

**The Effects of Globalization on International Business Cycle
Co-Movement: Is All Trade and Finance Created Equal?**

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30" Summary

- Very interesting paper. Impossible to do justice in 10 minutes. I will try to put it in literature context and offer some suggestions.
- Two questions, connected in general equilibrium:
 1. Does trade in intermediate goods strengthen international business cycle comovement relative to trade in final goods?
 2. Does capital market integration have different effects on international business cycle comovement than credit market integration?
- Answers from empirical exercise: Yes!
 1. Trade in intermediate goods leads to stronger comovement than trade in final goods.
 2. Credit market integration (bond trading) generates positive comovement, but capital market integration (equity trading) has a negative effect.
- Puzzle: Multi-sector IRBC model cannot replicate the positive effect of credit market integration.

The Model

- Three-country, IRBC model:
 - Two SOEs and ROW.
 - Two sectors in each country.
 - Input-output structure: Output of each sector in each country is used as input in production of the final good in each sector in each country.
 - Average productivity differences across countries result in specialization (average differential in output quantities of different sectors in different countries).
 - Households consume a basket of all final goods.
 - They trade shares in home and foreign firms in period 0.
 - They trade uncontingent bonds in all following periods.
 - C.E.S. aggregation of intermediate and final goods.

Trade Integration

- Trade integration is captured by the weights on home versus foreign goods in C.E.S. aggregators (intermediate and final).

Question

- Why not costly trade and changes in trade costs that result in endogenous changes in the characteristics of trade?
- This paper is related to Burstein, Kurz, and Tesar (*JME* 08) and Bergin, Feenstra, and Hanson (*AER*, forthcoming), who document the effect of trade in intermediate goods (production sharing) on business cycle comovement.
 - BKT: IRBC, no endogenous decision to do production sharing.
 - BFH WP: Endogenous offshoring, but no intertemporal features (no quantitative model).

Trade Integration, Continued

- Alternative approach:
- Endogenous trade in final goods and endogenous offshoring in an intertemporal IRBC-type framework.
 - In the sense of endogenous decisions *what* to trade and *what* to produce abroad and import as intermediate (not just how much).
- How do these endogenous, firm-level decisions affect comovement?
- How do changes in entry and trade costs at final and intermediate level affect comovement?
- Andrei Zlate's job market paper (Boston College, 2008):
 - Endogenous offshoring contributes positively to comovement between U.S. and Mexico.
 - It explains dynamic intensive versus extensive margin behavior of Mexico's maquiladora industry.
 - It has matters for the dynamics of international relative prices.
- Suggestion for Scott: Trade costs.

Asset Markets

- Trade in equities only in period 0. Dividend payments subject to taxes in following periods.
- Trade in bonds in all following periods, subject to quadratic adjustment costs.
- Dividend taxes and adjustment costs calibrated to replicate observed equity and bond holdings (see below on the latter).
- Given this setup, if I think of changing financial market integration, I think of changes in taxes or adjustment costs (more generally, I would include changes in the menu of tradable assets).

Asset Markets, Continued

- From my understanding of the paper, Scott views (bond market) integration as the following:
 - Suppose shocks are such that there is idiosyncratic income uncertainty across countries.
 - If this is the case, agents are willing to bear *given* costs (of adjusting bond holdings), and this leads to integration in the form of changing bond positions over the cycle to smooth consumption.
- In other words, integration is more the *observed* equilibrium outcome of responses to shocks than the effect of changes in asset menus and trading costs.
- Does this mean that, if shocks were such that there is no need for asset trading to smooth consumption, we would say there is no financial integration even if asset trade were completely frictionless?
- Why not looking at the alternative where financial integration is a response to changing asset menus and trading costs?

Asset Markets, Continued

Clarifying Question

- Why trade in equities only in period 0? Why not sequential trading? No effect on equilibrium allocation? Would it complete the markets?
- For instance, Devereux and Sutherland (2006) allow for sequential trading.

Asset Markets, Continued

On the Quadratic Costs of Bond Holdings and Credit Target Calibration

- Traditionally used as a device for pinning down the deterministic steady state of the model and ensure stationary responses to temporary shocks (since at least Turnovsky, *JIMF* 85).
- In this model, steady-state bond holdings are zero not because countries are symmetric, but because of the specification of adjustment costs.
- It is worth discussing this a bit for the important role played by these adjustment costs in Scott's exercise.

Asset Markets, Continued

- Suppose quadratic costs on holdings of an international bond defined as $\frac{\chi}{2} (B_{t+1} - \bar{B})^2$, where B_{t+1} denotes bonds to be carried into next period by the home household.
- Two countries for simplicity. \Rightarrow Euler equations for home and foreign households imply:

$$\begin{aligned} U'(C_t) [1 + \chi (B_{t+1} - \bar{B})] &= \beta E_t [U'(C_{t+1}) R_{t+1}], \\ U'(C_t^*) [1 + \chi (B_{t+1}^* - \bar{B}^*)] &= \beta E_t [U'(C_{t+1}^*) R_{t+1}], \end{aligned}$$

where R_{t+1} is the world interest rate. (I also assume PPP to simplify the point.)

- Absent adjustment costs ($\chi = 0$), steady-state versions of these equations imply $\beta R = 1$, and provide no restriction for the determination of steady-state bond holdings.
- There is a unit root in the dynamics of bond holdings and *all* shocks have permanent consequences.

Asset Markets, Continued

- When $\chi > 0$, the steady state equations are:

$$\begin{aligned}1 + \chi(B - \bar{B}) &= \beta R, \\1 + \chi(B^* - \bar{B}^*) &= \beta R.\end{aligned}$$

- Adding these two equations and imposing clearing of the world bond market ($B + B^* = \bar{B} + \bar{B}^* = 0$) yields $\beta R = 1$.
- In turn, this implies the unique steady state $B = \bar{B}$, $B^* = \bar{B}^*$.
- This simple mechanism is used in a large number of papers.
- In Scott's paper, $B = B^* = 0$ because $\bar{B} = \bar{B}^* = 0$ in the specification of bond holding costs.

Asset Markets, Continued

- This has an implication for calibration:
 - Scott mentions that he cannot calculate targets for credit integration from the model's steady state, because steady-state bond holdings in the model are zero.
- But if you are willing to use ad hoc adjustment costs anyway, why not center them around levels that can differ from zero and use that in calibration?
- The current approach relies on a combination of consumption smoothing and income smoothing arguments that is not completely clear to me, since it is not clear to me that income smoothing should be an objective of household bond holding decisions.

Empirical Work

- Reduced form approach.
- Why not structural estimation of model parameters?
- Devereux-Sutherland (2006a,b)/Tille-van Wincoop (2007):
 - Second-order approximation of portfolio optimality conditions and first-order approximation of rest of the model is enough to solve for steady-state portfolio (as function of structural parameters and second moments of exogenous shocks) and first-order dynamics of macro variables and net foreign assets.
- Why not maximum likelihood estimation of such approximated model (Ireland, *JEDC* 04)? Or Bayesian (current fashion)?
 - This exercise would allow Scott to connect his work to a fast-growing literature on estimated models and would shed light on parameters.
- Structural estimation of higher-order approximation to capture portfolio movements?
 - If Scott allows for sequential trade in equities, see Ghironi, Lee, and Rebucci (available soon) on the consequences of separating prices and quantities in defining asset positions for the need for higher-order approximations.

Conclusion

- This is a very interesting paper and I enjoyed reading it.
- I look forward to seeing more of Scott's work!