

Macroeconomics under Financial Crisis

Lecture 6

The macroeconomics consensus before the crisis II
The workhorse model

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July 4, 2016

A considerable consensus in the late 1990s emerges

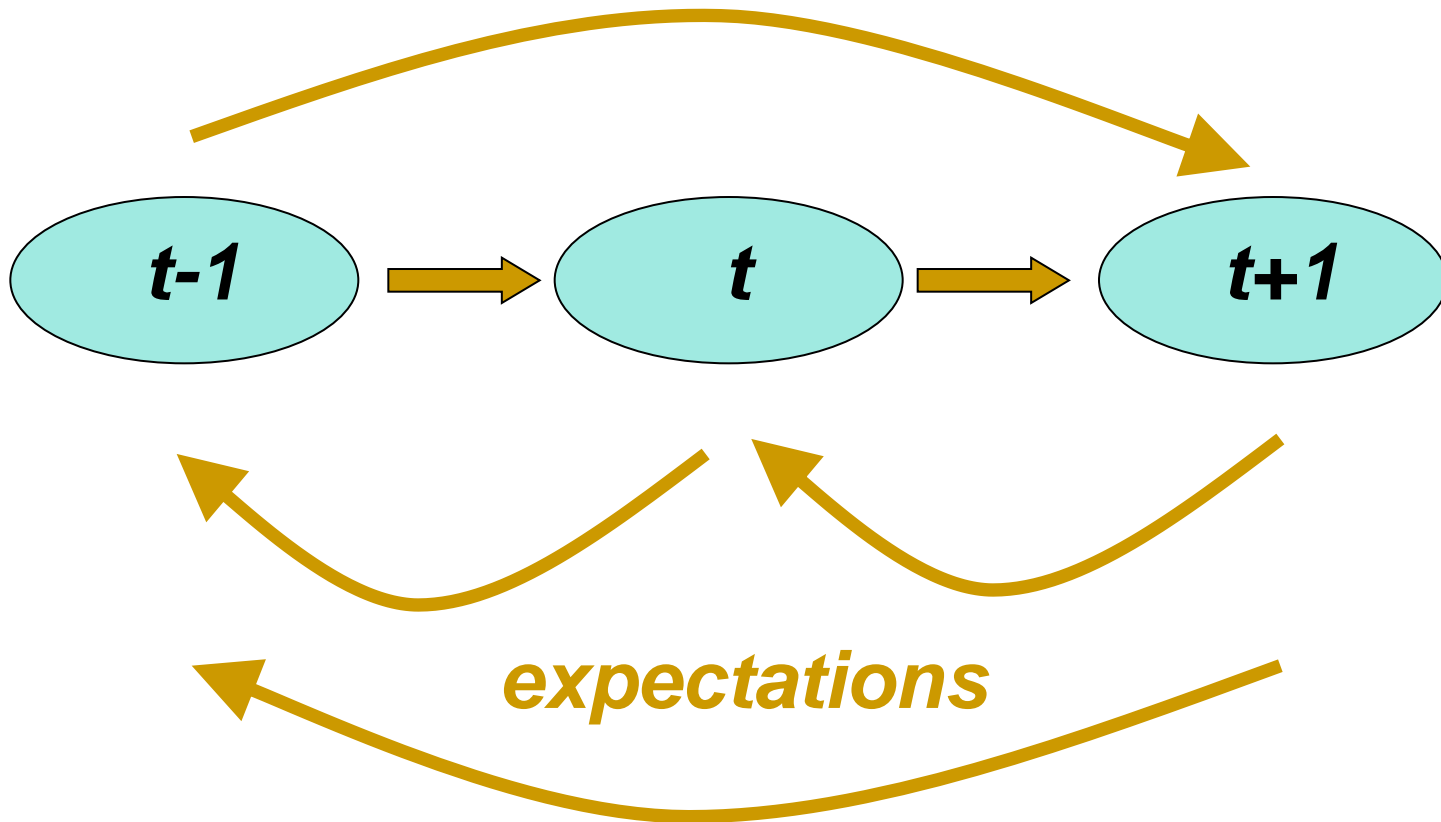
- “New Keynesian Macroeconomics”

or

“New Neo-classical Synthesis”

