# Central Bank Misperceptions and the Role of Money in Interest Rate Rules by G. Beck and V. Wieland

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# Motivation

- Basic Observation: The recent research program on monetary policy has essentially abstracted from ... **Money!**
- Why?
  - Money does not seem to matter (Ireland ...)
  - Once an interest rate is chosen, so is money

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- Lack of discipline, as it does not formally tight the model to the long–run behavior of nominal variables
- Otherwise stated, separation between low and business cycle frequencies in these models;
- *This remains an unresolved issue on the frontier of macroeconomic theory. Until it is resolved, monetary information should continue to be used as a kind of add–on or cross-check.*(Lucas, 2007)

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- Assigns a role for money in monetary policy in K/NK models
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# Simple Model

- Focus on the Keynesian model (simplicity)

$$\pi_t = \lambda(y_t - z_t) + \pi_{t-1} + u_t$$
$$y_t = y_{t-1} - \varphi(i_t - \pi_{t-1}) + g_t$$
$$m_t - p_t = \gamma_y y_t - \gamma_i i_t + s_t$$

- Monetary authorities aim at

$$\min \frac{1}{2}\mathbb{E}\left[\sum_{i=0}^{\infty} \beta^i (\pi_{t+i} - \pi^\star)^2 | \Omega_t\right]$$

**Q:** *Ad hoc* criterion: valid as long as there is no trade–off btw output stabilization and inflation (and money).

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# Simple Model

- Optimal behavior:

$$\mathbb{E}[\pi_{t+i}|\Omega_t] = \pi^e_{t|t} = \pi^\star = 0$$

- No information on $g_t$ and $u_t$: $g^e_{t|t} = u^e_{t|t} = 0$.
- Such that

$$y_t = z_t - \lambda^{-1}(\pi_{t-1} + u_t)$$
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- Optimal rule

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# Toward Cross Checking

- Show that $\pi_t = \lambda e_t + \lambda g_t + u_t$ where $e_t = \mathbb{E}[y_t - z_t|\Omega_t] - (y_t - z_t)$
- Mean across 1000 draws:

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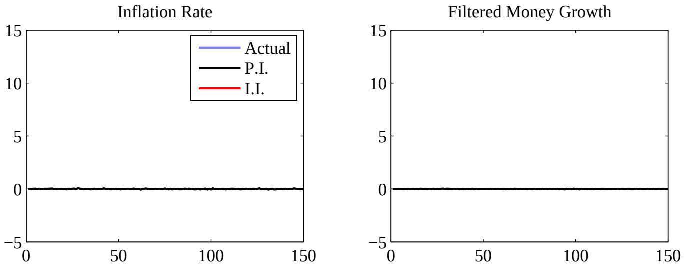

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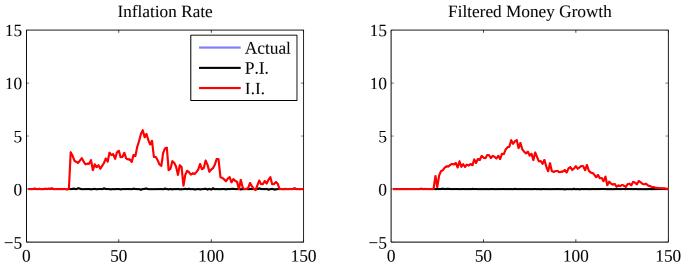

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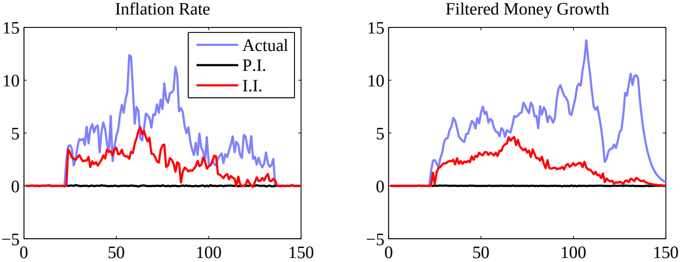

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Q: Assumes bad information throughout. Is it the case?

- Volatility(65:4–82:3)=3.33, Volatility(82:4–93:4)=2.09

- Improvements in collection of info. $\Longrightarrow$ may vanish!

