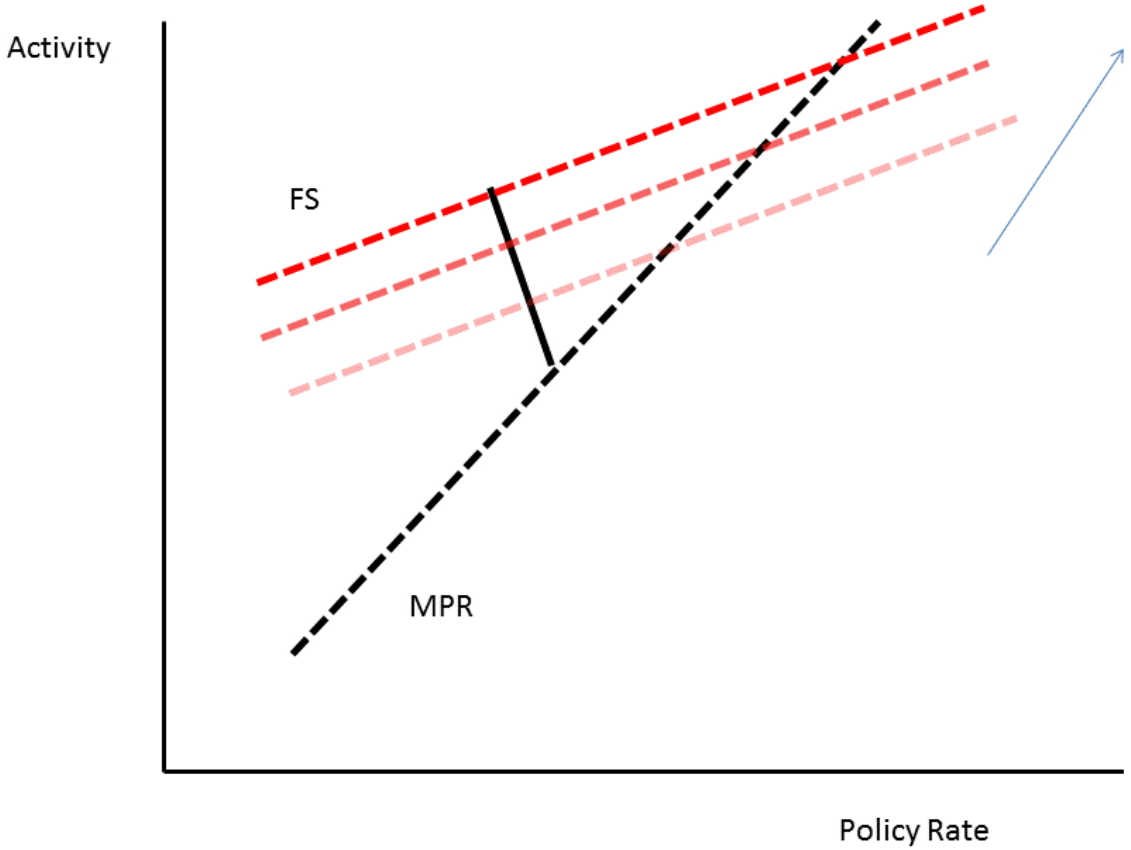
- But if asset prices, lending and market spreads act to amplify the cycle, we may be in trouble.

A Nash Game



- A financial sector with different preferences requires strong institutional co-ordination.

