Discussion of "Hysteresis in Unemployment " by Laurence Ball

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Ball's Test for Hysteresis

- A traditional Phillips curve

$$\pi_t = \pi_{t-1} - \alpha \left(u_t - u_t^*\right) \tag{1}$$

- Conventional view: $\uparrow u^* \implies \uparrow \pi$
- Hysteresis: $\uparrow\uparrow u \implies \uparrow u^* \implies \downarrow \pi$
- Evidence

Evidence: OECD Episodes

	$\Delta u^* \gg 0$	$\Delta u^* \ll 0$
$\Delta \pi \gg 0$	0	5
$\Delta \pi \approx 0$	0	4
$\Delta \pi \ll 0$	8	0

Measuring the Natural Rate

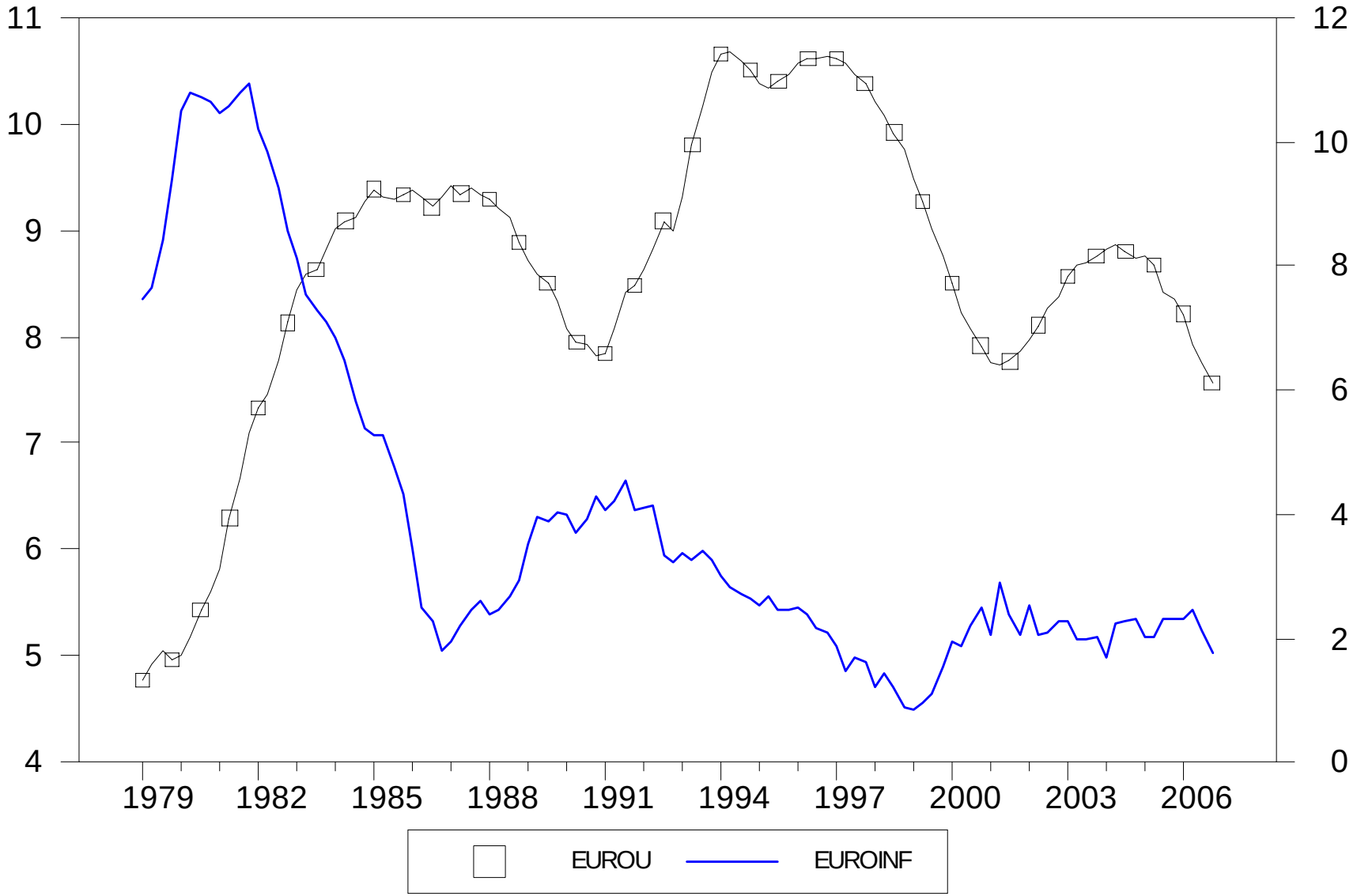
- Basic identification problem
- Ball: $\{u_t^*\}$ constructed as

