Banking Competition, Housing Prices and Macroeconomic Stability

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Household Indebtedness, House Prices and the Economy
Sveriges Riskbank

19-20 September, 2008

Financial frictions and macro stability

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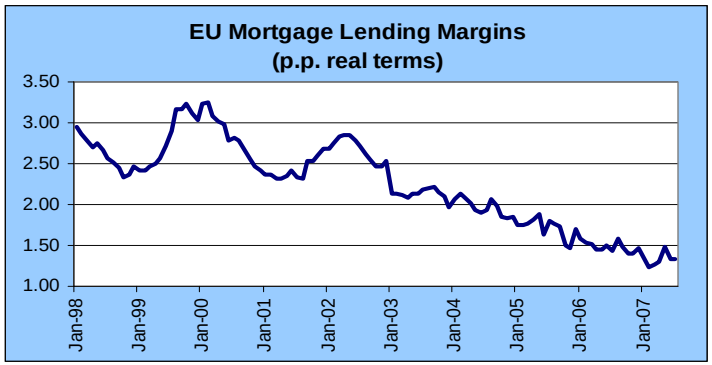
- Imperfect competition in banking also increases the response to shocks. Increasing competition helps in making the economy more stable too.

Imperfect banking competition: Alternative views.

- ECB Report on *EU Banking Structure 2005*:
  - *"... higher levels of competition may [...] be associated with ... faster pass-through".*
  - *"More intense competition [...] could threaten financial stability".*



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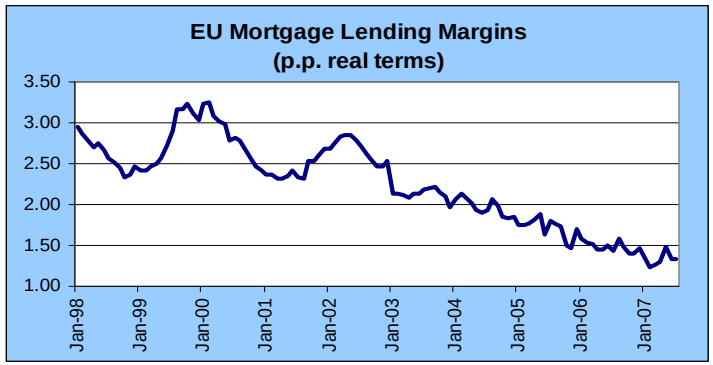

- *The liberalization of banking sectors [...] has increased the scope for [...] leverage and thus the procyclicality of the financial system.* (Goodhart et al., 2004)

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- *Credit supply*: Competition à la Salop (1979), "circular city" model. Each borrower may borrow from one bank with fully flexible rates, no switching costs.
- *Credit demand*: A *model* featuring *individual heterogeneity* (households savers and entrepreneurs) and (housing) *collateral constraints*, as in Iacoviello (2005).

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1. Rises output and consumption in the long run:
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2. Gives rise to stronger output responses following a monetary shock:
   - competition "greases the wheels" of credit and leads to higher overall leverage that amplifies the net-worth accelerator effect.
   - *"Financial liberalization is [...] associated with a strengthening of the financial accelerator mechanism and [...] give(s) rise to more pronounced boom–bust cycles".* (Goodhart et al., 2004)

Some previous literature: banking and the business cycle

- Christiano et. al (2007), Goodfriend and McCallum (2007) and Canzoneri et al. (2008). Perfectly competitive banks and complex banking technology.

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- Huelsewig et al. (2006) and Gerali et al. (2008). Interest rate rigidity in a Dixit-Stiglitz-Calvo model.
- Stebunovs (2006). Salop's banking model and firms' start-up costs.

The mechanism of this paper

- **The central idea**: Imperfect competition implies that the elasticity of demand for funds is *endogenous* and varies with interest rates, housing prices, etc. This interacts with the value of collateral and may amplify or dampen the economy's response to shocks.

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  - α represents the degree of banks monopoly power.

