International Transmission Through Relative Prices

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Discussion

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The 'International Comovement Puzzle'

- Data: positive investment correlation and output correlation across countries
- IRBC(BKK)model
  - Demand-supply spillover (+)
  - Resource shifting effect (-)

Literature

1. Dampen the resource shifting effect: Imperfect international asset market
2. Strengthen the demand-supply spillover effect:
   - Vertical linkages(Di Giovanni-Levchenko (2009), Burstein-Kurz-Tesar (2008))
   - Low elasticity of substitution (Kose & Yi (2006), Drozd-Nosal (2008))
3. Liao & Santacreu (2012): the role of extensive margin, and endogenous TFP comovement

This Paper: Theory

- Domestic composition effect: capital-intensive versus labor-intensive sectors
- The role of relative prices of these two categories of goods
- Mechanism
  - Home labor productivity shock expands labor-intensive sector more
  - Relative price of labor-intensive goods drops
  - Foreign expands capital-intensive sector, higher demand for capital
  - Positive investment correlation as well as output comovement across countries

This Paper: Empirics

- Labor intensive production & net exports are procyclical
  - Capital-intensive sector: output and employment share are negatively correlated with real GDP
  - Labor-intensive sectors' output is more volatile
  - Positive labor productivity shocks expand U.S. labor-intensive sector by more than the capital-intensive sector
- Relative prices of capital-intensive goods are procyclical and volatile
  - Price of capital-intensive goods positively correlated with real GDP
  - Price of labor-intensive goods negatively correlated with real GDP
- Sectoral Trade Balance
  - Real sectoral net exports are more volatile than the aggregate net exports
  - More labor intnesive, more positive correlated with real GDP (Figure V)

In Summary

- This is a very neat paper
  - Provide empirical facts about sectoral dynamics and business cycles
  - A theoretic framework to introduce the composition effects through the relative prices
- Contribute to the international business cycle literature
  - Draw attention to the role of factor-intensity
  - Model generates positive international comovement

Question 1: Labor Productivity shock

- Labor productivity shock
  - What are the driving forces behind business cycle fluctuations?
  - How to estimate the labor productivity process?
  - The current method implies that labor-intensive sector receives a larger productivity shock
  - Depending on the difference between the labor shares
- If using TFP shock
  - Assign 2 times higher capital adjustment costs to the capital-intensive sector, Empirical evidence?
  - If shocks are correlated across countries, both will expand labor-intensive sector
  - Does the composition effect still work?

Question 2: Initial factor abundance

- Table III shows initial factor endowment differences does not affect the results
  - How different are they for the two countries in the analysis
- International specialization
  - The model implies a country exporting one good must import another good
  - A country which is more capital-abundant, tends to export capital-intensive goods
  - Does a positive labor productivity shock change the international trade specialization pattern?

Question 3: Net export

- Overall trade balance is countercyclical for the US
  - The model generate procyclical home net export (Figure VI)
  - It would be interesting to see IRFs of trade balance in each sector
  - Both domestically and internationally
- Trade balance in the data and in the model
  - In data countries export and import goods in the same sector, while in model they do not
  - The observed fluctuations in trade balance in each sector may due to changes from both imports and exports

Question 4: Dividing sectors

- How to classify capital intensive sector and labor intensive sector?
  - Factor intensities are time-varying in each industry (Lin, Ju & Wang, 2010)
  - Yesterday's labor-intensive industry may become capital-intensive today
  - One country's labor-intensive sector may be capital-intensive in another country
  - Are capital shares the same across countries for any given sector?
  - How to estimate the capital share in each sector?
- Relative size of the two sectors
  - will affect the strength of the composition effect

Question 5: About the empirics

- Price: labor-intensive sector adjusts slower
  - May cause the negative correlation with real GDP
- The sectoral trade balance
  - Figure V shows only the two most labor-intensive sector (out of ten) are positive correlated with real GDP
  - How large are these two sectors?

Minor issues

- Vertical trade structure may affect the results
  - Suppose the labor-intensive sector uses inputs from capital-intensive sector
  - Relatively more expensive capital-intensive inputs can increase the production cost of labor-intensive goods
  - Both domestically and internationally
- Substitution between capital- and labor-intensive goods
- Factor market friction
  - Can factor be reallocated quick enough? How about skilled and unskilled workers?
- Composition effect at short and medium-run
- The other puzzles: e.g. $0 < corr(c, c*) < corr(y, y*)$, or trade-output comovement puzzle

Output Comovement and the Margins of Trade

Output correlation on EM and IM

Using Klenow and Hummels' decomposition method

Panel 1: HP-filtered output		Panel 2: Output growth		Panel 3: BP-filtered output	
$\text{corr}(y_i^{hp}, y_j^{hp})$	Coef.	$\text{corr}(\Delta y_i, \Delta y_j)$	Coef.	$\text{corr}(y_i^{bp}, y_j^{bp})$	Coef.
$\log(EM_{ij})$	0.309***	$\log(EM_{ij})$	0.196***	$\log(EM_{ij})$	0.593***
	(0.042)		(0.027)		(0.036)
$\log(IM_{ij})$	0.031	$\log(IM_{ij})$	0.011	$\log(IM_{ij})$	0.028
	(0.021)		(0.013)		(0.036)
Constant	0.644***	Constant	0.354***	Constant	0.662***
	(0.059)		(0.037)		(0.101)

Note: Standard errors in parentheses. Significance at the 1% (5%) level is indicated by ***(**).

log distance and log of entry cost as IVs.

TFP Comovement and the Margins of Trade

TFP correlation on EM and IM

Using Klenow and Hummels' decomposition method

Panel 1: HP-filtered TFP		Panel 2: TFP growth		Panel 3: BP-filtered TFP	
$\text{corr}(tfp_i^{hp}, tfp_j^{hp})$	Coef.	$\text{corr}(\Delta tfp_i, \Delta tfp_j)$	Coef.	$\text{corr}(tfp_i^{bp}, tfp_j^{bp})$	Coef.
$\log(EM_{ij})$	0.275***	$\log(EM_{ij})$	0.181***	$\log(EM_{ij})$	0.557***
	(0.037)		(0.024)		(0.062)
$\log(IM_{ij})$	-0.042*	$\log(IM_{ij})$	-0.027*	$\log(IM_{ij})$	-0.084**
	(0.018)		(0.012)		(0.030)
Constant	0.215***	Constant	0.154***	Constant	0.568***
	(0.051)		(0.034)		0.568***

Note: Standard errors in parentheses. Significance at the 1% (5%) level is indicated by ***(**).

log distance and log of entry cost as IVs.

Mechanism

- Consider a positive TFP shock
- Direct effect: Demand-supply channel
- Amplification effect:
  - Innovation: Increases in N_{dt}
  - International Technology Diffusion: N_{xt} increases and each variety has a higher average productivity (or quality) $\widetilde{z_{X,t}}$.
  - The effect is stronger the lower is $f_{X,t}$
- Endogenous TFP

$$TFP_t = (N_{dt} + N_{xt}^*) \left\{ \left(\frac{1}{N_{dt}+N_{xt}^*} \right) \left((N_{dt} \widetilde{z_{dt}}^{\theta-1} + N_{xt}^* \widetilde{z_{xt}^*}^{\theta-1} \right) \right\}^{\frac{1}{\theta-1}}$$