Discussion of "Market Power and Price Stickiness" by Olivier Wang and Iván Werning

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Bank of Canada

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I thank Lu Han for useful discussions. The views expressed here are ours, and they do not necessarily reflect the views of the Bank of Canada

Market concentration in macro models

- Motivated by rise in product-market concentration over last 30 years
- Standard models: no notion of market concentration
  - Monopolistic markets: infinitely many competitors, atomistic firms
- Oligopolistic markets in Wang and Werning:
  - AER 2022: Sectors with finite number of competitors $(n < \infty)$
  - Work-in-progress: Extend to equilibria with collusion
- Revisit questions where aggregate price flexibility is crucual:
  - What is the slope of the Phillips Curve?
  - What is the size of real response to a monetary shock?
  - What is the passthrough of exchange rate changes to prices?

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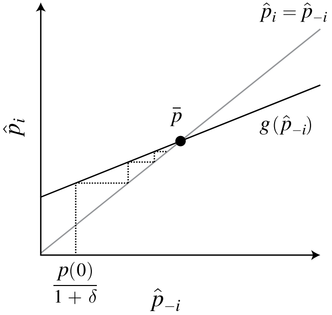
Pricing decision for a firm in oligopolistic markets ($n < \infty$)

Price-setting reaction function $g(p_{-i})$

$$\log p_i = \log \bar{p} + B \frac{\sum_{j \neq i} (\log p_j - \log \bar{p})}{n-1}$$



- Unlike in monopolistic market, firms have meaningful market shares
- Cares about competitors' prices and its effect on competitors
- Pricing complementarities:

$$\text{slope } B = (n-1)\frac{\partial g}{\partial p_j}(\bar{p}) > 0$$

- Optimal price does not deviate far from competitors' prices

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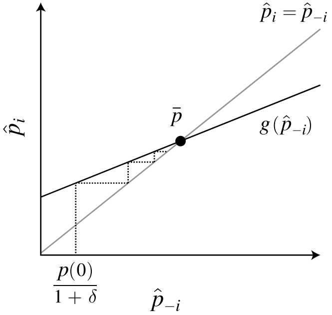

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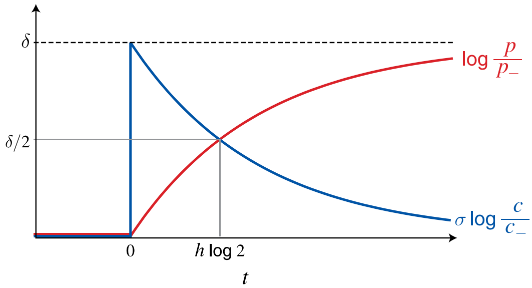
$B > 0$ implies sluggish aggregate price response

Aggregate reponse to a monetary shock δ



- Half-life: $h = \frac{1}{\lambda(1-B)}$ (λ freq of p-changes)
- aka "real rigidities", well-known
- Not known: contribution of $n < \infty$
- Different fundamentals contribute to $B > 0$
  - non-CES demand
  - firms-specific production factors
  - sticky wages, material inputs, ... (not in WW)
  - $n < \infty$
- How much of agg price response due to $n < \infty$?

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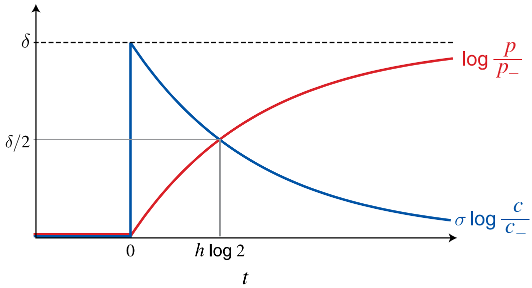

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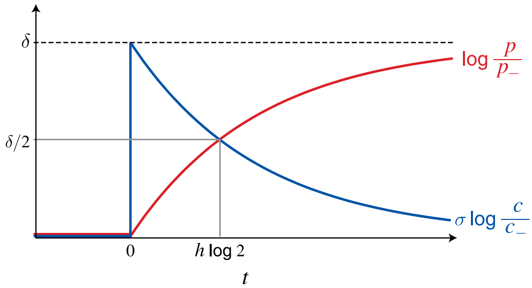

