Analysis of Policy and of Financial Frictions in New Keynesian Models

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Outline

- Why models?
- Why did New Keynesian DSGE models become so popular in past decade?
- DSGE models after 2008.

Why Models?

- Policy questions:
  - What kind of monetary policy will stabilize inflation?
  - Should monetary policy respond to credit growth or stock prices and, if so, by how much?
  - Should government spending and tax policy be used to stabilize the business cycle? If yes, how?
  - How should monetary policy respond to changes in interest rate spreads?
  - Should the government ever purchase privately-issued assets or make loans to banks? If yes, when and how much?
  - How should leverage restrictions on financial firms move over the cycle?

- All these questions:
  - have a quantitative answer.
  - require contemplating the interaction of financial, labor, goods, currency markets, etc.
  - difficult to juggle all these things in your head.

Why Models?

- Models can be used to compute the quantitative answers that are required.

- They can ensure that the rationale for whatever decision is taken in the end is coherent.

- They are a discipline device: if the answer they give contradicts your intuition, you can fight it out with the model.
  - Either you discover your intuition was wrong.
  - Or, you realize you are right and that the model fails to properly capture some feature of reality.
    - In this case, you've gained a deeper understanding of your own initial intuition.
  - Either way, there is a deeper foundation for the policy action taken.

Why did New Keynesian (NK) DSGE models become so popular in the past decade?

- Two key findings:
  - They resolved an age-old puzzle.
  - They are useful for forecasting.
- They played an important role in the analysis of policy questions.

Hume essay, *Of Money* (1752)

- …money… must first quicken the diligence of every individual, before it encrease the price of labour.

- The farmer and gardener, finding, that all their commodities are taken off, apply themselves with alacrity to the raising more…

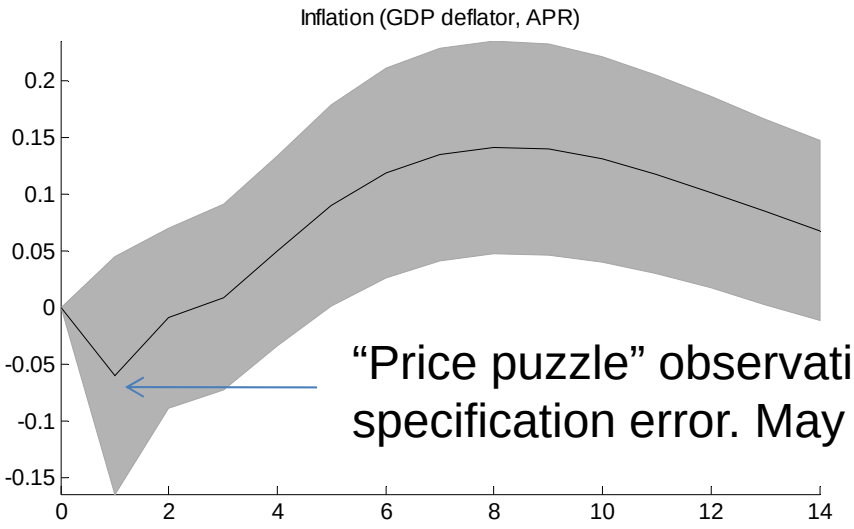
Early Monetary DSGE Models

- Generally inconsistent with Hume observation (also, Friedman's AEA Presidential address).

- In those models, monetary expansion produced an immediate rise in *P* and little rise in output.
  - Not surprisingly, early academic models little use to practical people.

– Can use VARs to quantify Hume observations…

The Hume Problem



"Price puzzle" observation: initially thought to reflect econometric specification error. May actually reflect a real feature of the data.