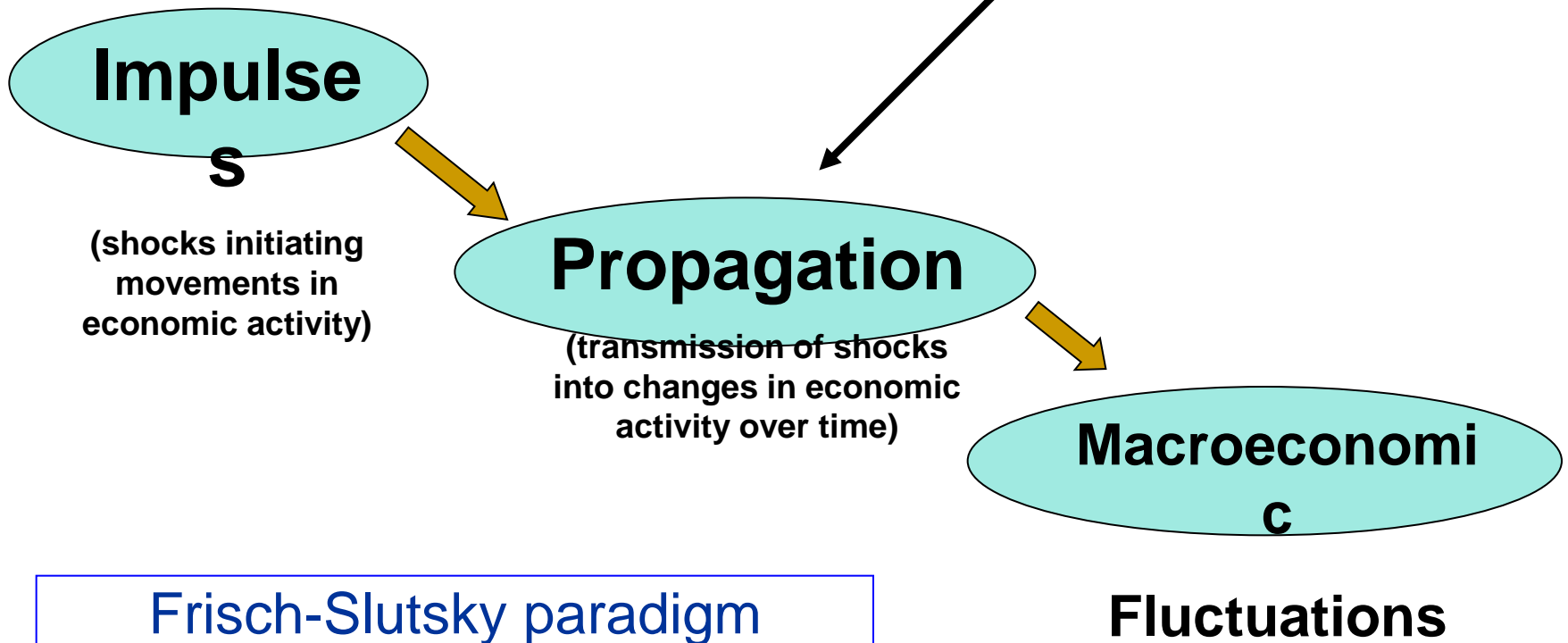
- Dynamic Stochastic General Equilibrium