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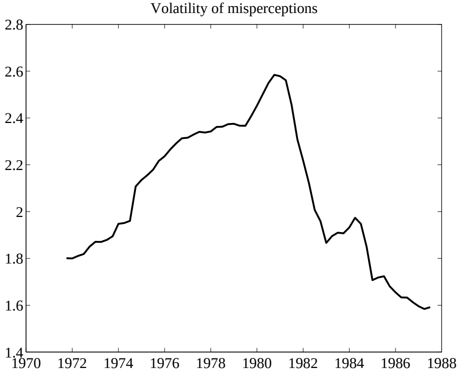


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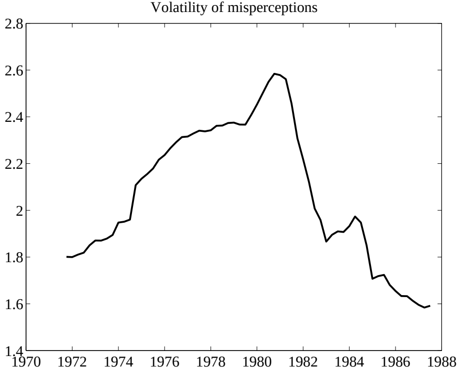


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# Cross Checking

- Aim: Use money as a cross check to really stabilize prices
- Idea:
  - Define a standardized measure of nominal growth

$$\kappa_t = \frac{\mu_t^f - \pi^\star}{\sigma_{\mu^f}}$$

  - If $\kappa_t$ is above a given threshold for $N$ successive periods, then adjust monetary policy

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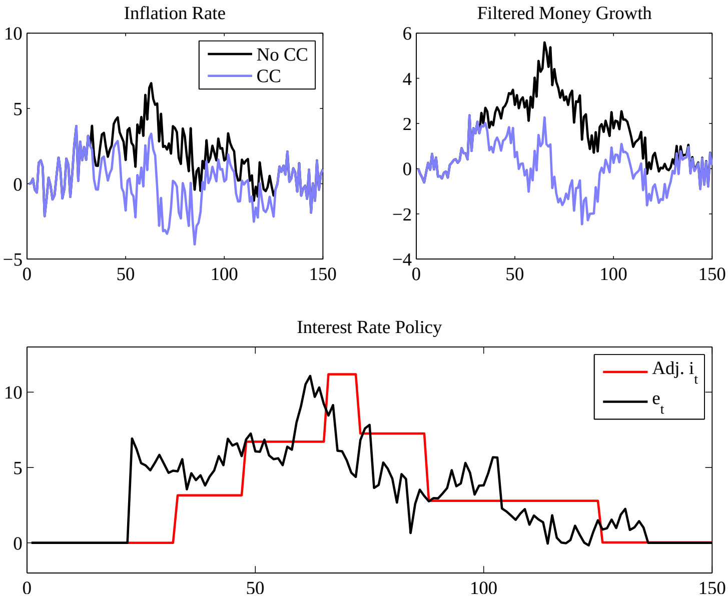

# Cross–Checking

- Go back to cross checking: The CB shifts its Taylor rule if

$$\bigwedge_{i=1}^{N}(|\kappa_{t-i}| > \overline{\kappa})$$

- Sounds reasonable
  - Convenient (simple enough to be implemented)
  - Seems to work well

# Cross–Checking

## Questions: Implementation

- Can the Central Banker really track a perfect measure of money growth?
- Measurement errors $\Longrightarrow$ Need to revise the criterion?
- Need money demand to back out equilibrium path of money growth (needed for cross check)
- Problem: fundamentally unstable econometric estimates

# Efficiency

- Is it an efficient rule? (Third or fourth best analysis)
- In the paper: derives the optimal behavior of the CB *imposing* cross–checking
- In other words: Cross checking is not necessarily an optimal behavior (in particular in a micro–founded model)

# Efficiency

- Can it be derived from first principles?
- Can imagine that this reflects a kind of commitment from the CB
- Commit not to let nominal growth go out of the way

$$\min \mathbb{E}\left[\sum_{i=0}^{\infty} \beta^i \frac{1}{2}(\pi_{t+i} - \pi^\star)^2 \left( + \underbrace{\mathscr{C}(\mu_{t+i})}_{\text{Management Cost}} \right) |\Omega_t \right]$$

subject to the model and

$$\sum_{i=1}^{N} \Phi(\mu_{t-i}) \leqslant \widetilde{\kappa}_N$$

# Efficiency

- No commitment: A rule in the same vain as the one exhibited in the paper
- Full commitment: A rule that involves expectations about future money growth $\Longrightarrow$ may be more smoothing.

# Efficiency

- What is important?

$$\bigwedge_{i=1}^{N}(|\kappa_{t-i}| > \overline{\kappa}) \text{ or } \bigwedge_{i=0}^{N-1}(|E_t\kappa_{t+i}| > \overline{\kappa})?$$

- Is there an optimal $N$?
- Criterion to select the threshold $\kappa$?