$$u_t^* \simeq \mathbf{HP}\left\{u_t + \frac{1}{\widehat{\alpha}}\,\Delta\pi_t\right\}$$

- Implicit assumptions:

(i) u_t^* evolves smoothly over time
(ii) $u_t - u_t^*$ orthogonal to error term in PC

Are these assumptions reasonable? Need for a theory of u_t^* and the error term.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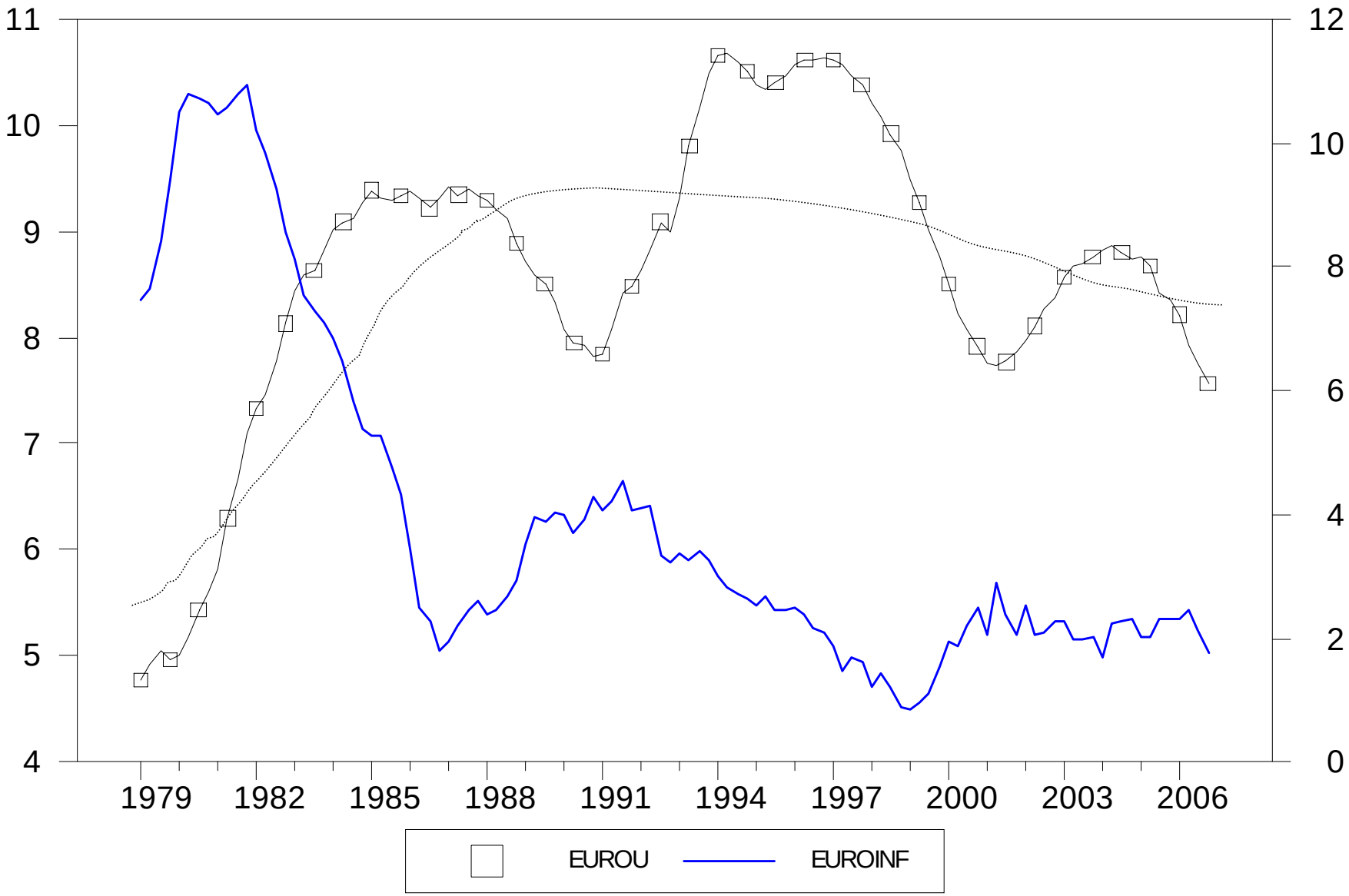
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Suggested Alternative Tests

