

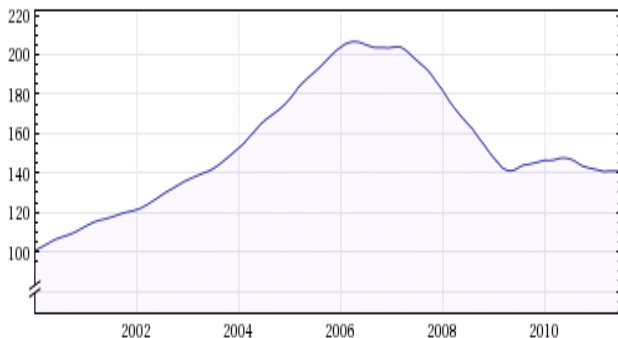
Sentiments

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Motivation

- fluctuations hinge on expectations
- but are these driven by preference and technology shocks?



S&P/Case-Shiller house price index, US Jan2000-Oct2011

This paper

- 1 stay within the core of the neoclassical paradigm
 - competitive, convex, RE, unique equilibrium
- 2 dispense with aggr shocks in technologies, preferences, etc

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- 1 stay within the core of the neoclassical paradigm
 - competitive, convex, RE, unique equilibrium
- 2 dispense with aggr shocks in technologies, preferences, etc
- 3 yet, obtain rich fluctuations in **beliefs**, allocations, prices

Key insights

- 1** decentralization → imperfect communication
→ **extrinsic shocks** in expectations of “aggregate demand”
- 2** trade → communication → propagation
→ **waves, boom-and-bust cycles**

Roadmap

- baseline model: clean theorems, simple examples
- broader insights
- extension 1: waves, boom-and-bust cycles
- extension 2: quantitative potential
- conclusion

The Model

- continuum of islands
 - repres. household and firm on each island
 - produce and trade differentiated goods
- fundamentals fixed and common knowledge
- trading via random matching

The Model: preferences and technologies

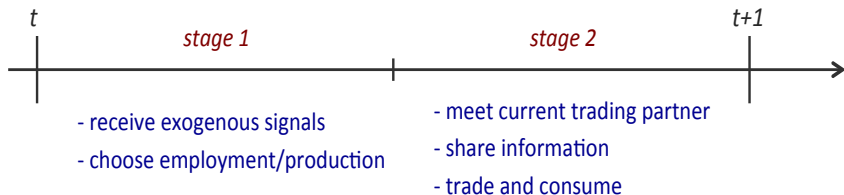
$$y_{it} = A_i F(K, n_{it})$$

$$U_i = \sum_{t=0}^{\infty} \beta^t [U(c_{it}, c_{it}^*) - V(n_{it})]$$

$$F(k, n) = k^{1-\theta} n^\theta \quad U(c, c^*) = c^{1-\eta} c^{*\eta} \quad V(n) = \frac{1}{\epsilon} n^\epsilon$$

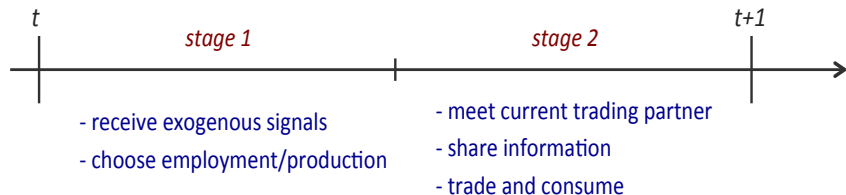
The Model: matching, trade, and communication

at each t , each island i is randomly matched to some j



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info dynamics: $\omega_i^t = (\omega_i^{t-1}, \omega_j^{t-1}, x_{it})$

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“aggregate demand externality” = p_i increases with y_j

Equilibrium

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- contraction mapping

Theorem

The equilibrium exists and is unique, no matter info structure.

Communication, beliefs, and fluctuations

- communication → coordination of beliefs of econ activity
- “perfect communication” \equiv prior to trading, i and j share same beliefs about prices (p_{it}) and/or allocations (y_{it}, y_{jt})

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Theorem

Extrinsic fluctuations along unique equilibrium if and only if communication is imperfect.

What drives beliefs?

