Twilight Zone Macroeconomics

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- We have entered into a new era of macroeconomics in advanced countries.
- As late as 2006, we were in the Great Moderation
- No more inflation, business cycle had been greatly moderated
- Economists were fighting over who should get credit
  - FED folks said it was due to astute monetary policy
  - Others said it was due to technology: beter inventory management due to forecasting
  - Others said it was good luck
  - Still other said it was due to Ronald Reagan and new credibility
- But there were warning: no more CPI inflation but asset price inflation
- Should the FED have burst the bubbles in asset prices and real estate under Greespan?
- Experience of Japan was a waraning not to burst bubble.

Monetary Policy

- Usual way to conduct monetary policy is through interest-rate rule known as the Taylor rule:

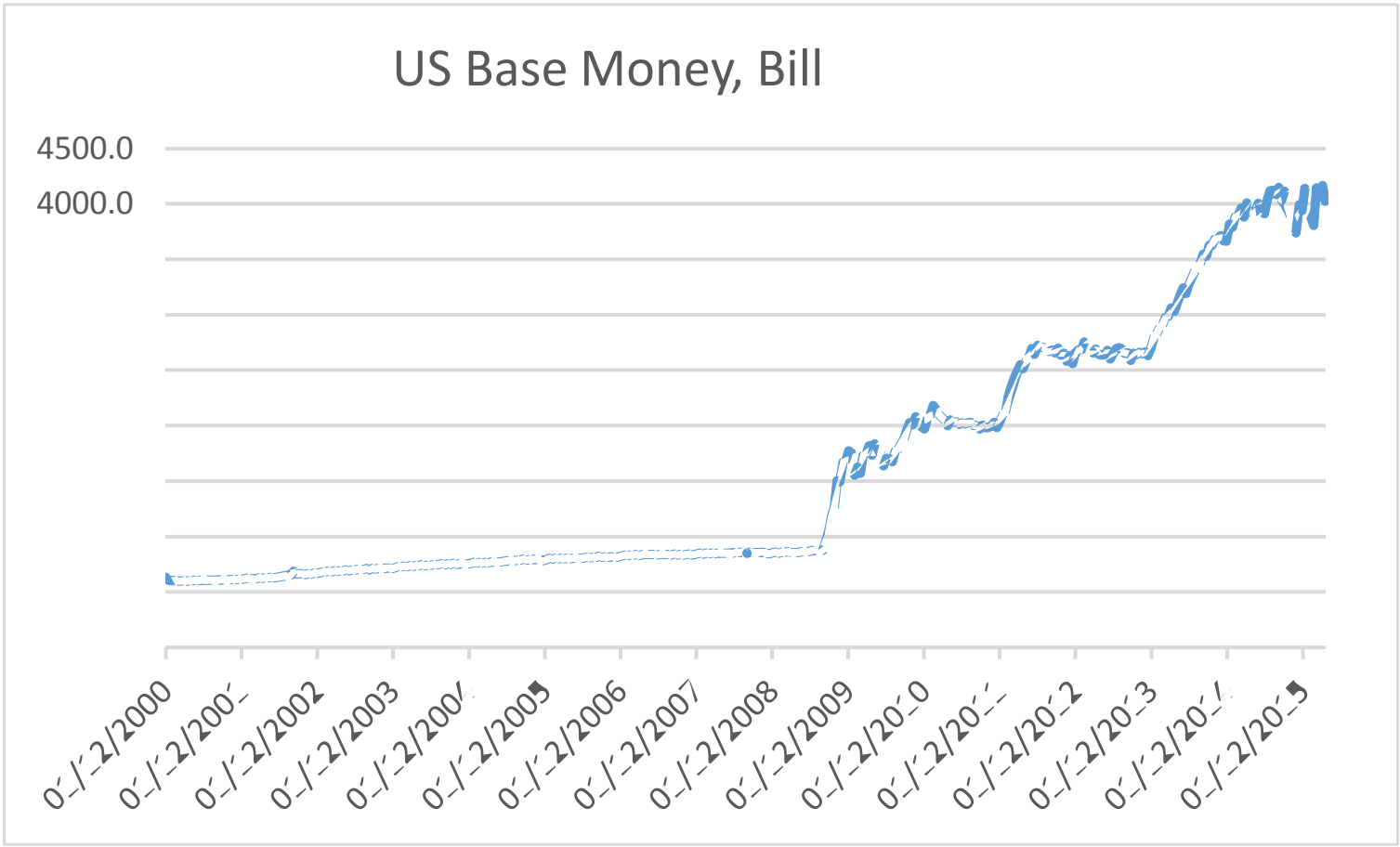
$$normal : i_t = (1-\rho)\left[i + \kappa^{\pi}\pi_t + \kappa^{y}\log(Y_t/Y_t^*)\right] + \rho i_{t-1} \quad (1)$$

$$ZLB : i_t = 0; \rho = 0 \quad (2)$$

$$1 + i_t = R_{t+1}\frac{E_t P_{t+1}}{P_t} \quad (3)$$

- Interest rates cannot go below zero.
- What is key is the relation between the real interest rate and the nominal rate.
- Real interest rates can rise if the expected inflation is negative.
- This is nightmare on Elm Street and Friday the 13th all wrapped up into one.

