MULTINATIONAL FIRMS, TRADE, AND THE TRADE-COMOVEMENT PUZZLE

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INTRODUCTION

Trade co-movement *puzzle* (Kose and Yi 2006)

▶ Data: bilateral co-movement of output is positively correlated with trade share

▶ Model: two-country real business cycle model
  ▶ Shocks: stationary TFP shocks
  ▶ Puzzle: Generates ten times weaker correlation

▶ This paper: heterogeneous firms with endogenous exports and multinationals (FDI)
  ▶ increase in number of exporting firms at home increases foreign GDP
  ▶ multinationals transfers technology
  ▶ number of multinationals procyclical

OVERVIEW OF DISCUSSION

- Overview of the paper

- Main comments
  - Interpretation of empirical results
  - Model validation
  - Medium term cycles is more interesting than emphasized

MUNDELL-IAN ORIGINS OF THE QUESTION

Consider two economies with sticky prices and business cycles.
Q: When should these economies share a common currency?

- ▶ Economic costs of EMU
    - ▶ *Loss of ability to stabilize business cycles* with independent monetary policy
    - ▶ Necessary if business cycles are not synchronized

- ▶ Economic benefits of EMU
    - ▶ Promote trade integration
    - ▶ Literature finds significant effects $\approx$ 8% - 23% increase in trade

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    - ▶ Promote trade integration
    - ▶ Literature finds significant effects ≈ 8% - 23% increase in trade

- ▶ Indirect benefit of integration
    - ▶ Trade integration may promote business cycle synchronization (Frankel & Rose 1998)
        - ▶ Reduce the need for independent monetary policy
    - ▶ Imbs critique
        - ▶ Countries that trade more with each other are similar in other ways, and thus subject to *common shocks*
        - ▶ Other extreme is the *transmission of shocks*

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    - ► Other extreme is the *transmission of shocks* → Gautham's paper

GAUTHAM'S PAPER: EMPIRICS

- Does trade promote business cycle synchronization?
    - 20 countries over 1993-2012
    - Two 10 year time windows
    - 184 country pairs (i, j) in each time window t
    - Country-Pair fixed effects (Imbs critique)

$$\text{BCS}_{ijt} = \alpha + \beta \log(\text{trade}_{ijt}) + \gamma \log(\text{FDI}_{ijt}) + \delta_{ij} + \epsilon_{ijt}$$

- Documents a significant BCS/FDI slope
    - β falls to half of its estimate and is insignificant
    - Doubling of FDI share (mean 3.9%) associated with increase in BCS by 0.05 (mean 0.57)

- Interprets FDI as multinational activity
    - di Giovanni, Levchenko & Mejean (2018), Kleinert, Martin & Toubal (2015) find evidence for multinational linkages to matter

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I am not going to attempt talking about this.

EMPIRICS: COMMENTS

- Does trade promote *Medium-term* cycle synchronization (MCS)?
    - Medium-term cycle (Comin-Gertler 2006) - frequencies between 32 - 120 quarters
    - Medium run consequences reconcile Lucas' *small* welfare costs of business cycles
    (Krebs 2003, Barlevy 2004, Garga and Singh 2016)
    - Liao and Santacreu (2015) document the medium term effect of trade integration using IV methods

- Gautham finds that FDI is also correlated with MCS in a table in Appendix

- "Stock of FDI is ... a measure of capital stock owned by foreign entities with *lasting* interest."

- Perhaps, its more useful to pursue this interpretation.

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THEORETICAL APPARATUS

- ▶ Kose & Yi (2006): A demand-supply spillover effect → small β
  - ▶ Positive TFP shock at home raises demand for foreign intermediate goods

- ▶ Adds pro-cyclical firm entry and endogenous export-ability (Ghironi & Melitz)
  - ▶ Firms pay sunk cost to reveal their idiosyncratic TFP draws. Expected profits determine the number of firms.
  - ▶ Conditional on entry (and productivity draws), pay fixed cost $F^X > 0$ to gain exporting rights. An iceberg trade cost regulates home-bias in goods market.
  - ▶ A positive aggregate TFP shock raises number of firms at home → more varieties, more measured TFP at home
  - ▶ Endogenous increase in number of exporting varieties raises foreign TFP
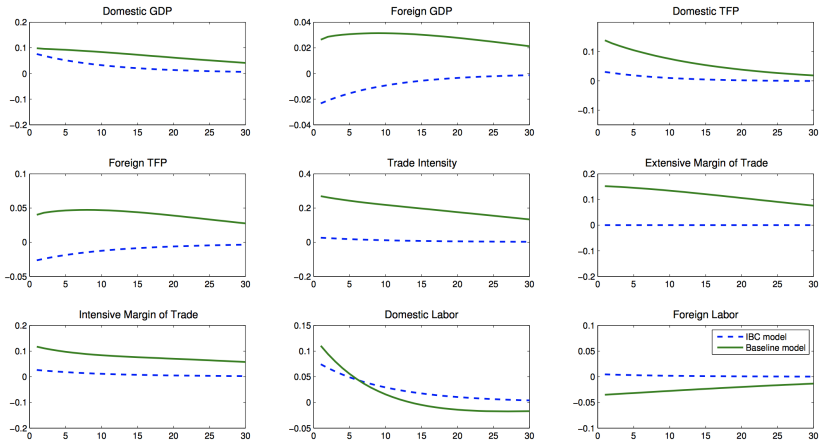 - ▶ Hence, TFP co-movement channel number 2.

