Discussion of "Optimal Monetary Policy in Production Networks"

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Question and Results

- How should a central bank conduct monetary policy in an economy with
  - Nominal rigidities
  - Multiple sectors
  - Sectoral linkages (production network)

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- Output gap stabilization approximates fully optimal policy

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- Households consume CES aggregator over sectoral goods
  - And are subject to a cash-in-advance constraint
- Central bank controls quantity of money (nominal demand)

What Do We Learn from This Paper?

- Compare this paper with two-sector NK model without production network in Woodford (2003)
  - Labor only input in production
  - Perfectly observable sector-specific technology shocks
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- Two dimensions
  1. Nominal rigidities as imperfect information
  2. Production network

Approximated Equilibrium Conditions

- Sectoral Phillips curves

$$\pi_{jt} = \kappa_j(x_t + \gamma_j q_t) + \beta \mathbb{E}_t \pi_{jt+1}$$

  - $q_t \rightarrow$ Price of good 2 relative to good 1 (in log-deviations from flexible-price counterpart)
    - ⋆ Endogenous cost-push shock
  - $\gamma_1 \propto n_2 \rightarrow$ Size of sector 2 weights importance of relative price for inflation in sector 1
    - ⋆ Similarly, $\gamma_2 \propto -n_1$

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- Relative price dynamics

$$q_t = q_{t-1} + \pi_{2t} - \pi_{1t} + \Delta p^*_{Rt}$$

where p^*_{Rt} is price of good 2 relative to good 1 in flexible-price equilibrium

Loss Function

- Per-period loss

$$L_t = w_1 \pi_{1t}^2 + w_2 \pi_{2t}^2 + \lambda_x x_t^2 + \lambda_q q_t^2$$

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  - Suboptimal to stabilize aggregate inflation ($\pi_t \equiv n_1 \pi_{1t} + n_2 \pi_{2t}$)

Optimal Policy and Alternative Rules

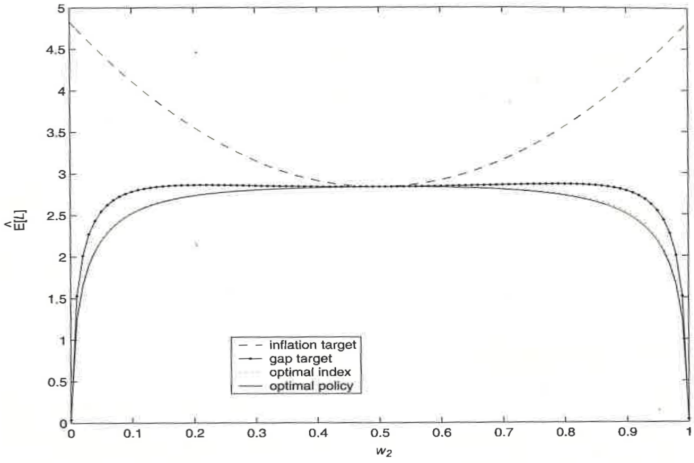

Figure 6.2 *Welfare losses under alternative policies with asymmetric disturbances.*

Fix average price stickiness and let relative weight on sector 2 vary

Source: Woodford (2003)

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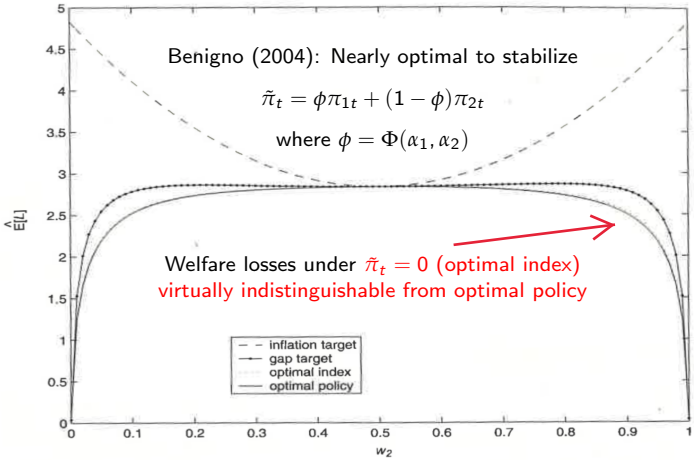

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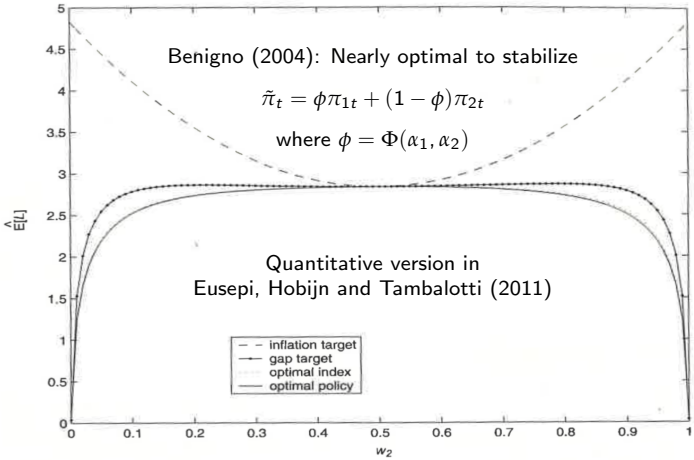

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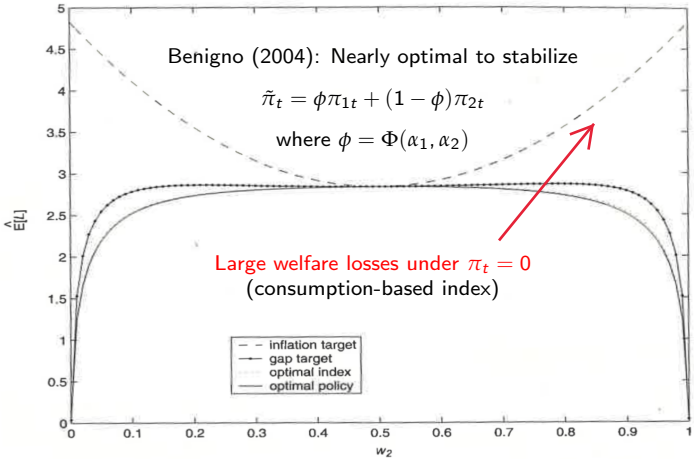

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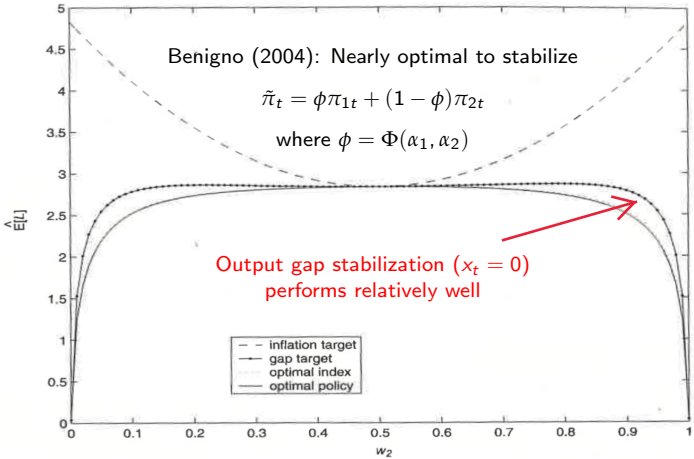

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- Role of production network not so clear-cut
  - Hard to fully disentangle from role of stickiness
  - Stickiness (and size) seem to prevail on upstream/downstream and connectedness