

Discussion of "The Growth of FDI Relative to Trade" by Jeffrey Bergstrand and Peter Egger

Wolfgang Keller
University of Colorado, NBER, and CEPR

October 2008

Main question

- What explains the rise in the FDI to trade ratio in the 1990s?
- Is it related to outsourcing of intermediate inputs?

Other explanations considered:

- 1 The costs of FDI fell faster than the costs of trade
- 2 The ownership changes from international mergers and acquisitions have spurred FDI relative to trade

The approach: I

- Extend the Egger and Bergstrand's JIE 2007 model to include a new good, intermediates
 - ▶ Now have 3 countries, 3 factors, and 3 goods (2 final goods, 1 intermediate good)
- Solve the model using numerical techniques
- Calibrate the model
- Show certain properties for final trade, intermediate trade, and FDI flows, including
 - ▶ All flows increase in the size of the economies
 - ▶ Trade flows are maximized when countries are equally large; not true for FDI flows
 - ▶ If costs of final trade rise, FDI flows rise, and vice versa

The approach: II

- Data on final versus intermediate goods trade using the UN's *Classification by Broad Economic Categories*
- Run gravity regressions on (1) final goods trade, (2) intermediate goods trade, and (3) FDI
- Simulate the model with and without intermediate goods trade: are intermediate goods crucial to explain the rise in the FDI-to-trade ratio?
- Using an IV regression framework, can one show that intermediates trade is the cause for the FDI-to-trade increase?

Three main points

- 1 Intermediate versus final goods according to the UN's *Broad Economic Categories* classification: what does it measure?

Three main points

- 1 Intermediate versus final goods according to the UN's *Broad Economic Categories* classification: what does it measure?
- 2 How reasonable is the assumption that all intermediate goods trade is between unaffiliated parties?

Three main points

- 1 Intermediate versus final goods according to the UN's *Broad Economic Categories* classification: what does it measure?
- 2 How reasonable is the assumption that all intermediate goods trade is between unaffiliated parties?
- 3 What empirical approach is best to demonstrate the impact of intermediate goods trade on the FDI-to-trade ratio?

Intermediate vs final goods and the UN Classification

- Does this category "intermediate goods" include many products whose trade is unrelated to the recent vertical specialization and offshoring (raw materials, primary metals, etc)?
 - ▶ Hummels, Ishii, and Yi claim that many classifications are rather arbitrary
- Why not compare the results with what you get based on input-output data for the economies where both data is available?

Interpreting gravity regression results

- Are these intermediate goods Ethier-type differentiated inputs? The authors run gravity regressions for different samples

| | OECD Sample | Non-OECD Sample |
|--------------------|-------------|-----------------|
| Final Goods | ... | ... |
| Intermediate Goods | ... | ... |

- What can one conclude from a comparable fit for intermediate goods in the Non-OECD sample? (see Evenett and Keller on gravity equations for total trade)
- In the end, should the R^2 be different in these equations? If yes, then similar R^2 might indicate that the classification into final and intermediate goods is not that sharp

Intermediate goods trade: at arms-length versus intra-firm

A recent paper asserts that

- "Intra-firm trade accounts now for about half of all U.S. imports."

Intermediate goods trade: at arms-length versus intra-firm

A recent paper asserts that

- "Intra-firm trade accounts now for about half of all U.S. imports."
- "Close to two thirds of all U.S. multinational parent exports to their foreign affiliates are intermediate goods and services."

Intermediate goods trade: at arms-length versus intra-firm

A recent paper asserts that

- "Intra-firm trade accounts now for about half of all U.S. imports."
- "Close to two thirds of all U.S. multinational parent exports to their foreign affiliates are intermediate goods and services."
 - ▶ Full disclosure: the paper is by Keller-Yeaple

Intermediate goods trade: at arms-length versus intra-firm

A recent paper asserts that

- "Intra-firm trade accounts now for about half of all U.S. imports."
- "Close to two thirds of all U.S. multinational parent exports to their foreign affiliates are intermediate goods and services."
 - ▶ Full disclosure: the paper is by Keller-Yeaple
- K-Y focus on intra-firm trade initially. Clearly, there is both; the reason this assumption matters is [only!] to get the empirics right.

Intermediate goods trade: at arms-length versus intra-firm

A recent paper asserts that

- "Intra-firm trade accounts now for about half of all U.S. imports."
- "Close to two thirds of all U.S. multinational parent exports to their foreign affiliates are intermediate goods and services."
 - ▶ Full disclosure: the paper is by Keller-Yeaple
- K-Y focus on intra-firm trade initially. Clearly, there is both; the reason this assumption matters is [only!] to get the empirics right.
 - ▶ As it is, intra-firm trade is likely underestimated in available statistics such as US BEA data

Intermediate goods trade: at arms-length versus intra-firm

A recent paper asserts that

- "Intra-firm trade accounts now for about half of all U.S. imports."
- "Close to two thirds of all U.S. multinational parent exports to their foreign affiliates are intermediate goods and services."
 - ▶ Full disclosure: the paper is by Keller-Yeaple
- K-Y focus on intra-firm trade initially. Clearly, there is both; the reason this assumption matters is [only!] to get the empirics right.
 - ▶ As it is, intra-firm trade is likely underestimated in available statistics such as US BEA data
 - ▶ Intra-firm intermediates are probably highly skilled-labor intensive (R&D, headquarter services, ...), while here the skilled labor share in intermediates is only 10%. Results for different values?

Intermediate goods trade: at arms-length versus intra-firm

A recent paper asserts that

- "Intra-firm trade accounts now for about half of all U.S. imports."
- "Close to two thirds of all U.S. multinational parent exports to their foreign affiliates are intermediate goods and services."
 - ▶ Full disclosure: the paper is by Keller-Yeaple
- K-Y focus on intra-firm trade initially. Clearly, there is both; the reason this assumption matters is [only!] to get the empirics right.
 - ▶ As it is, intra-firm trade is likely underestimated in available statistics such as US BEA data
 - ▶ Intra-firm intermediates are probably highly skilled-labor intensive (R&D, headquarter services, ...), while here the skilled labor share in intermediates is only 10%. Results for different values?
- Endogenizing the arms-length versus intra-firm trade margin?

Does intermediate trade drive the FDI to trade ratio in the 1990s?

- There are both simulations of the calibrated GE model and IV regressions to show that intermediate goods trade is the cause of a rising FDI to trade ratio
- Are the IV regressions necessary to identify the causal effect of intermediates?
 - ▶ Since we know the economy's entire GE structure, should we take it seriously and just use the GE model?
 - ▶ Should one think of the IV results as a "robustness check"?
 - ★ Intermediate goods trade costs are unlikely to pass the exclusion restriction, since they have a direct effect on FDI (Table 3)
- Can one estimate (some) parameters using Simulated Methods of Moments or Indirect Inference methods?

Summary

- Paper is very interesting
- I like the emphasis on intermediate goods in studying changes of FDI and trade
- Should present more analysis on what the UN classification does
- Hope to see future analysis of both intra-firm and arms-length trade
- Probably want to choose either simulations or IV regressions to make main point