Dynamic

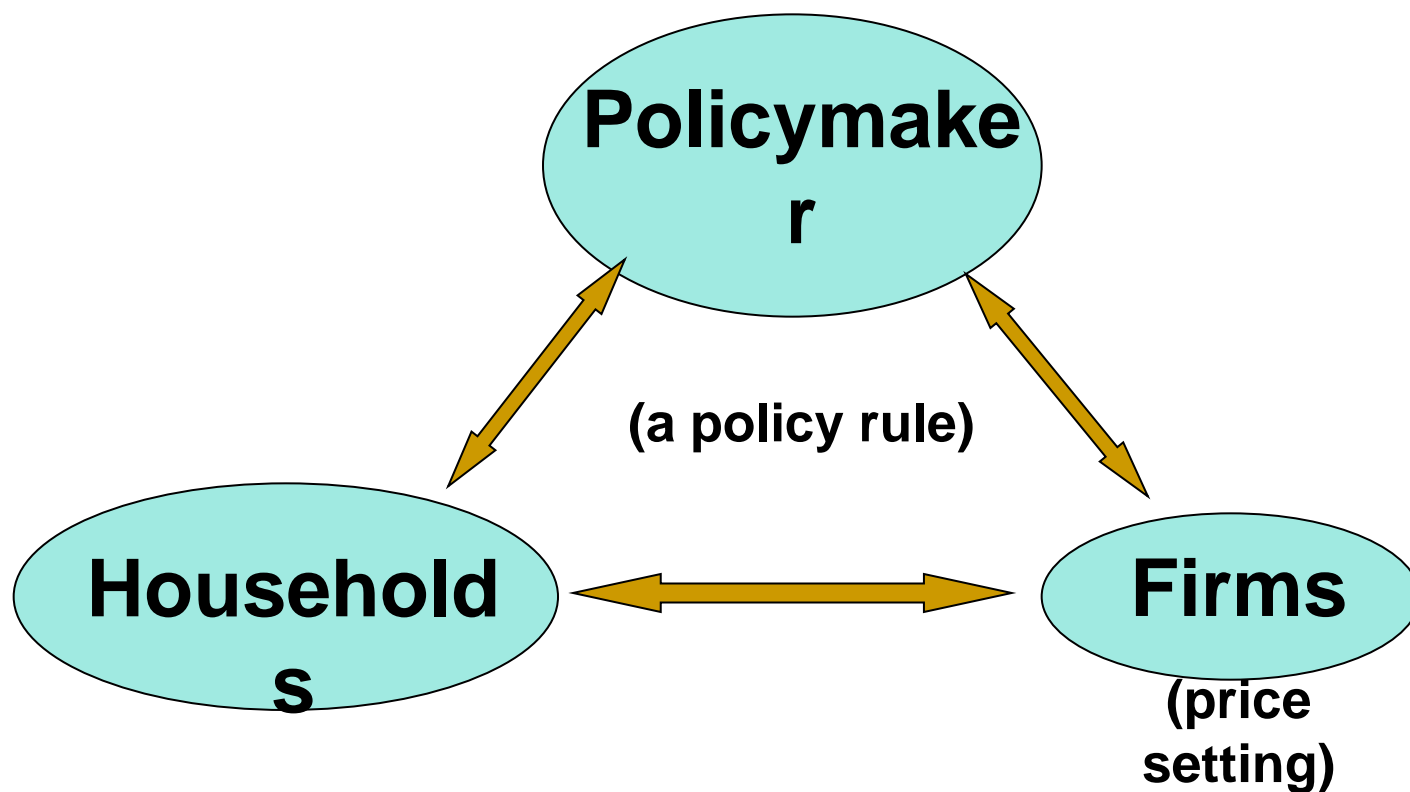


Stochastic

The structural model (reflecting the structure of the economy) determines the way the economy reacts to certain types of shocks. The structure is dependent on the parameters in the particular model we use. The same model can give quite different answers depending on the values of the parameters



General equilibrium



(Euler equation)

