Discussion of “A Gains from Trade Perspective on Macroeconomic Fluctuations” by Paul Beaudry and Franck Portier

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Motivation:
2. Model: depart from the stringent representative agent model.

Heterogeneous agent model: main ingredients
1. some market incompleteness.
2. some labor market specialization.

Main findings:
1. Model: offers a constructive way to show comovement
2. Policy: revised implications for fiscal and monetary policy
3. Data: 'perception' driven cycles with stable inflation

My discussion:
1. Mechanism to get comovement.
2. Nominal rigidities as an alternative.
General model

- Two sectors: investment and consumption goods
- Two types of agents:
  - decide how much to consume $C^i$, buy $K^i$, work $L^i$
- Production function for sectors:
  - if only one type of labor used to produce a good $\rightarrow$ specialized labor mkt.
- Preferences:
  - per period felicity: $U^i(C^i, 1 - L^i)$; both normal goods
  - continuation value: $V^i(K^i, \Omega) \equiv E[\beta \tilde{V}^i(K^i, S)|\Omega_1, \Omega]$
  - $\Omega_1$ : information used to predict exogenous state
Competitive equilibrium

- Each individual $i$:

\[
\max_{C^i, K^i, L^i} U^i(C^i, 1 - L^i) + V^i(K^i, \Omega)
\]

subject to:

\[
C^i + PK^i = w^i L^i
\]

- $P$ relative price of capital; consumption good is numeraire; $w^i$ wage

- Here assume fully specialized labor mkts: $C = F(L^1)$; $K = F(L^2)$:

\[
\max_{L^1} F(L^1) - w^1 L^1; \quad \max_{L^2} PF(L^2) - w^1 L^2
\]

- Optimality conditions: Intra Euler

\[
U^i_2(C^i, 1 - L^i) = p^i F_1(L^i) U^i_1(C^i, 1 - L^i)
\]

\[
p^i = \begin{cases} 
1, & \text{for } i = 1 \\
\frac{P}{P}, & \text{for } i = 2
\end{cases}
\]

- and Inter Euler:

\[
V^i_1(K^i, \Omega) = P U^i_1(C^i, 1 - L^i)
\]
Mechanism: Intertemporal optimality

- Define the change in $\Omega_1$ : such that
  \[
  \frac{\partial^2 V_i(K_i, \Omega)}{\partial K_i \partial \Omega_1} > 0
  \]

- Using
  \[V_1^i(K^i, \Omega) = PU_1^i(C^i, 1 - L^i)\]

- then since demand for capital goes up, under general conditions price of capital goes up.
Mechanism: Intratemporal optimality

- Take agent 2:

\[ U_2(C, 1 - L) = PF_1(L)U_1(C, 1 - L) \]

- an increase in \( P \), acts like a production possibility frontier shifter (TFP shock)
- Gains from trade: increase in the **relative** price for capital.
- it makes possible an increase in **both** \( L^2 \) and \( C^2 \).
- This is in contrast to the standard Barro-King logic: \( C \) and \( L \) cannot comove unless a technology shock.
Mechanism: Intratemporal optimality

\[ L^D(Z_t; P_t) \]  
\[ L^S(\lambda_t) \]

Wage

Labor

\[ \text{Labor Wage} \]

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Discussion of Beaudry and Portier

Oct. 2012 7 / 20
Shift in labor supply: Barro-King logic

\[ L^S(\lambda_t) \]

\[ L^D(Z_t; P_t) \]

Labor

Wage

\[ L^S(\lambda_t') \]

\[ L^D(Z_t; P_t') \]

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Shift in labor supply and demand (price ↑)

Labor Wage

\[ L^D (Z_t; P_t) \]

\[ L^S (\lambda_t) \]

\[ L^D (Z_t; P'_t) \]

\[ L^S (\lambda_t') \]

\[ L^S (\lambda_t') \]

\[ L^D (Z_t; P'_t) \]

\[ L^S (\lambda_t) \]

\[ L^S (\lambda_t') \]

\[ L^D (Z_t; P'_t) \]
Mechanism: Intratemporal optimality

- Agent 1:
  \[ U_2(C, 1 - L) = F_1(L)U_1(C, 1 - L) \]
- no change in the price, so here standard Barro-King logic applies
- What direction of change?
- Negative wealth effect: from increase in relative price of capital
  \[ \rightarrow L^1 \text{ increases and } C^1 \text{ falls} \]
  ▶ at most \( C^1 \) stays constant.
Overall: recall Proposition 1

1. Aggregate positive comovement is possible:

   \[ L^2 \uparrow, \text{Investment} \uparrow, L^1 \uparrow, (C^1 + C^2) \uparrow \]

