Fiscal and Monetary Interactions

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Why it works: a simple model

$$\max E\left[\sum_{t=0}^{\infty} \log C_t\right] \text{ s.t.} \tag{1}$$

$$C_t(1+\gamma v_t) + \frac{B_t + M_t}{P_t} = \frac{R_{t-1}B_{t-1} + M_{t-1}}{P_t} + Y_t + g_t \tag{2}$$

$$v_t = \frac{P_t C_t}{M_t} \tag{3}$$

$$R_t = \beta^{-1}\left(\frac{P_t C_t}{P_{t-1} C_{t-1}}\right)^{\theta} \text{ Taylor Rule} \tag{4}$$

$$\frac{B_t + M_t}{P_t} = \frac{R_{t-1}B_{t-1}}{P_t} + g_t \text{ Gov't Budget Constraint} \tag{5}$$

$$g_t = g_0 - \phi\frac{B_{t-1}}{P_{t-1}} + \varepsilon_t \text{ Fiscal Policy} \tag{6}$$

FOC's produce

$$R_t = (1 - \gamma v_t^2)^{-1}$$

$$\left(\frac{1 - \gamma v_t^2}{\beta}\right)^{1-1/\theta} Z_t = E_t Z_{t+1} \qquad (*)$$

$$Z_t = \frac{(1 - \gamma v_t^2)^{1/\theta}}{1 + 2\gamma v_t}$$

NB: Z_t monotone decreasing in v_t. $(*)$ has a solution with constant Z (and hence constant v) and is locally unstable if $\theta > 1$ (the Taylor principle). We treat Y_t and ε_t as i.i.d.

But can we rule out the locally unstable paths as equilibrium solutions?

- The paths in which Z increases, and hence v decreases, can be ruled out. Once Z goes above its steady state, equilibrium requires that it be unbounded above, but this cannot happen even with $v \to 0$.

- The paths in which Z decreases, and hence v increases, cannot be ruled out. On these paths, v approaches a finite upper limit as $Z \to 0$, while R and P_t/P_{t-1} approach infinity. No feasibility constraint is violated if such a path persists forever, with ever accelerating inflation.

- The stationary equilibrium has R, M, PC and PY constant.
- We have not used the government budget constraint or the fiscal rule. They simply determine a stationary time path for government debt.
- What if policy were not a Taylor-principle Taylor rule, but instead $R_t = \beta^{-1}$, i.e. a pure interest rate peg?
- What if, further, fiscal policy were to make the primary deficit (in equilibrium a surplus, if debt is positive) exogenous, but following the same stochastic process (as a function of Y_t and ε_t) as in the Taylor-principle Taylor rule?

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- ▶ Answer: Equilibrium is *exactly the same*.

Uniqueness

- The Taylor-principle Taylor rule equilibrium price level is not unique.
- This interest-rate peg equilibrium does deliver a unique price level.
- The unstable equation is no longer the Z equation, but the government budget constraint.
- Deflationary deviations in which real debt explodes upward are ruled out by transversality.
- Inflationary deviations in which real debt shrinks toward zero are ruled out as infeasible from the viewpoint of private agents — they would see themselves as having insufficient resources, in real bonds and discounted present value of Y, to support both the SRC level of C and the discounted value of current and future taxes g_t.
- So they would reduce their demand, reduce prices, bring the price level back to the equilibrium path.

- ▶ This is not a special result of a trick model. It is generally true that a given equilibrium generated by active monetary and passive fiscal policy can be supported also by active fiscal, passive monetary policy combinations.

- ▶ This does not rule out identification. We may know something about differences in what fiscal and monetary authorities care about, or what they observe, or the nature of delays in their decision-making, that allows identification, or at least allows exploring hypothetical identifications.

- Leeper and Davig have shown that if policy switches, or is believed subject to switching, between an active-money, passive-fiscal regime and the reverse, then fiscal shocks affect inflation even during the period when the active-money, passive-fiscal regime prevails.

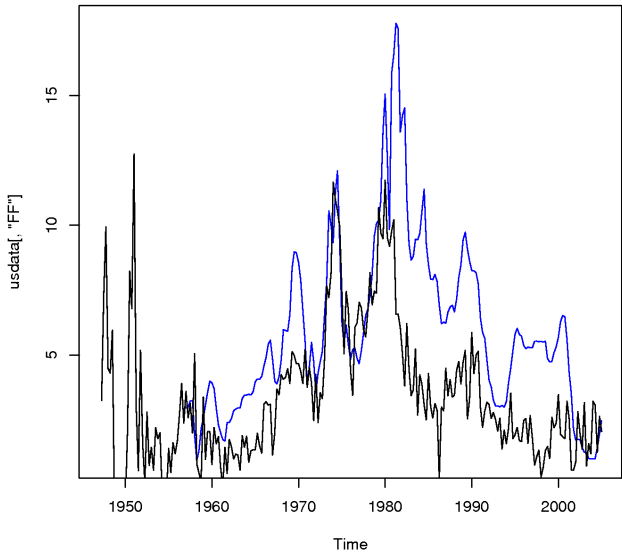The Taylor Principle for Taylor Rules
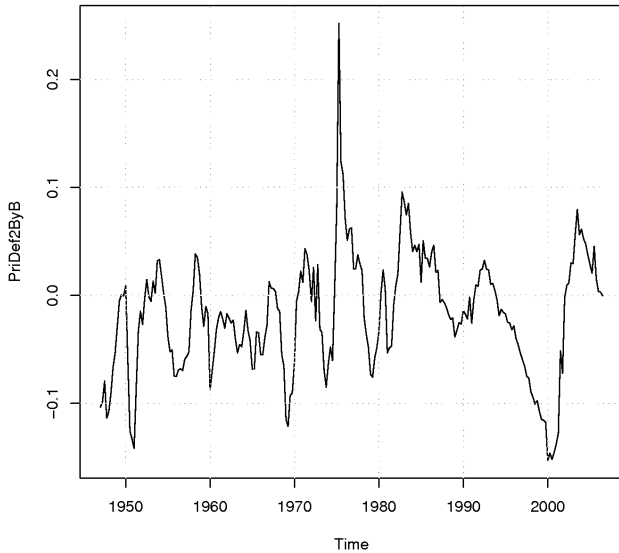
History