Key elements of NK/NNS

- IS curve
$$\tilde{y}_t = \frac{1}{\sigma} (i_t - E\{\pi_{t+1}\} - r_t^n) + E\{\tilde{y}_{t+1}\}$$

where

$$\tilde{y}_t = (y_t - y_t^n)$$

- Philips curve

$$\pi_t = \beta E\{\pi_{t+1}\} + \kappa \tilde{y}_t$$

- Monetary Policy anchor

$$i_t = \rho + \phi_\pi \pi_t + \phi_y \hat{y}_t + v_t$$

Key elements of NK/NNS-- IS curve

$$\tilde{y}_t = \frac{1}{\sigma} (i_t - E\{\pi_{t+1}\} - r_t^n) + E\{\tilde{y}_{t+1}\}$$

where $\tilde{y}_t = (y_t - y_t^n)$

the aggregate demand equation is derived from the first-order conditions of consumers, which give consumption as a function of the real interest rate and future expected consumption.

As there is no other source of demand in the basic model, consumption demand is the same as aggregate demand.

Assuming that as long as the marginal cost is less than the price the price setters satisfy demand at existing prices, aggregate demand is equal to output.

Putting these assumptions together, the first relation gives us output as a function of the real interest rate and future expected output.

Key elements of NK/NNS -- Philips curve:

$$\pi_t = \beta E\{\pi_{t+1}\} + \kappa \tilde{y}_t$$

- Philips curve:
under particular specifications (e.g., Calvo pricing), the Phillips curve-like equation gives inflation as a function of expected future inflation, and of the “output gap”, defined as actual output minus what output would be absent nominal rigidities.

Key elements of NK/NNS -- Monetary Policy rule

$$i_t = \rho + \phi_\pi \pi_t + \phi_y \hat{y}_t + v_t$$

- Monetary Policy anchor:

the monetary policy rule is formalized as a “Taylor rule”, a reaction function giving the real interest rate chosen by the central bank as a function of inflation and the output gap. (Nominal money does not explicitly appear in the model: The assumption is that the central bank can adjust the nominal money stock so as to achieve any real interest rate it wants. And, what matters for activity is the real interest rate, not nominal money per se.)

The Taylor Rule

- Taylor rule
 - Activist rule for monetary policy
 - Change the federal funds rate in response to output gaps and inflation gaps
 - Set the federal funds rate equal to a baseline rate
 - Then adjust it up or down depending on the size of the output gap or inflation gap