Households

$$\text{Max.} \quad U_0^s = E_0 \sum_{t=0}^{\infty} \left(\beta^s\right)^t \left(\log C_t^s - L_t + \vartheta \log H_t^s\right), \quad \text{s.t.}$$

$$C_t^s + I_t + \frac{\phi \left(I_t\right)^2}{2K_{t-1}} + P_t^h\left(H_t^s - H_{t-1}^s + H_t^z - H_{t-1}^z\right) + D_t$$

$$= \quad W_t^s L_t^s + Q_t^k K_t + Q_t^z Z_t + \Gamma_t + n\Omega_t + \frac{R_{t-1}^d D_{t-1}}{\pi_t}$$

$$K_t = I_t + \left(1 - \delta\right) K_{t-1}$$

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User cost: marginal rate of substitution between consumption of goods and housing services:

$$\varpi_t^s \equiv \frac{\vartheta C_t^s}{H_t^s} = P_t^h - \beta^s E_t \left(P_{t+1}^h \frac{C_t^s}{C_{t+1}^s} \right) = \frac{P_t^h}{R_t^d} \left(R_t^d - \pi_{t+1}^h \right)$$

Entrepreneurs

$$\text{Max.} \quad U_0^e = E_0 \sum_{t=0}^{\infty} (\beta^e)^t \left(\log C_t^e - \alpha d_t^{k,i} \right), \quad \text{s.t.}$$

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$$\text{User cost:} \quad \omega_t^e \equiv \beta^e E_t Q_{t+1}^z$$

Banks

$$\text{(Bank } i\text{) Max} \quad E_0 \sum_{t=0}^{\infty} \prod_{z=0}^{t} \left(\beta^s \frac{C_{z-1}^s}{C_z^s} \right) \Omega_t^i, \quad \text{s.t.}$$

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- FOC: $R_t^{i,e} = R_t^d + \frac{1}{\Lambda_t^{i,e} + \widetilde{\Lambda}_t^{i,e}}$,
  - Λ_t and $\widetilde{\Lambda}_t$ are the semi-elasticities of the intensive/extensive margins.

Optimal lending margins

- **Lending margin** (symmetric equilibrium):

$$R_t - R_t^d = \Lambda\Big(\underbrace{\underbrace{E_t\pi_{t+1}^h}_{<->},\ \underbrace{R_t^d}_{<+>}\ ,\ \underbrace{m}_{<->}}_{\Lambda_t} \vdots\ \underbrace{\frac{\alpha}{n}}_{<+>}\ ,\ \underbrace{\beta^e}_{<->}\Big)$$

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- **An illustration**: Low interest rates imply high demand for housing and loans, B.

  $\Rightarrow$ Small differences between loan rates of banks i and j imply large differences in the cost of servicing a large B.

  $\Rightarrow$ Hence, large flow of customers from i to j.

  $\Rightarrow$ Thus, competitive forces intensify and lending margins fall.

Optimal lending margins (cont'd)

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  - Countercyclical lending margins.
- Here we explore how banking competition, α/n, shapes the link between collateral and spreads.