Responses to a one-standard deviation shock to monetary policy

source: Christiano, Traband and Walentin, 2010, DSGE Models for Monetary Policy Analysis, in Friedman and Woodford, editors, Handbook of Monetary Economics

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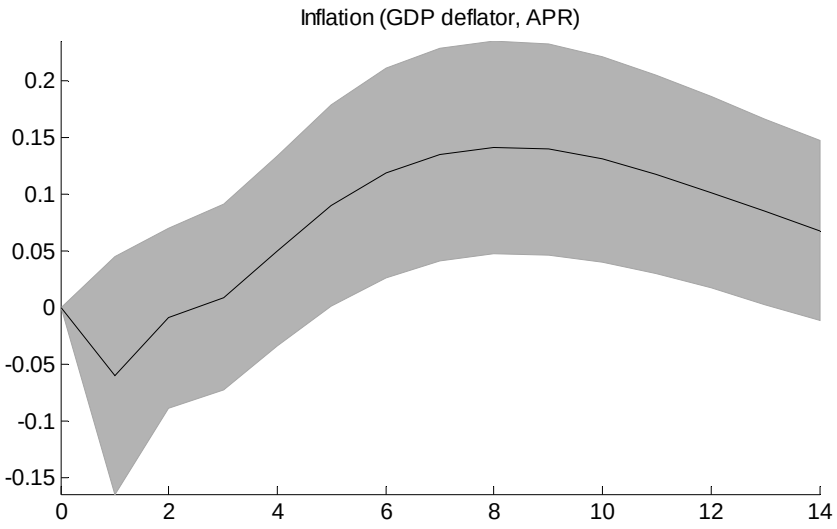

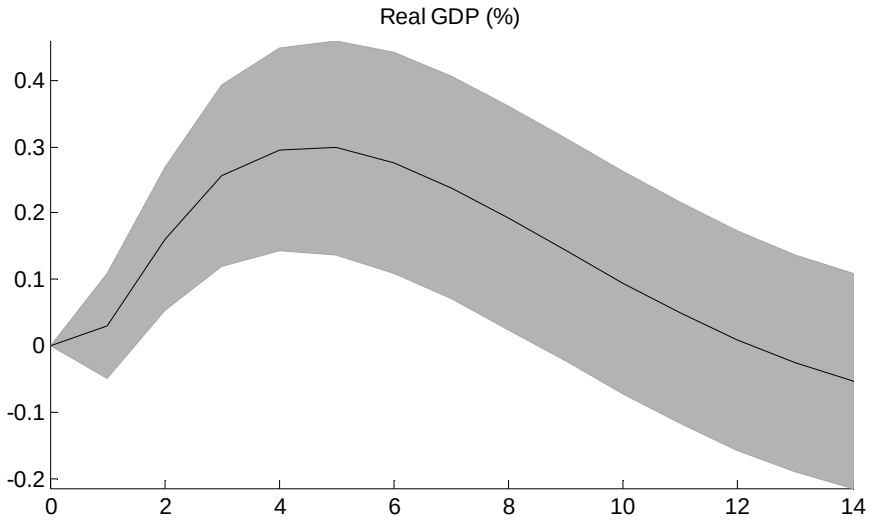

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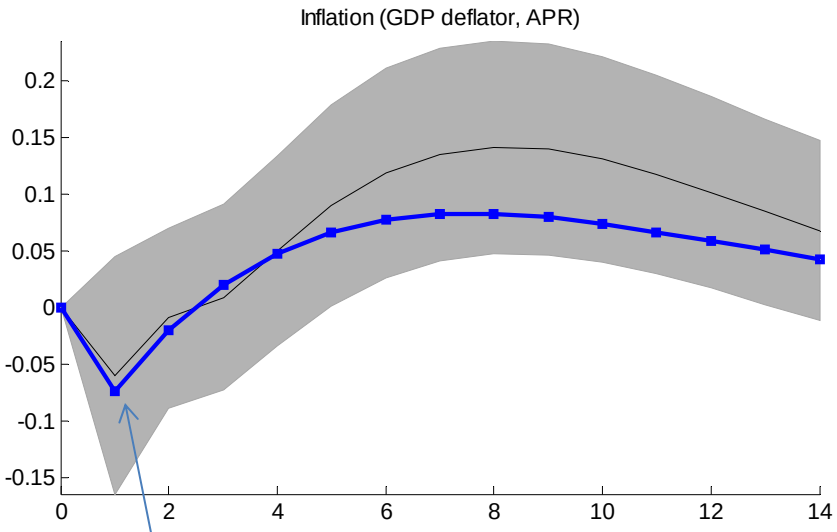
Position in late 1990s