Figure 1: A) Impulse Response Function to Domestic TFP Shock (IBC vs Baseline models)

GAUTHAM'S PAPER

- Endogenous multinational production (MP) units
  - High productivity (ϕ) firms may pay a higher fixed cost $F^M > F^X$ to re-locate production to Foreign country to cut down on ice-berg trade cost
  - captures the "proximity-concentration" trade-off

- Two mechanisms
  - Increase in number of MP units abroad raises foreign TFP. Amplified because of no ice-berg trade costs
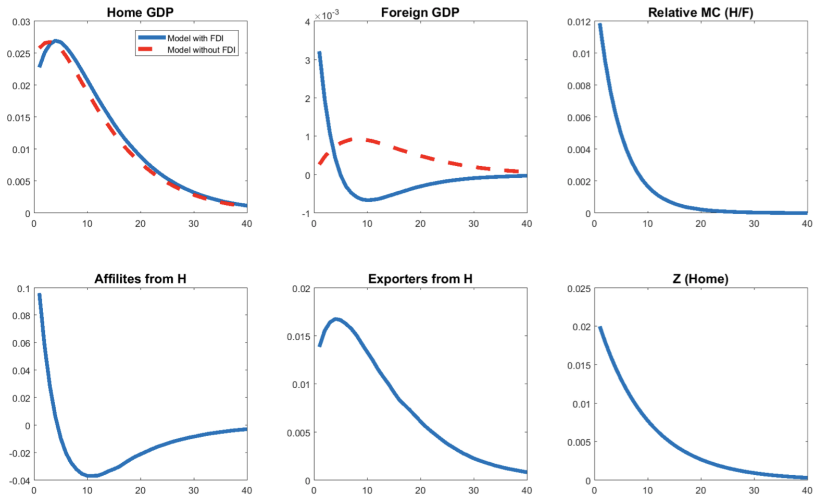
ENDOGENOUS MP UNITS

Figure 2: Comparison of impulse responses under models with and without MP.

MECHANISMS: COMMENTS

- Change in number of MP units is proxied with FDI volatility. The model calibration features (mean) FDI volatility of 9.5%, and max $> 21\%$
  - Data counterpart is based off the Great Recession (extreme event) and is 6.3%

- Comment 1: Show the drop in output associated with 9.5% increase in FDI volatility. Is it comparable to Great Recession, output drop of 5%?
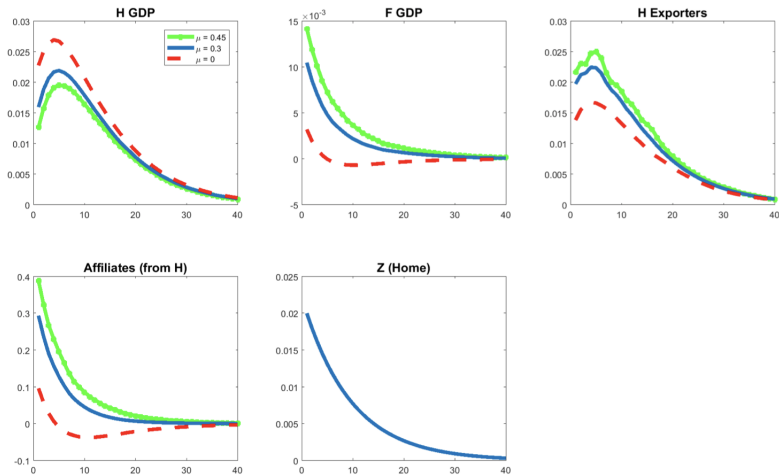
ENDOGENOUS MP UNITS + TECH TRANSFER

Figure 3: Correlation of real GDP under different values of μ.

MECHANISMS: COMMENTS

- A home TFP shock endogenously transmits into foreign country's aggregate TFP
  - di Giovanni et al micro evidence consistent with this mechanism

- The interaction of MP units with technology transfer is interesting

- Comment 2: Decompose the contribution of technology transfer margin independent of extensive margin
  - Figure 3 shows the effect of increasing μ on Foreign GDP
  - However, there is an extensive margin effect that amplifies the technology transfer effect.
  - Does extensive margin interact non-linearly in your model with increasing technology transfer?

- Comment 3: Emphasizing the medium-term component looks promising.

GENERAL COMMENTS

Implications for the currency area literature

- ▶ Does EU promote multinational activity?