- in general:

$$y_i = f(A_i, \mathcal{B}_i) \quad y_j = f(A_j, \mathcal{B}_j)$$

A_j is TFP, \mathcal{B}_j is expected terms of trade

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- imperfect communication: $\mathcal{B}_i \neq \mathcal{B}_j$

\Rightarrow beliefs free to move with extrinsic shocks (“sentiments”)

Sentiment shocks: simple example

$$x_i = (x_i^1, x_i^2)$$

$$x_i^1 = \log A_j + \varepsilon_i \quad x_i^2 = x_j^1 + \zeta$$

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Proposition

In equilibrium,

$$Y_t = \Phi \zeta_t \quad \overline{\mathbb{E}_{it} Y_t} = \Psi \zeta_t$$

Sentiment shocks: richer example

$$\log A_{it} = \bar{a}_t + a_i$$

$$x_i = (x_i^1, x_i^2, \dots, x_i^H)$$

$$x_{it}^1 = \log A_{jt} + \varepsilon_{it}^1 \quad x_{it}^h = x_{jt}^{h-1} + \varepsilon_{it}^h \quad \varepsilon_{it}^h = \zeta_t^h + u_{it}^h$$

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Proposition

$\exists \bar{\zeta}_t = \Xi(\bar{\zeta}_t^1, \dots, \bar{\zeta}_t^h)$ and $v_t \perp (\bar{a}_t, \bar{\zeta}_t)$ such that

$$\begin{aligned} Y_t &= \Phi \bar{a}_t + \bar{\zeta}_t \\ \overline{\mathbb{E}_{it} y_{jt}} &= \Phi \bar{a}_t + \Psi \bar{\zeta}_t \\ \overline{\mathbb{E}_{it} Y_t} &= \Phi \bar{a}_t + \Lambda \bar{\zeta}_t + v_t \end{aligned}$$

Broader insights (1)

■ Arrow-Debreu / standard macro

- expectations perfectly aligned across agents
- expectations and outcomes pinned down by fundamentals

■ imperfect communication

- extrinsic variation in expectations
- “coordination failure” and “animal spirits” along unique equil

Broader insights (2)

- which kind of expectations are we talking about?
- first-order beliefs of endog outcomes (GDP, inflation, etc)
not higher-order beliefs of exog fundamentals
- only the former matter / can be estimated

What's next

- 1 communication \rightarrow waves / boom-and-bust cycles
- 2 RBC-like extension \rightarrow quantitative potential

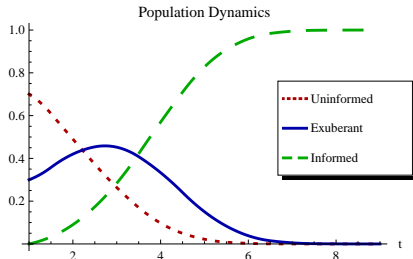
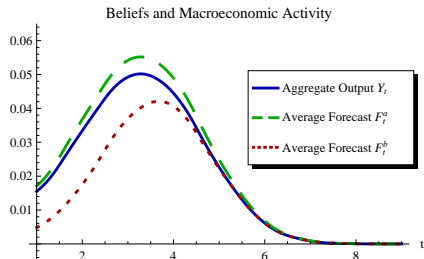
Contagion and boom-and-bust cycles

- two regions: “North” and “South”
- TFP differs across regions, info differs both across and within
 - **uninformed**: know only local TFP
 - **partially informed**: signals about the other region
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 - **uninformed**: know only local TFP
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- sentiment shock hits only few islands and only at $t = 0$
- communication \rightarrow propagation \rightarrow **waves / cycles**

Contagion and boom-and-bust cycles



Quantitative potential

- extension with investment and utilization
- baseline RBC, but sentiment shocks instead of TFP shocks

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	The Model		U.S. Data	
	<i>std. dev.</i>	<i>corr(X,Y)</i>	<i>std. dev.</i>	<i>corr(X,Y)</i>
output Y	1.73	1.00	1.74	1.00
employment N	1.47	1.00	1.34	0.87
consumption C	1.26	0.98	1.19	0.79
investment I	4.30	0.96	4.98	0.76
labor productivity Y/N	0.27	0.99	0.87	0.66
labor wedge LW	5.14	-1.00	4.47	-0.82

- **contribution:**
 - imperfect communication \rightarrow extrinsic fluctuations
 - within otherwise conventional unique-equil DSGE models

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■ interpretation:

- shocks to expectations
- animal spirits, news shocks, uncertainty shocks
- demand shocks