2. Individual positive comovement is not possible:

   \[ C^1, L^1 \text{ and } C^2, L^2 \text{ cannot move all up.} \]

   Next, discuss the two main mechanisms:

1. increased demand for capital
2. comovement between \( C^2 \) and \( L^2 \).
Discussion: 1) increased demand for capital

- Intertemporal Euler in the standard dynamic optimization formulation

\[ \lambda_t = \beta E_t \lambda_{t+1} R_{t+1}^k \]

- \( \lambda_t = \) LM on budget constraint; here:

\[ \beta E_t \lambda_{t+1} R_{t+1}^k = V_1^i(K^i, \Omega) \]

- Start from: as \( \Omega_1 \uparrow \), then \( V_1^i(K^i, \Omega) \uparrow \)
- It is the marginal ‘valuation’ of capital \( \uparrow \)
- In standard RBC: good news on TFP \( \longrightarrow \beta E_t \lambda_{t+1} R_{t+1}^k \downarrow \)
- Need the **intertemporal substitution** stronger than wealth effect.
- Same logic if signals about future means or variances.
Discussion : 2) comovement between $C$ and $L$

- Irrespective of effect on $U_1(C, 1 - L)$, need $C$ and $L$ to comove:
  \[
  U_2(C, 1 - L) = PF_1(L)U_1(C, 1 - L)
  \]

- Change in $P$: essential; **shifts labor demand**

- Other solutions:
  
  1. **internal habit formation**: $\lambda_t = f(C_t, E_t C_{t+1})$
     - can have $C_t \uparrow$, and still $\lambda_t \uparrow$, so $L_t$ can $\uparrow$

  2. **nominal rigidities**: **countercyclical markups**:
     \[
     U_2(C, 1 - L) = \frac{1}{\mu}F_1(L)U_1(C, 1 - L)
     \]
     - $C \uparrow$, $L^{\text{supply}} \downarrow$, real wage $\uparrow$, markup over mg. cost $\mu \downarrow$, labor demand $\uparrow$

  3. other shocks (eg. demand), act like TFP shocks (eg. Bai et al., 2012)
Sticky prices: Shift in supply and demand (markup ↓)
Back to motivation: inflationary 'perception-driven' booms?

- BP’s argument: standard New Keynesian model, 'perception' shocks will be highly inflationary (act like 'demand' shocks)
- In the data: inflation roughly constant in last 3 cycles → not a priori plausible
- their model, 'perception' shock not inflationary because affects potential output
Disinflationary 'perception-driven' booms?

- Document that inflation tends to be low during (stock market) booms

<table>
<thead>
<tr>
<th>Table 3: Variables Over Various Sub-periods, 1919Q1-2010Q1</th>
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<tbody>
<tr>
<td>Periods</td>
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<tr>
<td>--------</td>
</tr>
<tr>
<td>Boom</td>
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<tr>
<td>Other</td>
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<tr>
<td>Whole period</td>
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Notes: (1) numbers represent 100 times average of log first difference of indicated variable over indicated period. (2) Boom periods are the union of the trough to peak periods enumerated in Table xx. (3) 'Other' are periods that are not booms and that exclude World War II (1939Q4-1945Q4). 'Whole period' corresponds to the full sample, excluding World War II.
Disinflationary ‘perception-driven’ booms

- Monetary model: following positive news about future TFP
  - positive comovement: $C$, $H$, $I$ and price of capital all ↑
  - inflation is low.

- Why can inflation be low? Two counter effects

  1. Standard, inflationary: because current marginal cost ↑
  2. Disinflationary: future marginal costs ↓, since expected TFP ↑
Disinflationary ’perception-driven’ booms

- For the textbook CGG model, analytical results:
  - perfect signal $s_t$ about TFP
    \[ a_{t+1} = \rho a_t + \xi_{t+1} + s_t \]

- Closed form solution for output gap and inflation:
  \[ \hat{y}_t = \eta_y a_t + \phi_y s_t; \quad \hat{\pi}_t = \eta_\pi a_t + \phi_\pi s_t \]

1. Proposition: $\eta_y, \eta_\pi < 0$
2. For wide parameterization: $\phi_y > 0$, $\phi_\pi < 0$

- Inside coefficient $\phi_\pi$: sum of the two counter effects
  \[ \hat{\pi}_t = \lambda \hat{y}_t + \beta E_t \hat{\pi}_{t+1} \]
Figure 6: Response of Baseline and Perturbed Model to Signal Shock (Signal not realized); Perturbation = Ramsey
Conclusion

- Very rich paper.
- Heterogeneity is important.
- Labor market specialization can deliver many new insights:
  1. comovement driven by perception
  2. demand vs supply shocks
  3. redistribution effects of fiscal policy