Trade and Synchronization in a Multi-Country Economy
Luciana Juvenal and Paulo Santos Monteiro

Discussion by
Roc Armenter, FRB Philadelphia

SCIEA, FRB Atlanta
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Introduction

• Does trade lead to business cycle synchronization?
  • Empirical evidence says it does.
  • But trade models typically predict a tenuous relationship.

• This paper develops a model with
  • Ricardian trade a la Eaton-Kortum,
  • Pricing-to-market and variable markups,
  • Calibrated iceberg trade costs,
  • and 21 countries!

• The model doubles the effect from Kose and Yi (2006), although there still quite some way to go.
Transmission

- Standard IRBC will have two channels
  - Trade,
  - Finance.
- This paper assumes financial autarky and focuses on trade:
  - Although trade is not necessarily balanced for the intermediate manufactured goods.
  - Heathcote and Perri (2002)
- Let’s see how trade alone transmits shocks across countries.
Country 1 Productivity Shock

Output

Technology T

Real Ex. Rate $P_2/P_1$

Import share in Manufactures
Real exchange rate

- Output and RER are tightly connected:
  \[
  \frac{Y_{it}}{Y_{jt}} = A^{ij} \left( Q_{jt}^{ij} \right)^{\frac{\nu + 1}{\nu}}.
  \]

- We run into the Backus-Smith puzzle.
- Output correlation and RER volatility are the two sides of the same coin.
  - How does this relationship look in the data?
  - Note it bypasses trade intensities.
Trade costs decrease synchronization

![Graph showing the impact of trade costs on synchronization]

Country 2 Output

- Low Trade Costs
- High Trade Costs

% Deviations from s.s.

Time Horizon

- Blue line: Low Trade Costs
- Red line: High Trade Costs
Trade costs amplify shocks
Pricing to Market?

- Technology and the price level are given by

\[ P_{it} = \kappa \Phi_{it}^{-\frac{1}{\theta}} \]

where

\[ \Phi_{it} = \sum_j T_{jt} (\omega_j \tau_{ij})^{-\theta} . \]

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Pricing to Market?

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• Pricing-to-market and variable markups determine the constant \( \kappa \).

• However, market competition seems irrelevant for correlations

\[ Q_{ij}^{it} = \left( \frac{\Phi_{it}}{\Phi_{jt}} \right)^{\frac{1}{\theta}}. \]
Trade linkages

• Log-output is

\[ y_{it} = S_i + \frac{\nu + 1}{\nu \theta} \log \left( \sum_{j} T_{jt} (\omega_j \tau_{ij})^{-\theta} \right) \]

• A first-order approximation around s.s. delivers

\[ \hat{y}_{it} \propto \sum \lambda_{ij} \hat{T}_{jt} \]

where \( \lambda_{ij} \) is the import share from country \( j \) in s.s.

• What matters is the correlation of trade linkages

\[ \rho (\hat{y}_{it}, \hat{y}_{kt}) = \frac{\sum_j \lambda_{ij} \lambda_{kj}}{\sqrt{\sum_j \lambda_{ij}^2} \sqrt{\sum_j \lambda_{kj}^2}} = \rho (\lambda_{ij}, \lambda_{kj}) \]
For synchronization what matters is whether countries have similar trade patterns, not whether they trade much with each other.
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Consider two three-countries worlds:

- **Isosceles world**
  - Two core countries with bilateral trade cost $\tau_l$,
  - A remote country with trade cost $\tau_h > \tau_l$ with core.

- **Linear world**
  - A core country with trade cost $\tau$ with periphery,
  - Two remote countries with no trade with each other.
Isosceles world

Shock at Core Country One

Shock at Remote Country

Core 1
Core 2
Remote
Linear world
Conclusions

- It is a great idea to apply the Eaton-Kortum framework to output synchronization.
- The model has many interesting predictions:
  - Trade blocks,
  - Trade patterns,
  - Importance of core (and large) countries,
  - Output volatility and remoteness...
- Applications go well past the trade - output correlation.
- The current version does not realize yet the full potential of the paper.