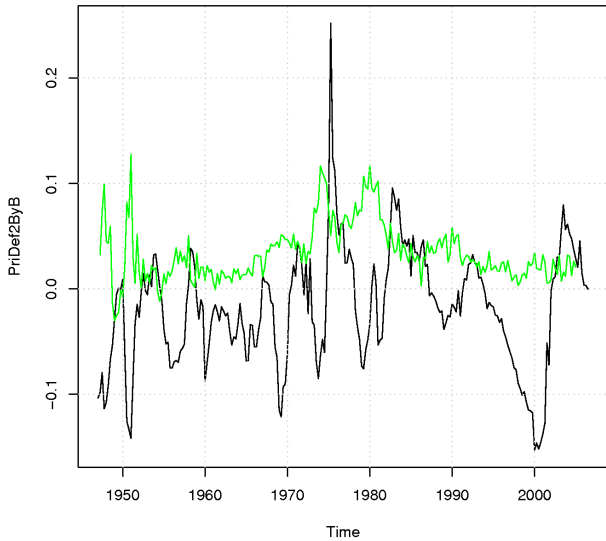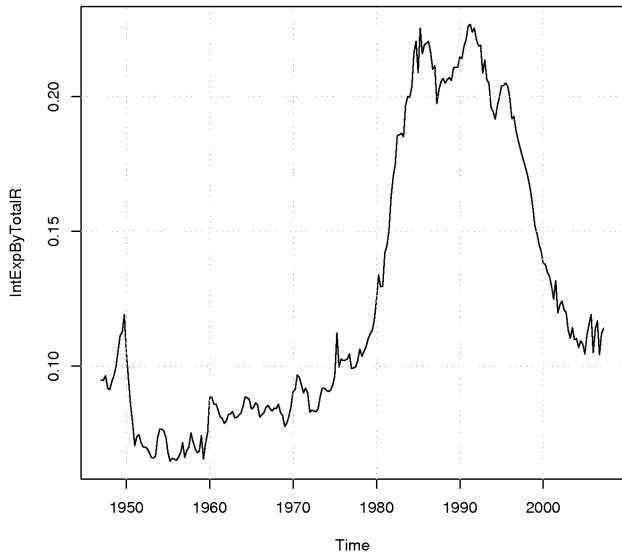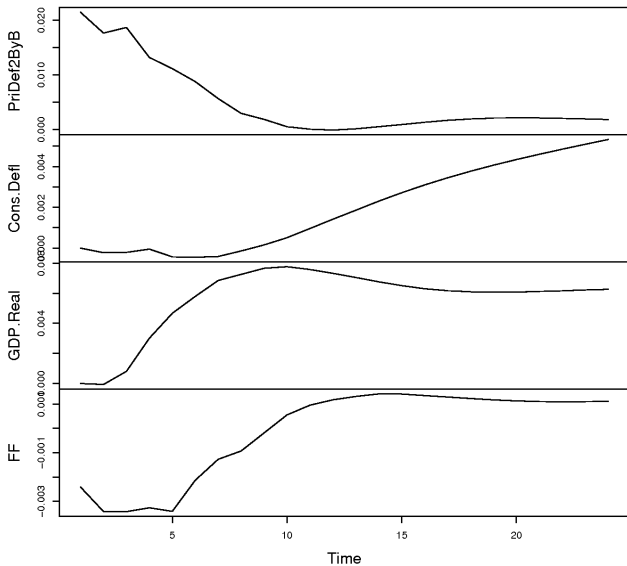The 70's: A Monetary Story

The 70's: A Fiscal Story

Stable perceived policy rules, known by all?

Food for thought: primary deficits seem to help in a simple VAR

Primary Deficit / Federal Debt

- Was the public sure in 1978-80 that interest rates would follow inflation upward *no matter how high*? If not, fiscal surprises were feeding in to the inflation process (i.e., were "natural rate shifters").

- Did bondholders know in 1978 when and how fiscal resources to provide them a competitive return were going to emerge? Might their views on this have been shifting?

Response to PD Shock (ypfr)

Response to R Shock (ypfr)