- Quantitative Easing=Large Scale Asset Purchases=Long Term Repurchase Operations



- Billion here, billion there: soon it adds up to real money
- This is quasi-fiscal monetary policy: FED was buying assets of non-bank financial institutions.

- If interest rates are stuck at zero, we can use tax-rate changes on consumpton and income
- These changes affect decisions on consumption and labor supply the same way interest rate changes do.
- Idea is that the tax rate on consumption affects intertemporal trade off between current and future consumption
- Tax rate on labor affects the intratemporal tradeff between work and leisure
- So if tax rates can change, no big deal if interest rates are stuck
- We tried this briefly with "cash for clunckers" in 2009. Did it go far enough?

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  3. Model is driven in one case by regurring productivity shocks and in another by recurring financial shocks.

- The model is simulated for recurring shocks and simulated for T= 100,000 periods.
- We then isolate sub-periods when the GDP is two standard deviations below its stochastic mean.
- This then allows us to examine the adjustment of key macroeconomic variables for five years before and five years after the crisis event. In the non-crisis regime, an optimal Taylor rule is operational for the interest rate.
- In the crisis regime, we first examine the case of the zero lower bound with no fiscal or monetary alternatives.
- Then we compare and contrast results for two alternative cases:
- (optimal quantitative easing rule
- (iioptimal rules for the tax rates on consumption and wages.
- Like impulse response paths, the method shows the paths for the different scenarios

The approach has the added advantage that we can also ascertain the frequency/likelihood of crisis compared to normal times.

Table 1

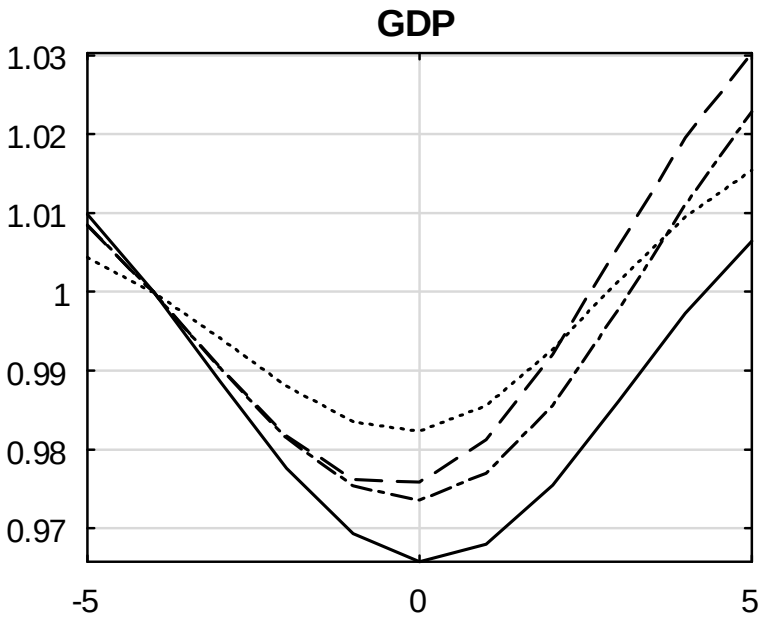
Stochastic Mean and Srd dev (%Y): Simulated Data for Productivity Shock