Steady state analysis

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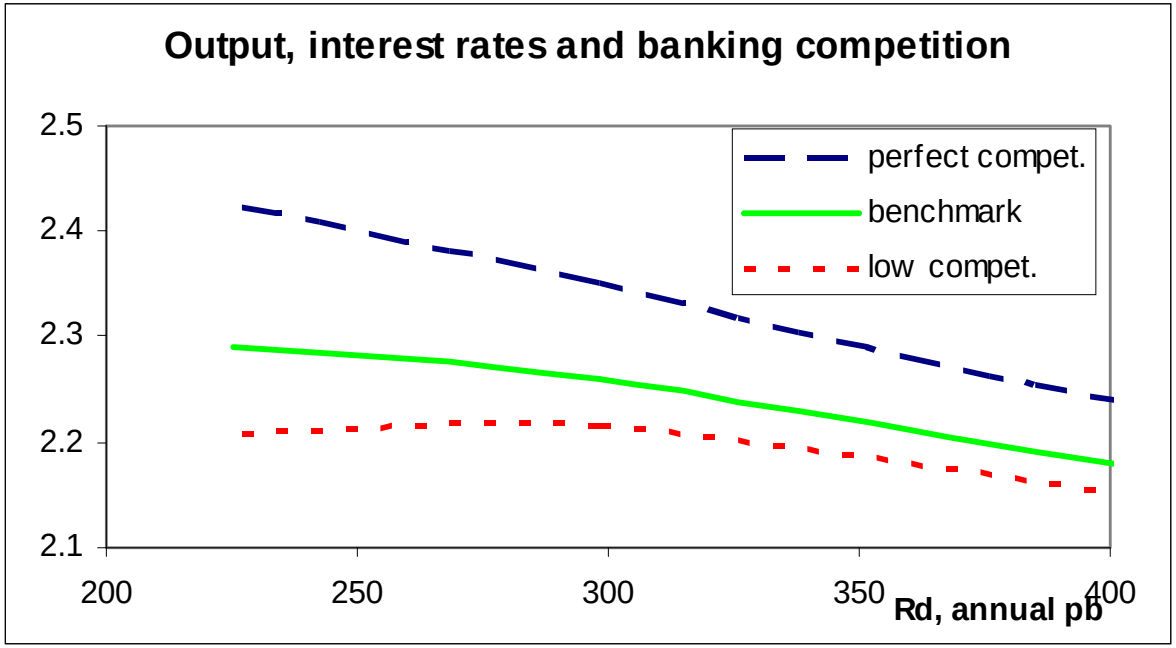

1. Stronger competition ⇒ higher output.
2. Lower interest rates ⇒ higher output (unless competition is weak).

Lending margins and user costs

- Key concept: the **relative user cost**, saver vis-à-vis entrepreneur:

$$\frac{\omega^e}{\omega^s} = \frac{1-[m/R+(1-m)\beta^e]}{\beta^e\left(1-1/R^d\right)}$$