- Compare change in u to that in u^* during "Ball episodes"

  Advantage: not distorted by changes in inflation resulting from other factors

  Evidence: $|\Delta u| > |\Delta u^*|$ in all but three episodes.

- Granger-causality from u_t to u_t^*

  - But likely spurious Granger-causality caused by HP filter

- Responses to identified monetary policy shocks

  - Are the effects on unemployment permanent/highly persistent?
  - Are they consistent with the relation $\Delta \pi_t = -\alpha \ u_t$?

- Assessment of "long-term unemployment hypothesis": redo analysis excluding LT unemployed from u_t measure

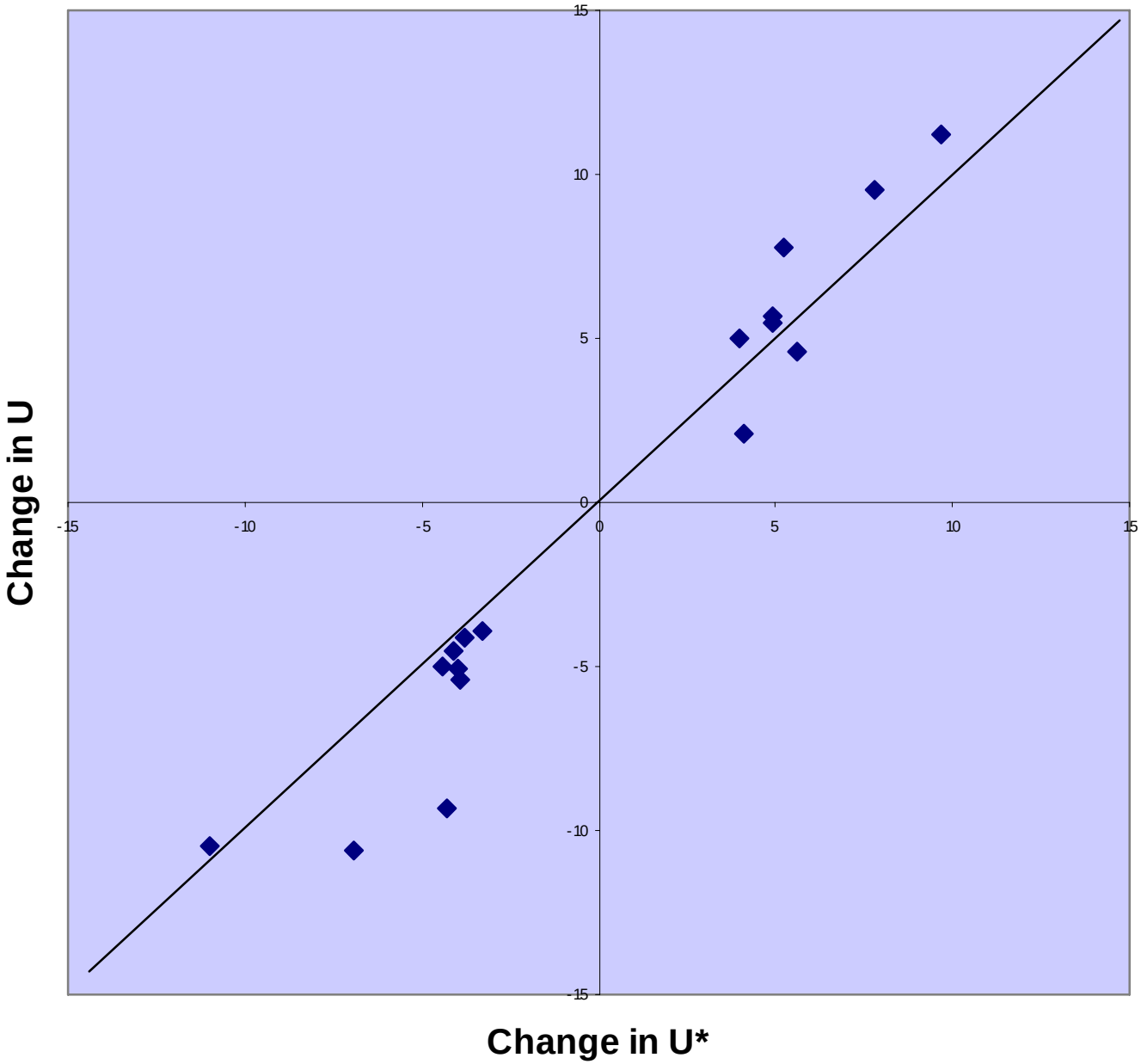
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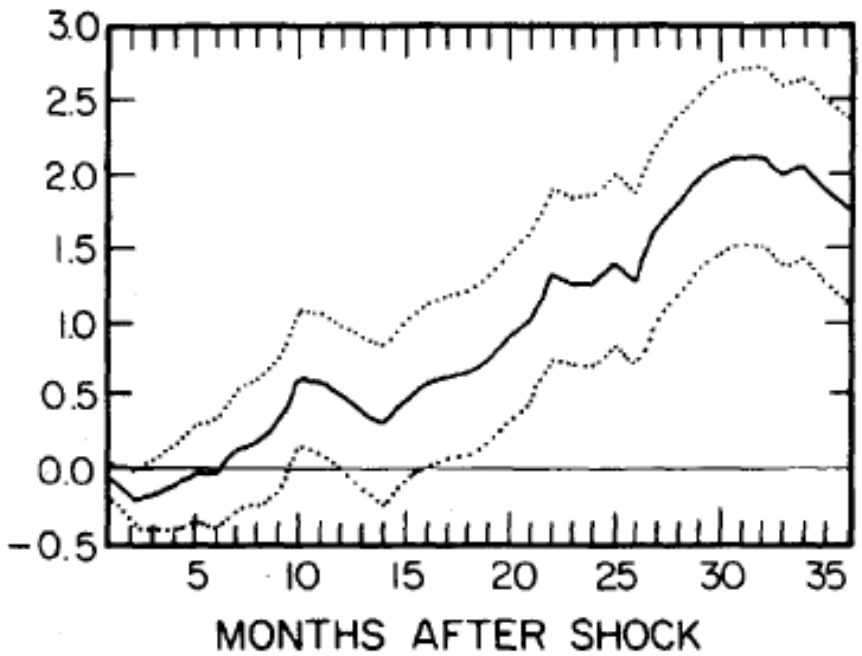
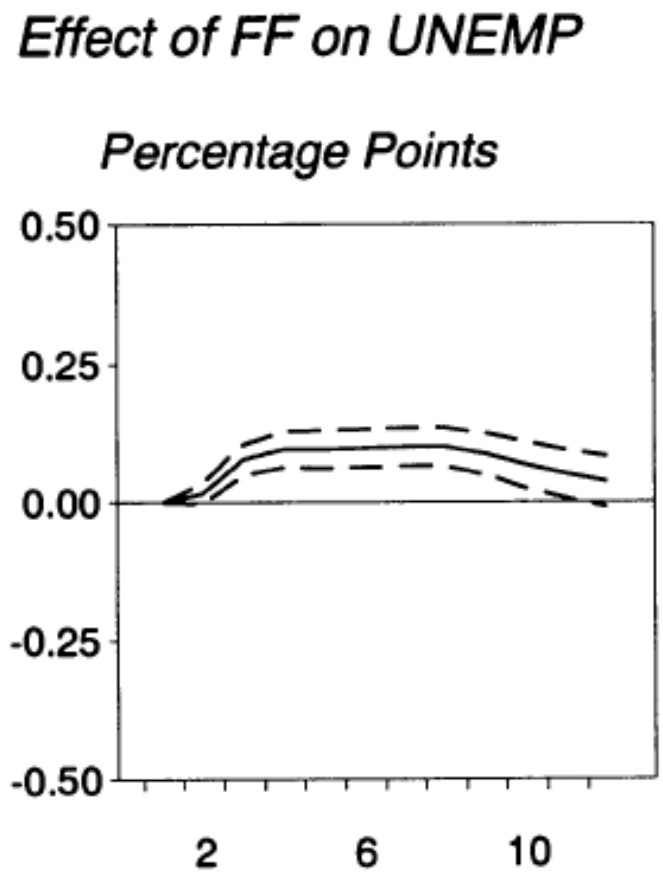
Figure 5 IMPULSE RESPONSE FUNCTION FOR BASIC UNEMPLOYMENT REGRESSION.