The Taylor Rule

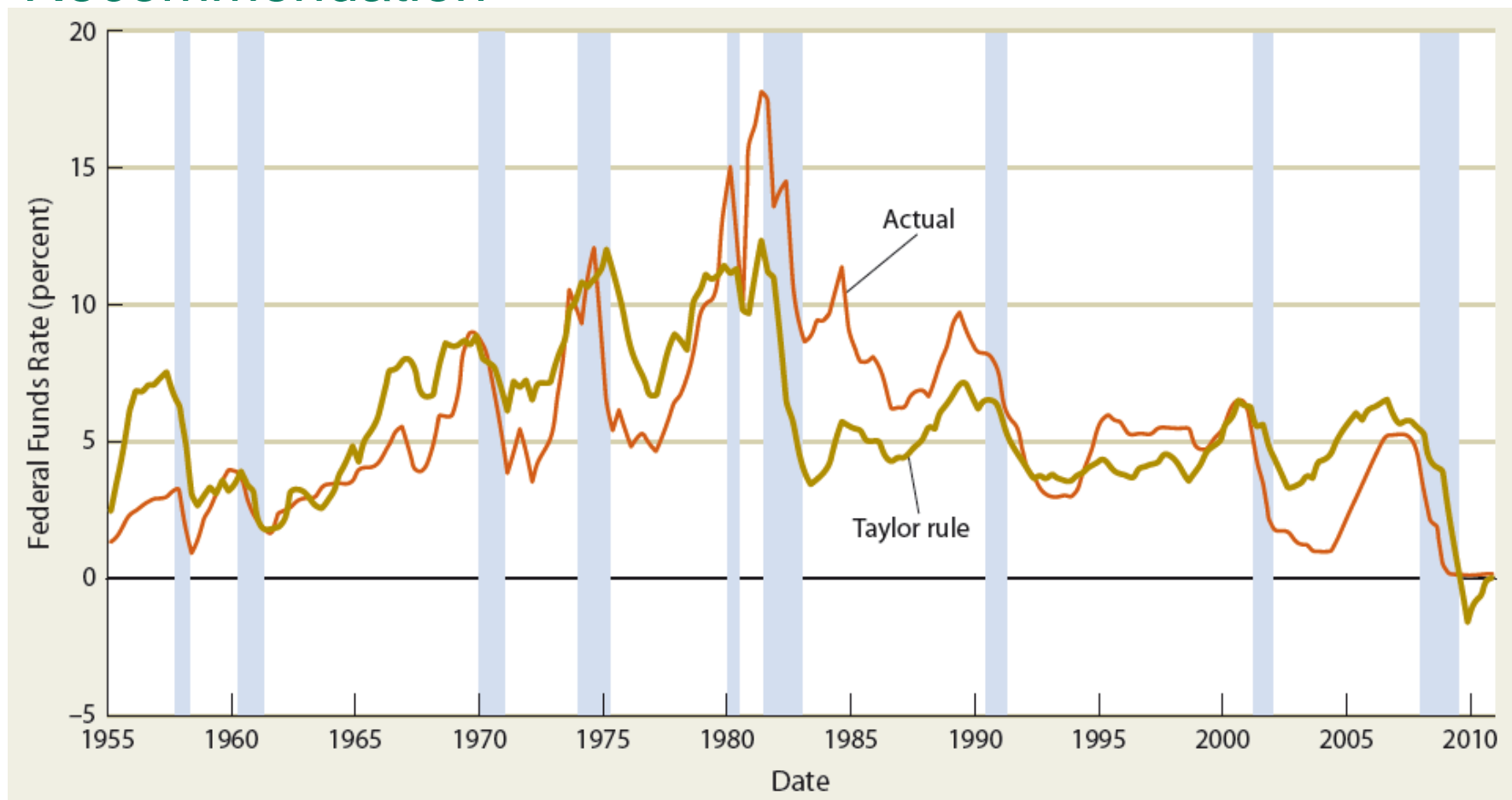
■ Taylor rule

- The baseline rate = equilibrium real federal funds rate + average inflation rate over the last year
- If: positive output gap or inflation gap
 - Increase the nominal federal funds rate
- If: negative output gap or inflation gap
 - Decrease the nominal federal funds rate