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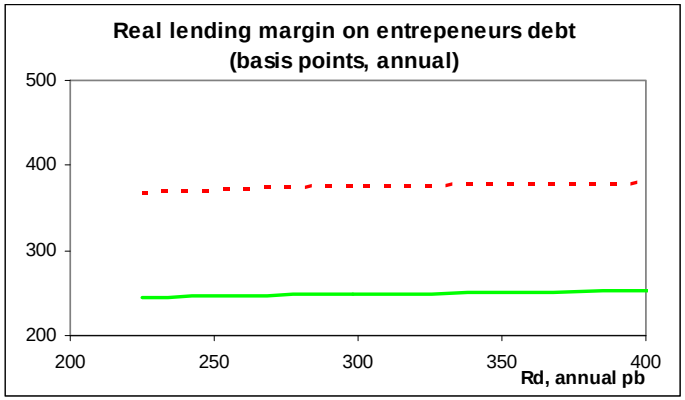
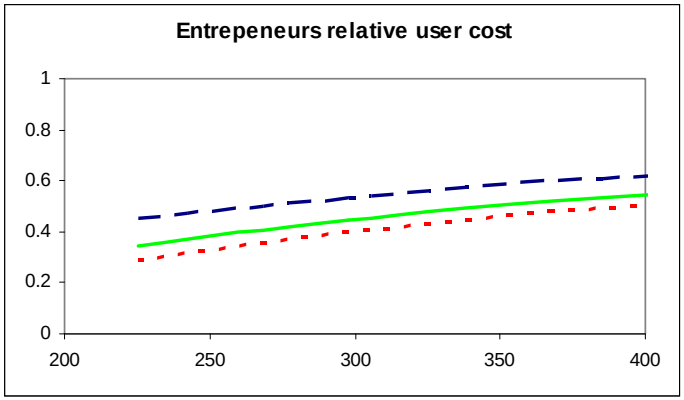
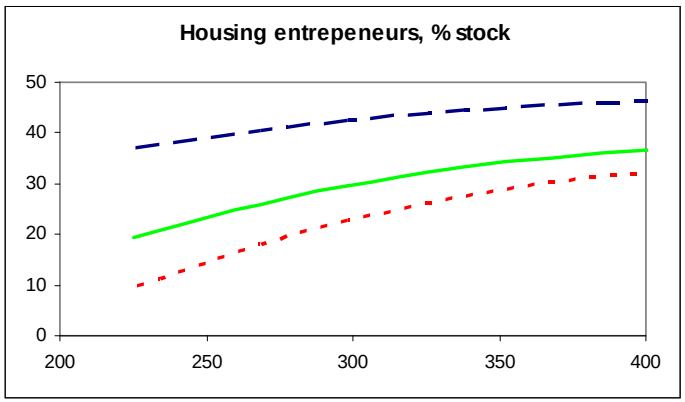
2. $\frac{d(\omega^e/\omega^s)}{d\alpha} > 0$: higher competition implies lower lending margins.
3. $\frac{d(\omega^e/\omega^s)}{dR^d} < 0$: a fall in R^d reduces the total opportunity cost for a saver faster than that of the borrower (that is only affected by a fraction m).