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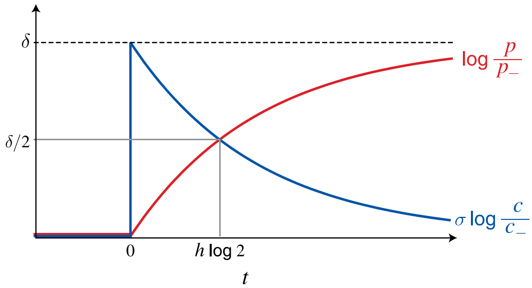

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Need full solution for disentangling sources of $B > 0$

1. Slope of the reaction function: $B = B(\mu, \omega, \epsilon, n, \lambda)$
   - μ markup, ω elasticity of sub-n across sectors, ϵ demand elasticity in steady state
   - Closed form: sufficient statistics for B
2. Markup: $\mu = \mu(B, \omega, \epsilon, \Sigma, n, \lambda)$
   - Σ demand super-elasticity in steady state
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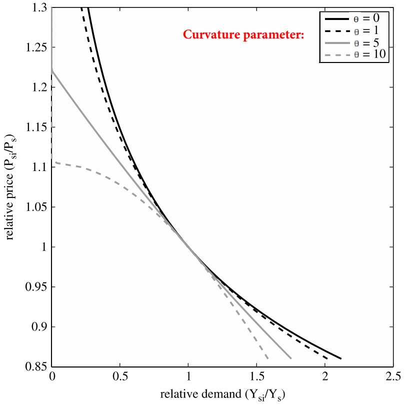
Kimball (1995) kinked demand

Demand elasticity varies with market share



- Higher price chokes demand quicker than under CES
- Monopolistic markets ($n = \infty$): elasticity of substitution η and curvature θ
- Oligopolistic markets ($n < \infty$):

  demand elasticity: $\epsilon = \left(1 - \frac{1}{n}\right)\eta + \frac{1}{n}\omega$

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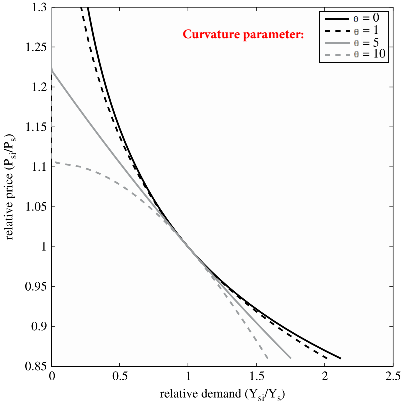

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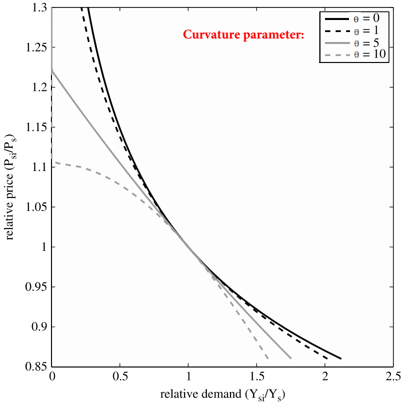

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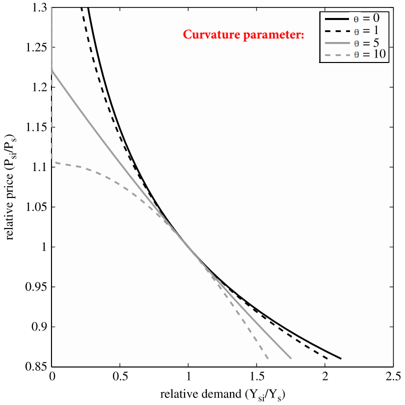

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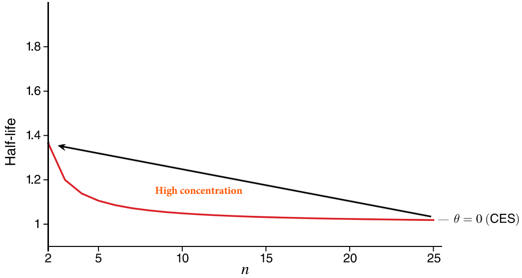
Half-life of response to monetary shock