Notes: The impulse response function shows the impact of a unit shock to the monetary dummy variable on the level of the unemployment rate (expressed in percentage points). The coefficient estimates used to generate the impulse response function are given in Table 2. The dashed lines show the one standard error bands.

Source: Romer and Romer (1989)



Source: Christiano, Eichenbaum and Evans (1996)

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"This paper is based on the presumption that the old-fashioned Phillips curve is a useful framework. The relative merits of old and new PCs can be debated in other forums..."

L. Ball, "Hysteresis in Unemployment"

Unemployment and Inflation: A Microfounded Approach

- Inflation equation

$$\pi_t = \beta \; E_t\{\pi_{t+1}\} - \lambda\varphi \; (u_t - u_t^n) - \Delta a_t$$

- Differences with traditional Phillips Curve

  - structural interpretation
  - inflation is forward looking.
  - well defined economic intrpretation for the natural rate

- No reason to presume $\{u_t^n\}$ is a smooth function of time (e.g. large response to real shocks if real wage rigidities).

- Adverse productivity shock $\downarrow a_t \Longrightarrow \uparrow\uparrow u_t^n$

  $\Longrightarrow$ optimal policy: $\uparrow u_t$, $\uparrow \pi_t$

- Persistent increase in u_t^n in response to adverse real shocks (if strong real wage rigidities), partly matched by corresponding increase in u_t under optimal policy $\Longrightarrow$ appearance of hysteresis.
- Unanswered question: why don't real wages fall?

Unemployment and Inflation: A Microfounded Approach

- Staggered wage setting à la Calvo

$$\pi_t^w = \beta \; E_t\{\pi_{t+1}^w\} - \lambda \; (\mu_t - \mu_t^n)$$

where

$$\mu_t \equiv (w_t - p_t) - (c_t + \varphi \; n_t)$$

- Unemployment

$$u_t \equiv n_t^s - n_t$$

where n_t^s is implicitly defined by

$$w_t - p_t = c_t + \varphi \; n_t^s$$

- Wage markup and unemployment

$$\mu_t = \varphi \; u_t \qquad ; \qquad \mu_t^n = \varphi \; u_t^n$$

- Wage inflation equation

$$\pi_t^w = \beta \; E_t\{\pi_{t+1}^w\} - \lambda\varphi \; (u_t - u_t^n)$$

- Price setting:

$$p_t = w_t - a_t$$

where $\Delta a_t = \varepsilon_t \sim$ white noise.

- Price inflation equation

$$\pi_t = \beta \; E_t\{\pi_{t+1}\} - \lambda\varphi \; (u_t - u_t^n) - \varepsilon_t$$

- Differences with traditional Phillips Curve

- unemployment coefficient and error term have a structural interpretation

- inflation is forward looking.

- the natural rate has a well defined meaning: equilibrium unemployment in the absence of nominal rigidities.

- No reason to presume $\{u_t^n\}$ is a smooth function of time (e.g. large response to real shocks if real wage rigidities). Conventional measures likely to be poor proxies.
- Adverse productivity shock $\downarrow \varepsilon_t \Longrightarrow \uparrow\uparrow u_t^n \Longrightarrow$ optimal policy: $\uparrow u_t$, $\uparrow \pi_t$
- Hysteresis $\Longleftrightarrow$ persistent increase in u_t^n in response to adverse shocks (e.g. strong real wage rigidities).

Predictions under No Hysteresis

	$\Delta u^* \gg 0$	$\Delta u^* \ll 0$
$\Delta \pi \gg 0$	X	
$\Delta \pi \approx 0$	X	X
$\Delta \pi \ll 0$		X