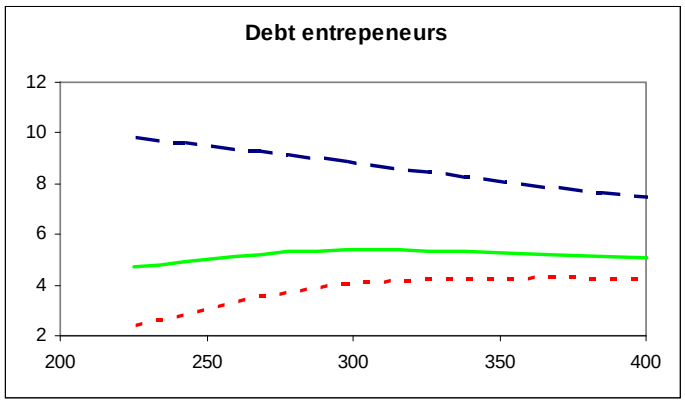
Banking competition and collateral allocation

- Higher competition triggers a reallocation of houses from savers to entreps., rising entreps' credit capacity, investment and output.





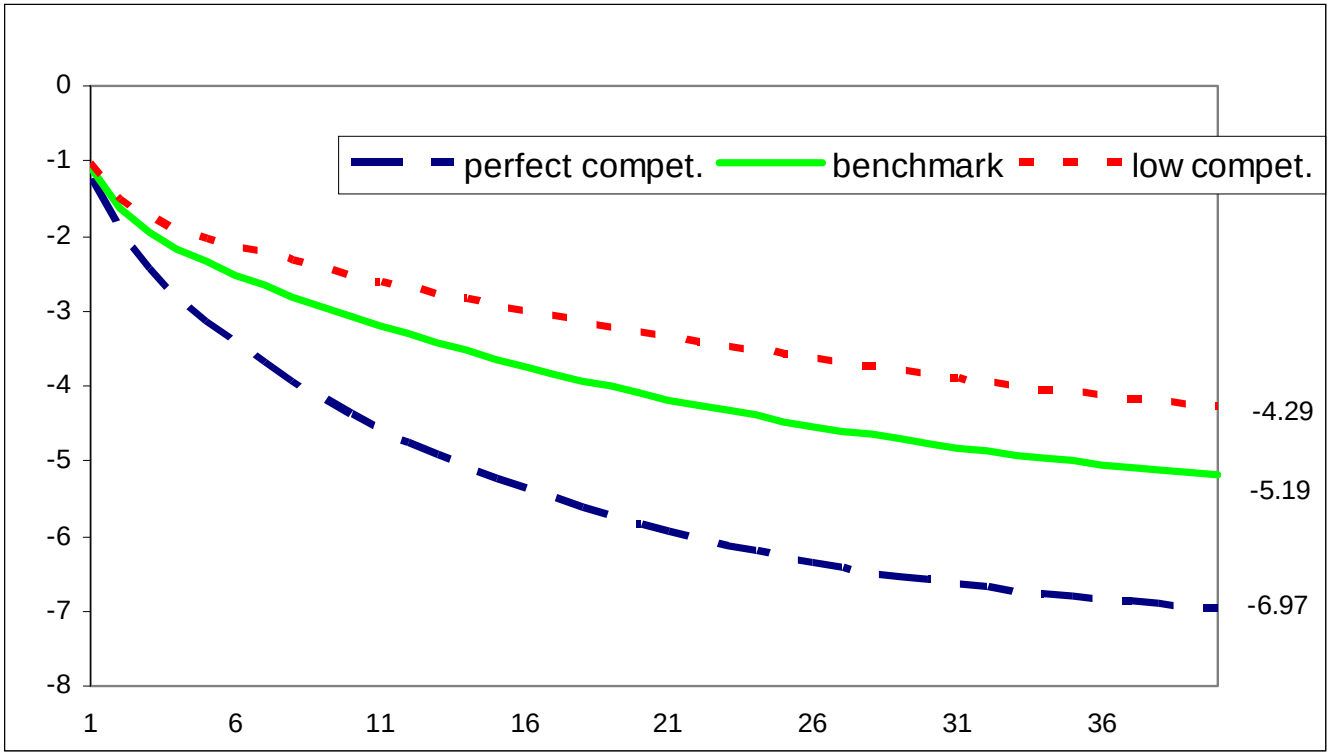




Monetary shocks

- Stronger competition leads to larger and more persistent output response:

Accumulated output response. Monetary shock



Stark contrast with other models of financial frictions and banking

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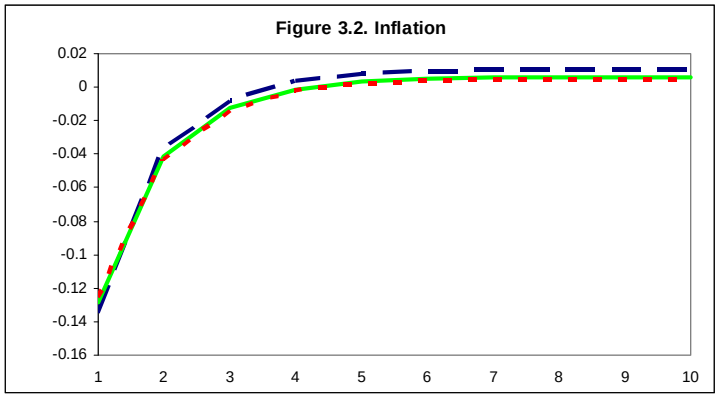
- Campbell and Hercowitz (2006) obtain a different result in a model with collateral constraints: financial deregulation (increase in the loan to value ratio) has contributed to reducing output volatility.
- A detour: literature on financial deregulation and economic stability. Not a simple relationship among the two.

Competing channels

1. **Price rigidity**: unlikely to explain previous differences:



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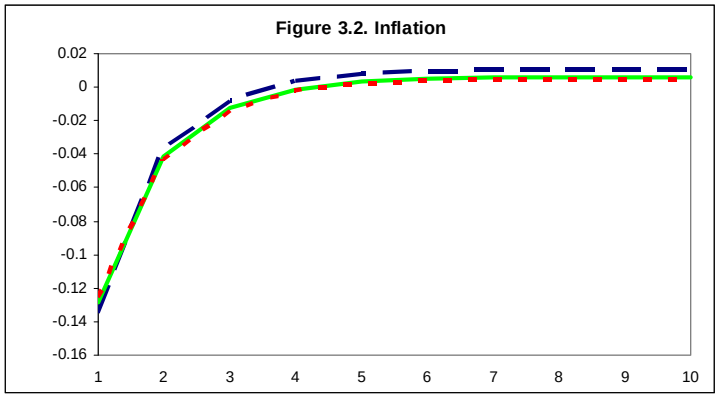
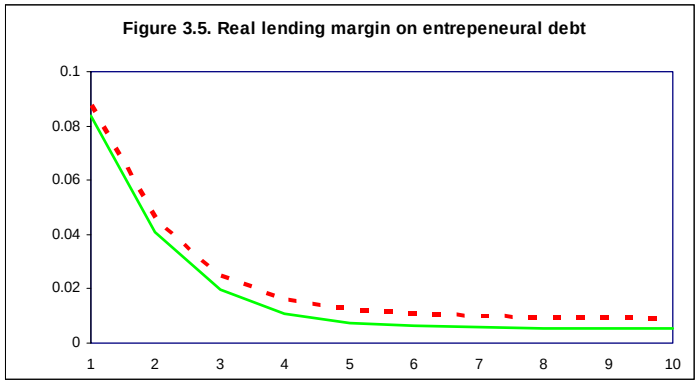


2. **Lending margins**: imperfect competition makes the margins countercyclical (similar to BGG, Mandelman, Stebunovs):



Competing channels (cont'd)

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- Multiplier, $\frac{1}{1-\left(\frac{m}{R}\right)}$, is a decreasing and convex function of R:
  - Stronger competition $\Rightarrow$ stronger multiplier (non-linear) effects and amplified by m.

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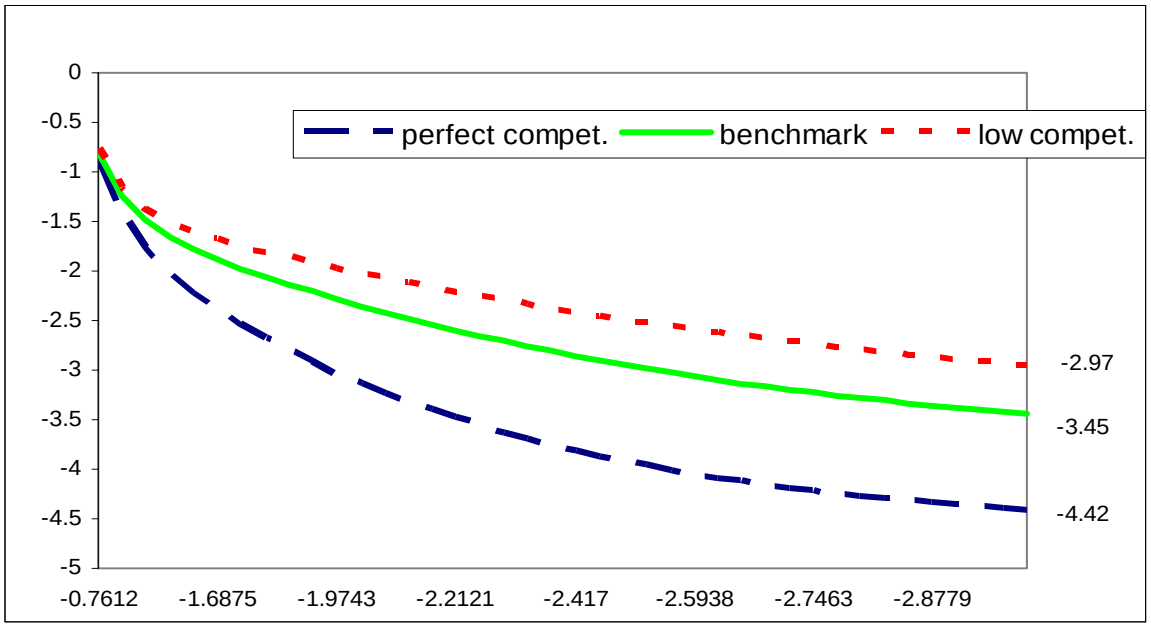
  - m is low
  - housing prices are hump-shaped following negative shock.
- The amplification of fluctuations in our setup are closely related to asset prices driven boom and bust cycles.