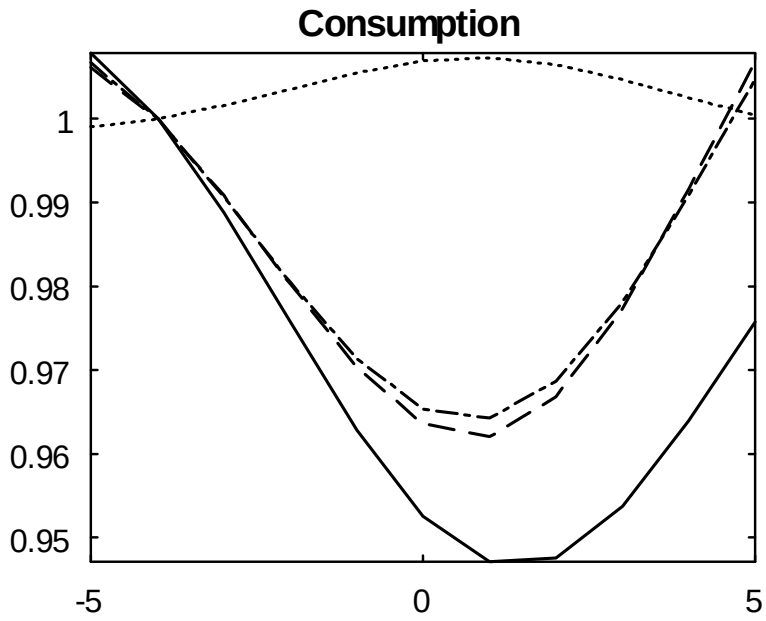
Variable	ZLB		QE		FR	
	Mean	Std dev	Mean	Std dev	Mean	Std dev
Y	0.692	1	0.708	1	0.668	1
C	0.434	0.762	0.434	0.736	0.447	0.148
I	0.080	0.453	0.082	0.371	0.078	0.088
W	1.379	2.731	1.386	2.724	1.385	2.373
Q	1.000	0.474	1.000	0.312	0.999	0.526
Π	1.000	0.131	1.000	0.120	0.999	0.222
$(R_t^k - R_t)$	0.023	0.102	0.023	0.228	0.020	0.674
N	3.734	1.651	2.956	1.613	3.688	3.896
ψ	–	–	0.226	0.339	–	–
G	0.178	–	0.193	0.057	0.144	1.066
τ^c	–	–	–	–	-0.011	1.217
τ^w	–	–	–	–	-0.014	1.575
Welfare	-318.264	45.243	-320.422	45.406	-313.752	4.562
% Crisis	0.066		0.040		0.050	

Table 2

Summary Min-Max Values for Recurring Productivity Shock

	ZLB		QE		FR	
Variable	Min	Max	Min	Max	Min	Max
Y	0.612	0.768	0.626	0.781	0.577	0.780
C	0.382	0.487	0.367	0.482	0.438	0.465
I	0.052	0.129	0.053	0.120	0.070	0.087
W/P_m	1.187	1.604	1.145	1.609	1.145	1.610
Q	0.962	1.038	0.971	1.027	0.925	1.026
Π	0.990	1.010	0.984	1.012	0.973	1.025
$\ln\left(R_t^k/R_t\right)$	0.012	0.030	-0.006	0.042	-0.064	0.089
N	3.591	3.886	2.856	3.170	3.357	4.144
ψ	–	–	0.193	0.251	–	–
G	0.178	0.178	0.188	0.197	0.034	0.261
τ^c	–	–	–	–	-0.153	0.104
τ^w	–	–	–	–	-0.199	0.135
Welfare	-321.886	-314.670	-324.659	-316.919	-314.251	-313.218