Taylor's rule of thumb

$$i_t = r^n + 1.5[\pi_t - \pi^*] + 0.5(y_t - y_t^n)$$

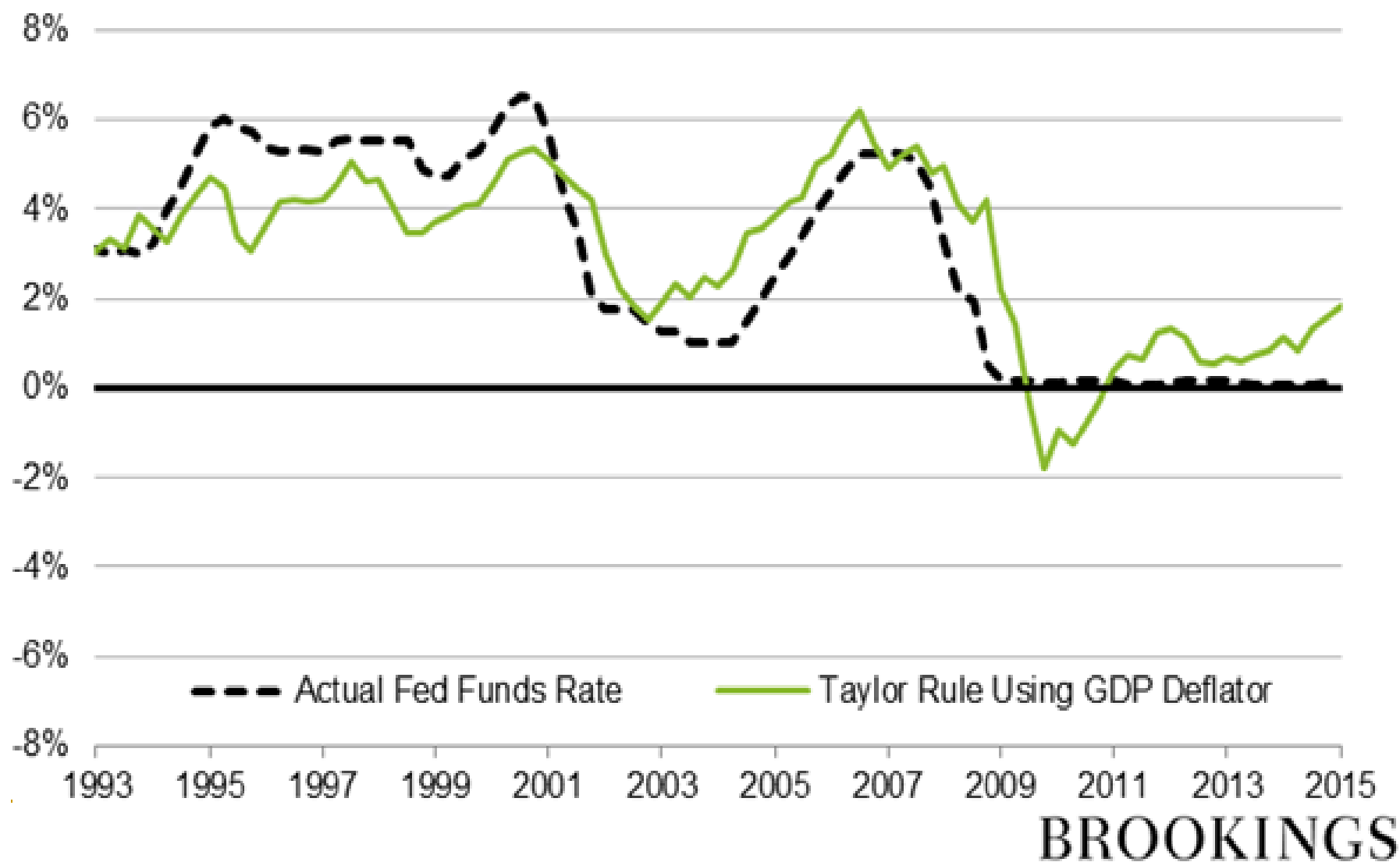
Actual Federal Funds Rate and the Taylor Rule Recommendation



- (a) The Taylor rule sets the nominal federal funds rate as the sum of a long-run equilibrium real rate, inflation over the past year, a response to the output gap, and a response to the inflation gap. A policymaker following the Taylor rule generally would have wanted tighter policy in the 1950s, 1960s, 1970s, and 2000s and easier policy in the 1980s and 1990s.