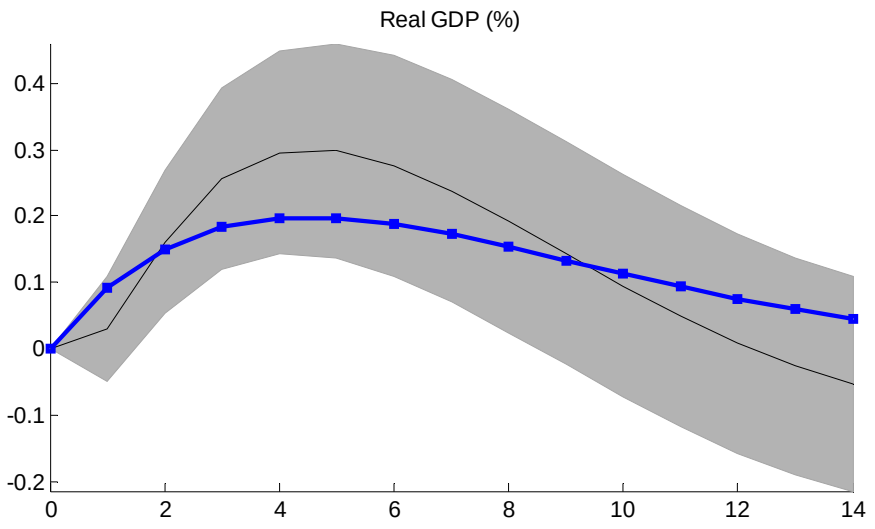
- Mankiw (2000,NBER WP 7884) argued that no plausibly parameterized model would soon come to terms with the Hume observation.
  - A quantitative account would require assuming prices stuck for two years…inconsistent with micro evidence.

- The discovery was then made that New Keynesian models give a plausible account for the Hume observation.

- New Keynesian DSGE models elevated from 'toy model' status.

The Hume Problem and DSGE Models





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Assumption that firms must borrow to finance variable inputs (the "working capital channel") implies that an expansionary monetary policy shock (which drives down the interest rate) reduces inflation for a while.

Significance of First Observation

- Earlier models, which were not compatible with Hume observation seemed to miss key aspects of the monetary transmission mechanism.
  - Lacked the credibility needed to be useful in the analysis of monetary policy.

A Second Key Finding

- Smets and Wouters' demonstration that New Keynesian DSGE models forecast about as well as sophisticated atheoretical models.

- This elevated DSGE models from status of 'toys' to serious tools.

Contribution of New Keynesian DSGE Models to Analysis of Policy

- Much discussion of inflation targeting and the Taylor Principle:
  - If inflation rises 1%, raise nominal interest rate by more than 1%.

- DSGE models helped quantify the wisdom in the Taylor Principle.

- They also articulate some possible pitfalls
  - If working capital channel is strong enough, Taylor Principle may destabilize.
  - Taylor Principle may inadvertently trigger a 'rational asset price bubble'.

- Contributed to discussions about how to use fiscal/tax policy to stabilize business cycles.

- It is possible to integrate rich financial structures into NK DSGE models, to address questions that involve finance:
  - Implications of central bank purchases of assets.
  - How to respond to interest rate spreads, credit growth, stock market?

Objective of Course

- Introduction to the basic New Keynesian model.
  - Foundations and concepts.
- Policy implications of the New Keynesian model
  - Case for and against ‘inflation targeting’.
  - Risks to the economy if the interest rate is at its zero lower bound.
  - Monetary policy and asset market fluctuations.
  - Fiscal policy.
- Financial frictions.
- Computer exercises to learn Dynare.