Won't Get Fooled Again – Or Will We? Monetary Policy, Model Uncertainty, and 'Policy Model Complacency'

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Introduction

- Question: can modern monetary policy work even if it is predicated on a mis-specified policy model?
  - "modern monetary policy" - interest rate operating procedure
  - policy "works" if economy moves towards targeted values of macro variables
- Answer: yes!

Introduction

- Suggests efficacy of monetary policy in the face of policy model uncertainty
- BUT – purpose not to encourage "policy model complacency", but to *warn against it*:
  - although policy works, central banks vulnerable to "surprises" – events with systematic origins in the "true model" not anticipated by policy model;
  - central bankers should therefore entertain more eclectic views of how the economy operates
    - pay attention to models outside mainstream model that make non-mainstream predictions

Introduction

Organization of talk:

- Basic 3-equation model
- Monetary policy with a mis-specified IS curve
- Monetary policy with a mis-specified Phillips curve
- The perils of "policy model complacency"
- Conclusions

Basic 3-equation model – IS curve

- $$y = A - \delta r$$

$$r = b + m$$

$$\Rightarrow y = A - \delta(b + m)$$

Basic 3-equation model – Phillips curve

- Basic PC:

$$p = \psi + \phi p^e + \alpha y$$

- Accelerationist PC:
  $\phi = 1$, $p^e = p_{-1}$, and $\psi = -\alpha y_n$

$$\dot{p} = \alpha(y - y_n)$$

Basic 3-equation model – IROP

- Central bank sets overnight rate according to:

$$\dot{b} = \lambda(p - p^T) + \mu(y - y^T)$$

- $y^T = y_n$ if Phillips curve accelerationist

Monetary policy with a mis-specified IS curve

- Suppose that "true model" states:

$$m = -\eta b$$

- But central bank thinks:

$$m = \bar{m}$$

Monetary policy with a mis-specified IS curve

- "True" IS curve:

$$y = A - \delta(1 - \eta)b$$

- Policy model IS curve:

$$y = (A + \delta\bar{m}) - \delta b$$

- Lucas critique problem!

Implications for stability

- Dynamics of economy summarized as:

$$\dot{y} = -\delta(1-\eta)[\lambda(p - p^T) + \mu(y - y_n)]$$

$$\dot{p} = \alpha(y - y_n)$$

Implications for stability

- Dynamics of economy summarized as:

$$\dot{y} = -\delta(1-\eta)[\lambda(p-p^T)+\mu(y-y_n)]$$

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- Equilibrium conditions $\dot{y} = \dot{p} = 0$ yield solutions $y = y_n$ and $p = p^T$

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- At same time ...

Implications for stability

- $\mathbf{Tr}(\mathbf{J}) = -\delta(1-\eta)\mu$,
  $\mathbf{Det}(\mathbf{J}) = \delta(1-\eta)\lambda\alpha$

$$\mathbf{J} = \begin{bmatrix} -\delta(1-\eta)\mu & -\delta(1-\eta)\lambda \\ \alpha & 0 \end{bmatrix}$$

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- $\mathbf{Tr}(\mathbf{J}) = -\delta(1-\eta)\mu$,
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- $\mathbf{Tr}(\mathbf{J}) < 0$ and $\mathbf{Det}(\mathbf{J}) > 0$ if $\eta < 1$

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- $\mathbf{Tr}(\mathbf{J}) < 0$ and $\mathbf{Det}(\mathbf{J}) > 0$ if $\eta < 1$
- Stability plausible (as long as commercial bank reaction to changes in overnight rate not "too large")

$$\mathbf{J} = \begin{bmatrix} -\delta(1-\eta)\mu & -\delta(1-\eta)\lambda \\ \alpha & 0 \end{bmatrix}$$

Monetary policy with a mis-specified Phillips curve

- Suppose that "true model" states:

$$p = \psi + \phi p^e + \alpha y$$

$$\dot{p^e} = -(1-k)(p - p^T)$$

- But central bank thinks:

$$\dot{p} = \alpha(y - y_n)$$

$$p = p^T$$

Monetary policy with a mis-specified Phillips curve

- Central bank IROP:

$$\dot{b} = \mu(y - y^T)$$

- Tinbergen problem!
  - Central bank thinks p managed by separate policy authority ...
  - ... so too few instruments relative to policy targets

Implications for stability

- Dynamics of economy summarized as:

$$\dot{y} = -\delta\mu(y - y^T)$$

$$\dot{p} = -\phi(1-k)(p - p^T) - \alpha\delta\mu(y - y^T)$$

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Implications for stability

- $\mathbf{Tr}(\mathbf{J}) = -(\delta\mu + \phi[1-k])$,
  $\mathbf{Det}(\mathbf{J}) = \delta\mu\phi(1-k)$

$$\mathbf{J} = \begin{bmatrix} -\delta\mu & 0 \\ \alpha\delta\mu & -\phi(1-k) \end{bmatrix}$$

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Implications for stability

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- $\mathbf{Tr}(\mathbf{J}) < 0$ and $\mathbf{Det}(\mathbf{J}) > 0$ if $k < 1$
- Stability plausible (as long as the expectations remain heterogenous – specifically, some decision makers remain credulous ($p^e = p^T$))

$$\mathbf{J} = \begin{bmatrix} -\delta\mu & 0 \\ \alpha\delta\mu & -\phi(1-k) \end{bmatrix}$$

The perils of "policy model complacency"

- Preceding analysis is "good news, bad news" story for monetary policy authorities
- GOOD NEWS obvious:
  - efficacy of modern monetary policy at least somewhat robust to policy model mis-specification ...
  - ... and therefore invulnerable to (at least some) sources of model uncertainty

The perils of "policy model complacency"

- BAD NEWS more subtle because it emanates from the good news ...
- ... which can give rise to "policy model complacency":
  - policy may succeed even when central bank's understanding of the macroeconomy is deficient
  - danger: success of policy misinterpreted as successful understanding of underlying workings of economy
  - result: "policy model complacency"
    - creates vulnerability to surprises (events with systematic origins that are not anticipated by policy model
    - as in 2007/08, for example? (See Goodhart 2009, pp.826-7)

The perils of "policy model complacency"

- Both examples of policy model mis-specification presented earlier exemplify vulnerability to surprises emanating from "policy model complacency"
- With mis-specified IS curve, if η becomes "too large" ($\eta > 1$ – i.e., rate spreads strongly counter-cyclical), previously successful monetary policy will suddenly cease to stabilize the economy

The perils of "policy model complacency"

- With mis-specified Phillips curve, if k becomes "too large" ($k = 1$ – i.e., p^T loses all credibility as anchor for inflation expectations), previously successful monetary policy will suddenly cease to stabilize the economy
- Possible to imagine real-world circumstances under which these conditions emerge (2007/08 and 1970s, respectively).

The perils of "policy model complacency"

- Lessons for policy quite simple: *policy makers should entertain more eclectic views of how the economy functions*
  - there is no shortage of "heterodox" macro models that differ fundamentally from dominant New Consensus DSGE model
  - these are provided free of charge by the academy
  - results of this paper suggest that they amount to a free insurance policy

Conclusions

- No lack of discontent with economic theory since the crisis
- This includes calls for wholesale abandonment of New Consensus DSGE model that dominates monetary policy analysis
- Even if such calls not heeded by policy makers, there is a clear case for paying more attention to "heterodox" models:
  - they are provided at no cost to central banks by academics
  - they frequently suggest systematic tendencies that are not present (or even possible) in DSGE models
  - as such, paying attention to them provides free insurance against the downside risks inherent in "policy model complacency"