Discussion "Learning From Prices: Amplification and Business Cycles Fluctuations"

Chahrour & Gaballo (2018)

Discussant: Juan Passadore

December 2018

Intro

- Question: what drive the business cycle?

- Answer: new theory of expectations-driven business cycles...mechanism...price increase is.... lower productivity? or improvement in local conditions? Correlated errors.

- Main take out: TFP can generate positive price-quantity co-movement. Upward slopping demand curve. Rich set of correlation.

- Results Insights:
  - Learning: Multiplicity. Amplification. Fundamental / Sentiments.
  - Business Cycles: Add public information on productivity. Mix of supply and demand-driven fluctuations. Attacks several facts.

- Overall...important contribution, nice to read, many results.

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Main Results: Learning I

- Prices in the island

$$p_i = (1-\alpha)\mu_i^e + \alpha(1-\phi)\left[(1-\kappa)\int \mathbb{E}\left(\mu_i \mid p_i\right) di - \zeta\right]$$

- Inference problem. Higher price: higher μ_i or lower productivity ζ?

$$s_i = \gamma\mu_i + (1-\gamma)\left[\int \mathbb{E}\left(\mu_i \mid s_i\right) di - \zeta\right]$$

$$\gamma \equiv \frac{(1-\alpha)\kappa}{(1-\alpha)\kappa + \alpha(1-\phi)(1-\kappa)}$$

- Ingredients: Informed consumers about local conditions $\kappa \in (0,1)$. $\phi \in (0,1)$ decreasing returns.

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Main Results: Learning II

- Strategies and Equilibrium: $\mathbb{E}\left(s_i(\mu_i - a_i s_i)\right) = 0.$
- Result 1:
  - $\gamma \geq 1/2$ unique REE.
  - $\gamma < 1/2$ low REE.....if $\sigma < \bar{\sigma}^2$ two other equilibria.
- Result 2: In the limit $\sigma \to 0$
  - $\gamma \geq 1/2$, unique and high equilibrium...no volatility.
  - $\gamma < 1/2$ the low and the middle discontinuity. Strong amplification.
- Result 3: Across all equilibria $\phi_\epsilon = 0$:

$$\int \mathbb{E}\left(\mu_i \mid s_i\right) = \phi_\zeta \zeta + \phi_\epsilon \epsilon.$$

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Comments Learning

1. Which is the empirically relevant case? Which equilibria? Unique? Magnitude for κ? Micro-foundation..
2. Lorenzoni (2009). Noise shocks. Gain from endogenous signals?
    1. Qualitative response. High signal, good news in Lorezoni, bad news here.
    2. Amplification. Large noise shocks. Maybe not here.
3. Relation to Benhabib et al (2015). Only fundamental shocks: interesting, surprising.

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Any fundamental volatility is ruling-out non fundamental equilibria.

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Main Results: Business Cycles I

- Towards demand and supply shocks

$$\zeta = \zeta^s + \zeta^n$$

- Slope of demand? Aggregate demand, $c = \bar{\mu} - p$, given by:

$$c = (\varphi(a) - 1)p + \varphi(a)\alpha(1-\phi)(1-\kappa)\zeta^n$$

- Main result: $\lim_{\sigma \to 0} \varphi(a) > 1$ when $\kappa < \alpha$. Across all equilibria:

$$Cov(p, c) > 0!$$

- Comment. But...raises two empirical questions: 1) $\kappa < \alpha$? micro to macro. Rational Inattention. 2) $\sigma = \frac{\sigma_{\zeta^s}}{\sigma_\eta} \to 0$?

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Main Results: Business Cycles II

- Technological shocks and hours...

$$n = (1-\kappa)\int \mathbb{E}\left[\mu_i \mid p_i\right] di = -(1-\kappa)\frac{a(1-\gamma)}{1-a(1-\gamma)}\zeta^s$$

- Result: So..$cov(n, \zeta^s) < 0$: for the unique and low equilibria
- Comment:...the other two (high middle)...$\frac{a(1-\gamma)}{1-a(1-\gamma)} < 0$. More evidence in favor of the unique equilibrium (and low one)? Globally and locally learn-able.

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Main Results: Business Cycles III

- Weak price and quantity correlation (pinned down by the relative variance of surprise and news):

$$p = -\alpha(1-\phi)(1-\kappa)\zeta + (1-\alpha\phi)\psi(a)(1-\kappa)\zeta^s$$

$$c = \alpha(1-\phi)(1-\kappa)\zeta + \alpha\phi\psi(a)(1-\kappa)\zeta^s$$

- Comment: TFP (surprise or public) shocks explain the co-movements. If we identify the shock that maximizes the variance of a variable (e.g. consumption) as in Angeletos et al (2018)? What do we find?

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  - Testable implications of this channel
  - Policy, Social Value of information
- Looking forward to the next iterations!

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