The pre-crisis problem

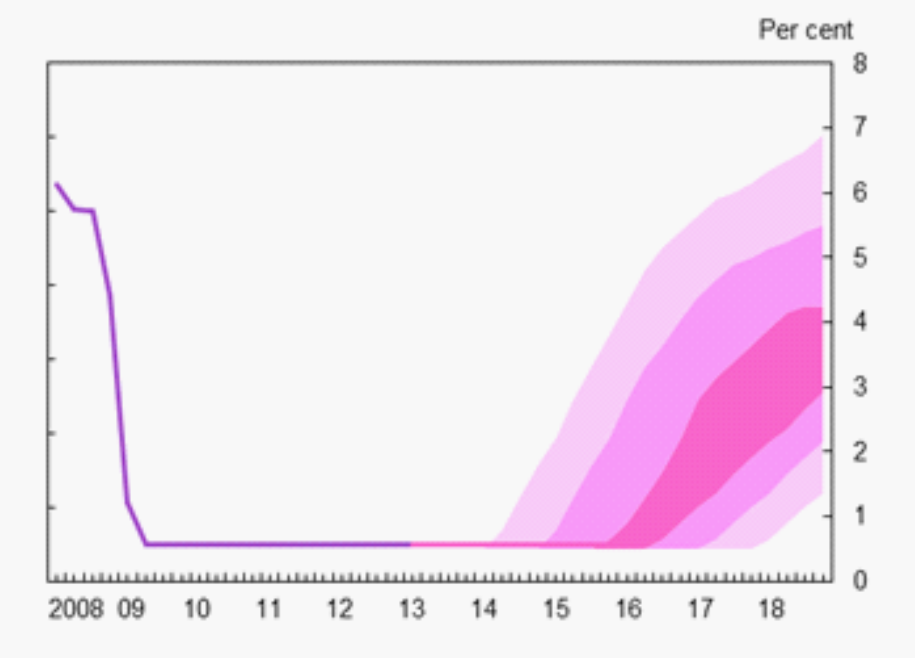


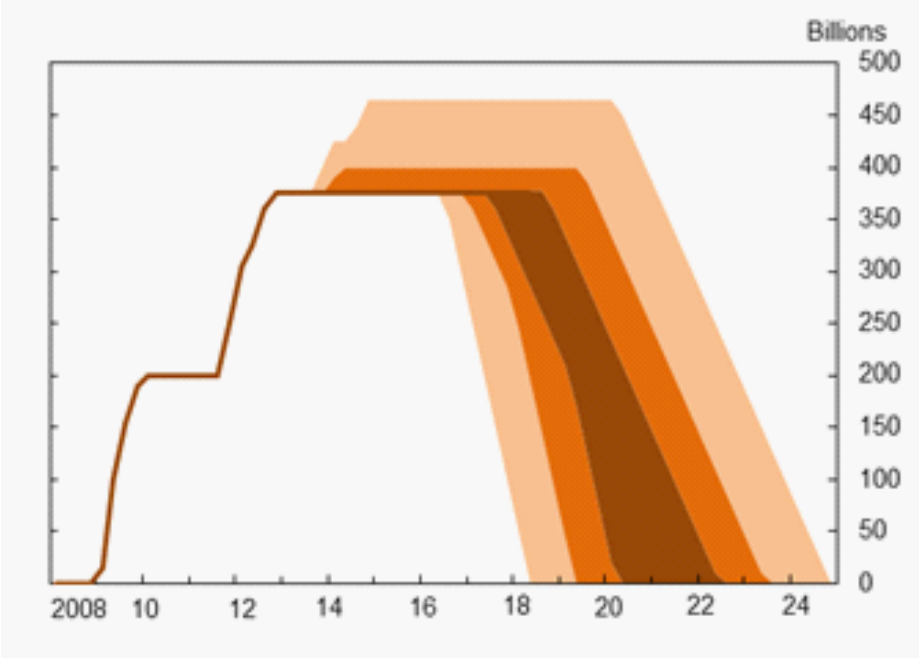
- If unchecked may lead to excessive creation of inside money.

X Complete Forward Guidance

- Debate in c2006-7 about publishing interest rate forecast
- 'Conservative' view: (i) do not tie future decision-makers hands, (ii) forecasts subject to news and 'error', (iii) may prevent private sector views being traded into market prices and (iv) practically difficult to agree on path
- 'Transparency' view: (i) level and path of interest rates matter, so provide more clarity; (ii) produce explicit projections conditional on expected state of economy; (iii) invites alternate views.
- Forward Guidance on first change in rates only, although helpful, seems to be somewhere between the former and the latter

Publish Instrument Forecasts





- Consider complete 'state contingent-time dependent' guidance that respects uncertainty
- Question whether this would lead to herding

Information for Financial Markets

- ZLB represented about regime change and we need to avoid precipitous movements that may delay return to normal times
- Forward Guidance - helpful transparency about reaction function - but did it reveal (new) or confirm (explain)?
  - we are far from the normal equilibrium and it is uncertain how we will return to neutral;
  - the MTM via bond prices is highly sensitive; and
  - we may wish to normalise at different speeds to trading partners
- But we do not know the plan for Bank Rate normalisation, what the plans are for the APF and have no quantified measure of the uncertainty in the 'true' state in terms of interest rate space
- Complete forward guidance by proving explicit probability density forecasts of Bank Rate.

Concluding Remarks

1. Inflation targeting cannot prevent "boom and bust"
2. Money supply and its counterparties matter and complicates the path and long run level of Bank Rate
3. Financial frictions act through traditional supply and demand side - making capacity judgements very hard
4. Fiscal policy underpins aggregate demand but also supports fragile financial institutions - further restrictions apply.
5. Debt will take 10-15 years to get back to 'normal' and demand is inelastic
6. Sensible application of liquidity and capital targets seem likely to reduce business cycle variance albeit at some cost of permanent output
7. Plotting the policy path is considerably more complicated and requires significantly more explanation than we had in the past.

Bibliography

- Barwell, R. and J. Chadha, Complete Forward Guidance, Central Banking, 2013.
- Chadha, J. and L. Corrado, Macro-prudential policy on liquidity: What does a DSGE model tell us?, Journal of Economics and Business, Volume 64, Issue 1, 2012, pp37-62.
- Chadha J, G. Corrado and L. Corrado, 2013, Stabilisation Policy in a Model of Consumption, Housing Collateral and Bank Lending, Studies in Economics 1316, University of Kent.
- Chadha, J., L. Corrado and S Holly, A Note on Money and the Conduct of Monetary Policy, Macroeconomic Dynamics, In Press. 2014.
- Chadha, J, Corrado L. and J. Meaning, 2012. "Reserves, Liquidity and Money: An Assessment of Balance sheet Policies," BIS Policy paper 2012, vol. 66, pp 294-347.
- Chadha, J, Corrado L. and S. Qi, 2010. "Money and liquidity effects: Separating demand from supply," Journal of Economic Dynamics and Control, 34(9), pp. 1732-1747.
- Chadha, J. and S. Holly, 2011, (Ed) Interest Rates, Prices and Liquidity, 2011, Cambridge University Press.
- Chadha, J., P. Turner and F. Zampolli, 2013, The Ties that Bind: Non-Conventional Monetary Policy and Debt Management, Oxford Review of Economic Policy.
- Chadha, J and J Warren, 2013, Accounting for the Great Recession in the UK: Real Business Cycles and Financial Frictions, Manchester School, pp43-64.
- Chadha J. and A. Waters, Applying a Macro-Finance Yield Curve to UK Quantitative Easing, Journal of Banking and