- ▶ Scylla and Charbydis (A well and an abyss)

- ▶ Theory has hard time matching the large slope in the data

- ▶ Empirics imply that doubling FDI only increases BCS to 0.6
  (enough to give up monetary independence?)
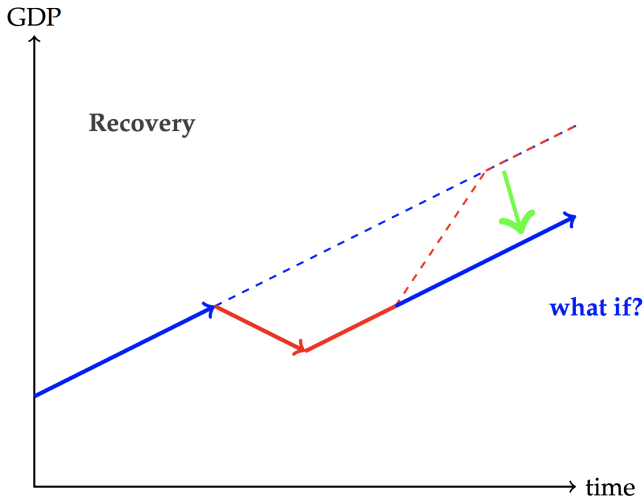
GENERAL COMMENTS

Integration and BCS

- ▶ Net zero current account balance is forced every period. What is the role of financial autarky?

- ▶ Kalemli-Ozcan's work emphasizes that financial integration may reduce BCS. Improved risk-sharing promotes specialization, and hence reduced co-movement
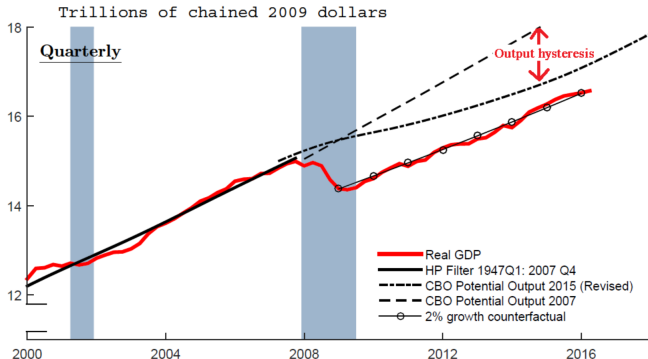
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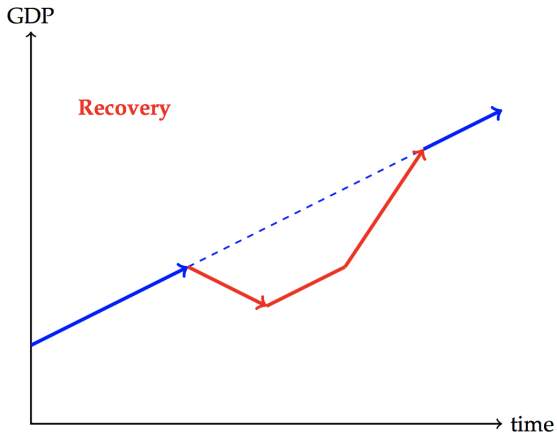
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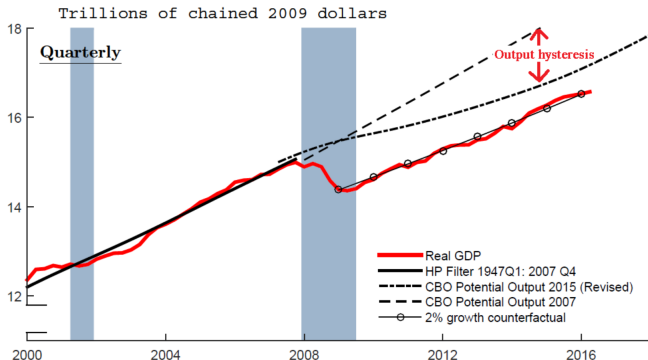

Source: Garga and Singh (2016)

HYSTERESIS

Note: Quarterly Real GDP data from St. Louis FRED database. CBO Potential Output 2015 and CBO Potential Output 2007 estimates are taken from the Congressional Budget Office February 2016 releases. The trend line until 2007Q4 is estimated on quarterly data from 1947 Q1: 2007 Q4 using Hodrick-Prescott filter with a smoothing parameter of 1600. The solid black line with circles is constructed using 2% annual growth rate starting from 2009. The shaded areas represent the recessions dated by NBER.

Secular Stagnation with decline in multinationals? What open economy model to use?

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Secular Stagnation with decline in multinationals? What open economy model to use?

Eggertsson, Mehrotra, Singh and Summers (2016)

SUMMARY

- Nice paper
- Comment 1: Medium term cycle story is more appealing (to me), especially for extreme events
- Comment 2: Calibration of multinational units volatility can be made more transparent
- Comment 3: Gautham is underselling the contribution. May get a large interaction of multinational entry with positive technology transfers