Key elements of NK/NNS --MR

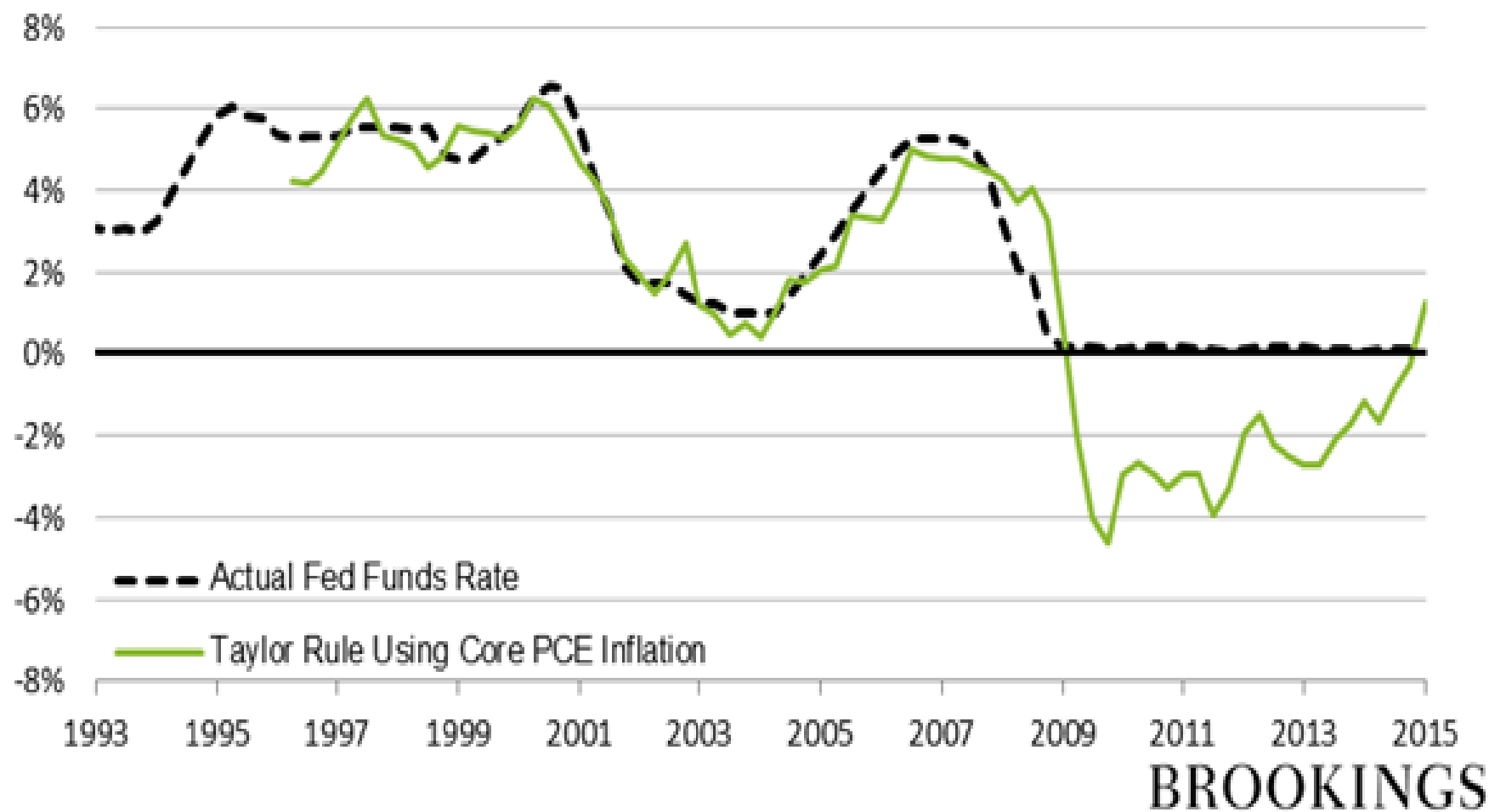
Figure 1: The Original Taylor Rule, 1993-Present



Key elements of NK/NNS –MR-- Bernanke

Figure 2: Predictions of a Modified Taylor Rule

(Core PCE inflation, weight of 1.0 on output gap)



Taylor Rule

$$i_t = r^n + \pi_t + \phi_\pi [\pi_t - \pi^*] + \phi_y (y_t - y_t^n)$$

where $\phi_\pi > 0$, $\phi_y > 0$

or in a more practical form

$$i_t = a + \phi_\pi \pi_t + \phi_y (y_t - y_t^n)$$

Discussion about presentation assignments

The End