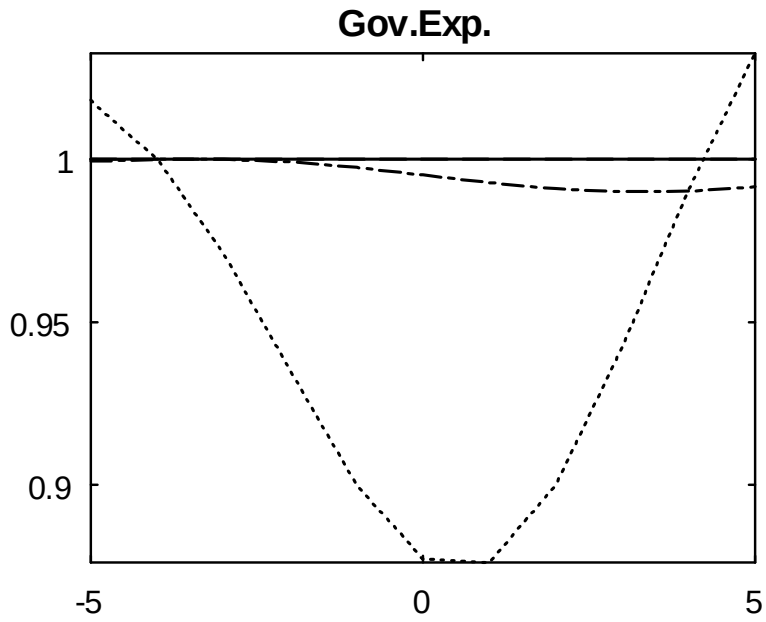
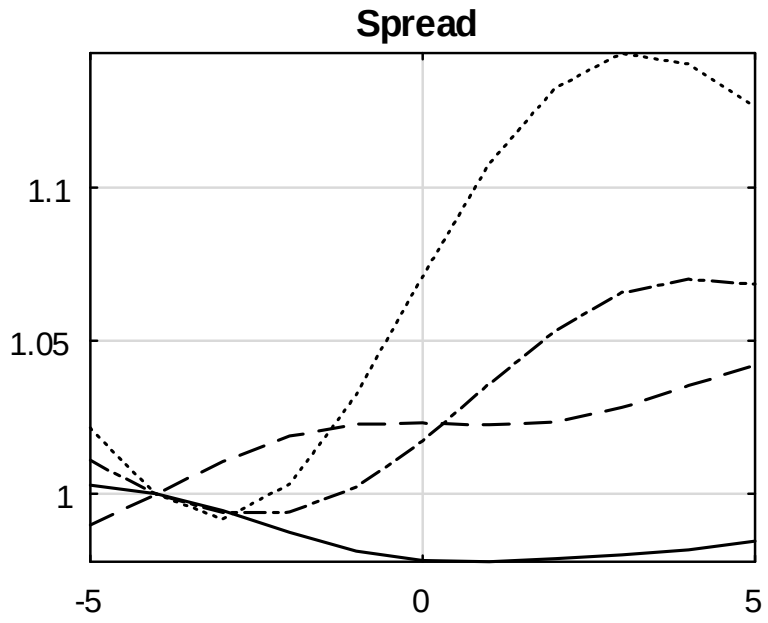
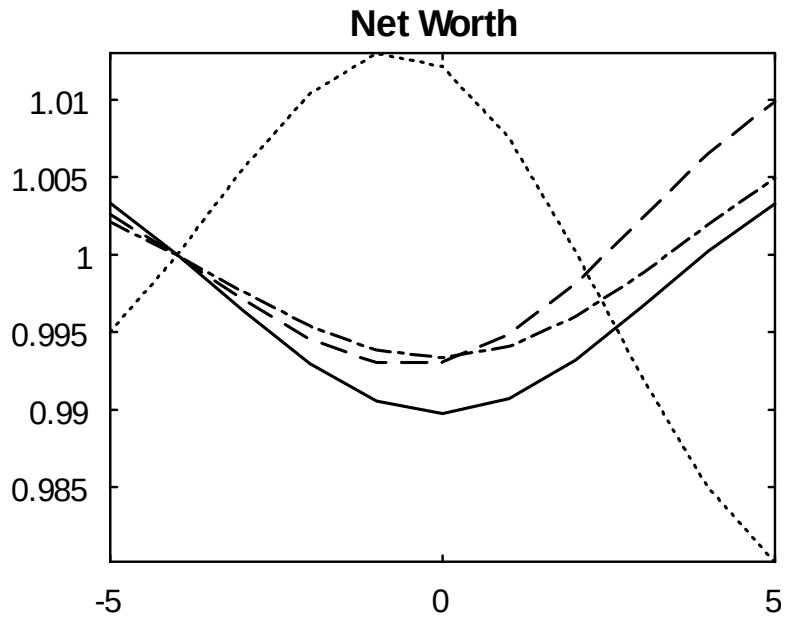


Figure: Productivity Shock on GDP, Consumption, Wage and Gov. Spending





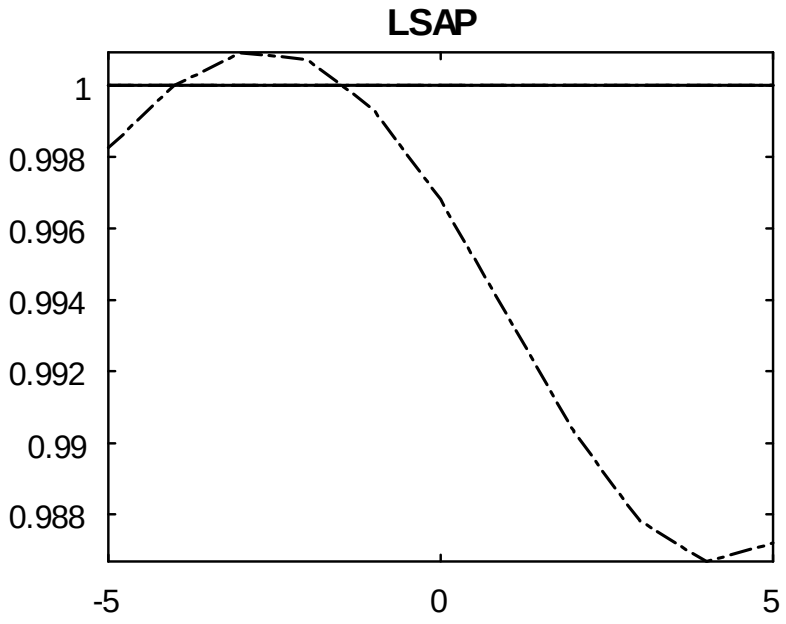


Figure: Productivity Shock — Spread, Net Worth, LSAP, Tax Rates