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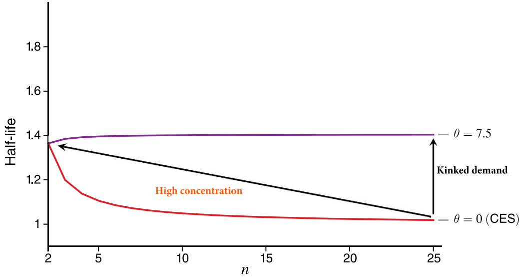

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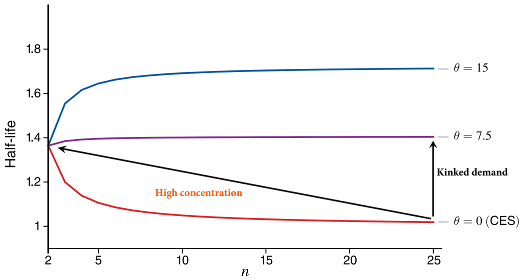

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- How to identify a unique (n, η, θ)?

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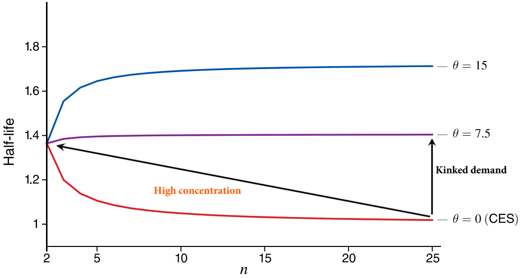

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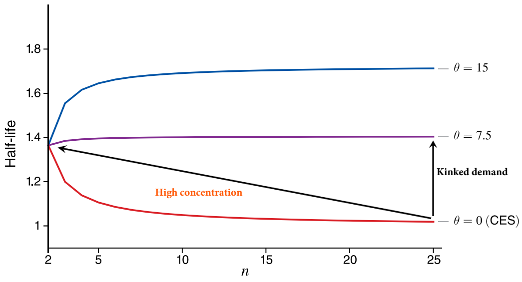

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- Pass-through of shocks to own marginal cost (Amiti, Itskhoki, and Konings, 2019):

$$\Delta \log p_{it} = \alpha_n \Delta \log mc_{it} + \hat{B}_n \frac{\sum_{j \neq i} \log p_{jt}}{n-1}$$

- AIK estimate that $\hat{\alpha}_n$ is lower in more concentrated sectors
- Calibration: fix $\eta = 10$, for each n calibrate θ_n to match $\hat{\alpha}_n$
- Result: θ_n increases with concentration $1/n$, amplifying stickiness relative to $\theta_n = \theta$
  - Going from $n = \infty$ to $n = 3$ doubles half-life (reduces Phillips Curve slope by 4)
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Comment 1. Double-counting the effect of market concentration?

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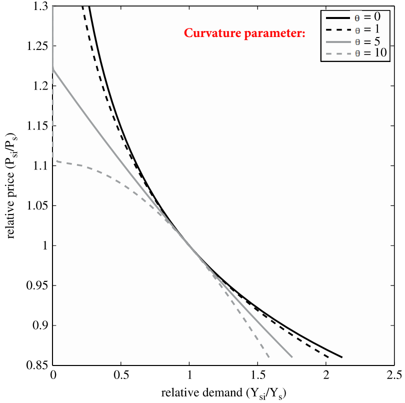

- No reason why θ_n would increase with concentration $1/n$
- In monopolistic settings, curvature θ_n reflects effects of concentration
- Double-counting: explicit market concentration but also add curvature θ_n

Comment 2. Role of sticky prices?

- AIK's framework is based on assuming flex prices (annual data)
- Calibration is based on fixed λ while varying (θ, n)
- But in the data λ varies across sectors, and in theory λ influences B and μ
- Allow λ to vary in calibration

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Comment 3. On how firms compete

- For given concentration $1/n$, important to know how firms compete
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  - No product scope (sell single product)
  - No price discrimination (homogeneous consumers)
  - No input-output links (competitive input markets)
  - No collusion
- Wang and Werning (in progress) consider the effect of collusion
  - Collusion leads to even more price stickiness than in Wang and Werning (2022)
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  - empirically relevant: collusion harder to measure than discounts, scope, or inputs/output links
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Summary

- Important research agenda!
  - Market concentration can be important for aggregate price sluggishness
  - Insightful theoretical results
- Comments/suggestions for future work:
  - Disentangle effect of concentration from other fundamentals
  - Clarify the role of micro price stickiness for the result