Indexed debt

- **A similar result is obtained with indexed debt:**

$$\widehat{NW}_1 = \frac{\beta^e}{1-\left(\frac{m}{R}\right)}\left[\hat{P}_1^h + \frac{Q^z}{P^h}\hat{Q}_1^z\right]$$

Accumulated output response. Monetary shock



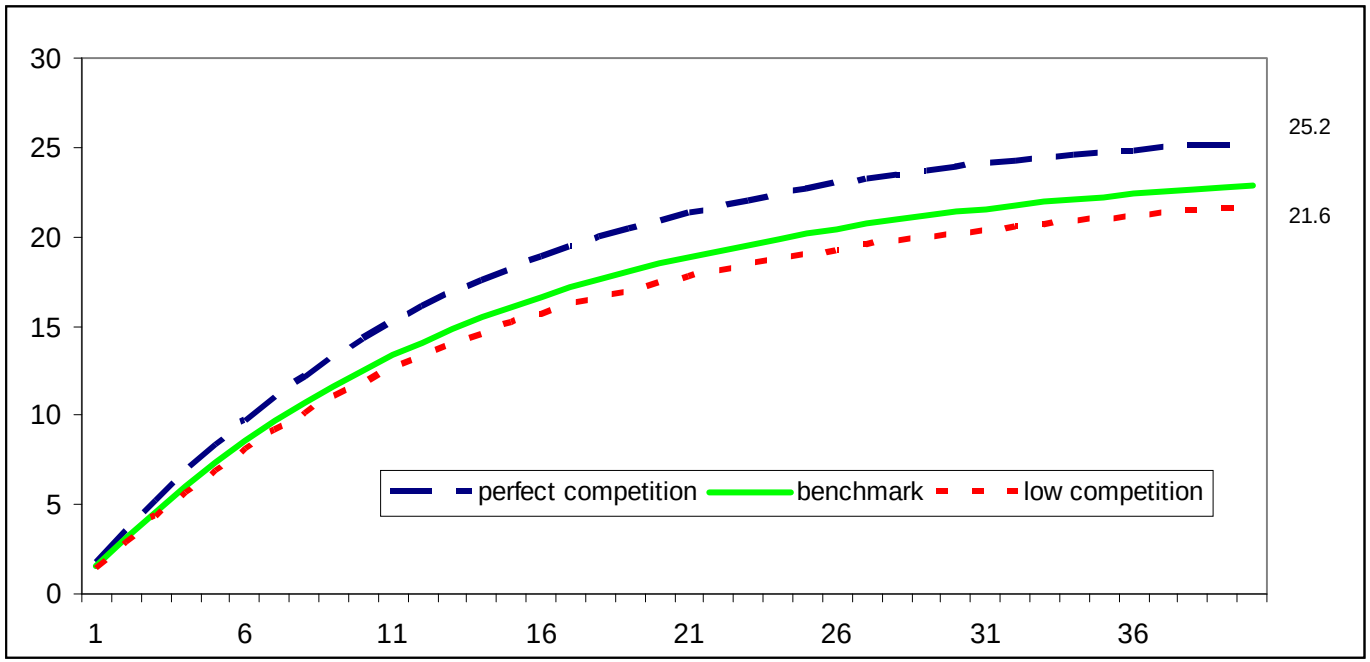
Technology shocks

- As before, stronger competition leads to larger and more persistent output response. However, effects are milder:

$$\widehat{NW}_1 = \frac{\beta^e}{1-\left(\frac{m}{R}\right)}\left[\underset{<+>}{\hat{P}_1^h} + m\underset{<->}{\hat{\pi}_1} + \frac{Q^z}{P^h}\underset{<+>}{\hat{Q}_1^z}\right]$$

Same multiplier effect, but debt deflation buffers total response:

Accumulated output response. Technology shock



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