The Heckscher-Ohlin Model: Features, Flaws, and Fixes

III: So What Do We, Like, Do?

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Themes of the 3 Lectures, Again

- The HO Model is largely well behaved in 2 dimensions, even when you include trade costs
- In higher dimensions, it is not so well behaved, especially when you include trade costs

✍Various modifications and extensions of the HO model offer some promise of making it behave better

Outline

- Ways to Make HO Behave?
  - Specific factors
  - Armington Preferences
  - Lumpy Countries
  - Monopolistic Competition
  - Heterogeneous Firms
  - Variable Trade Costs
  - Aggregation
- Conclusion

Ways to Make HO Behave?

- Not a new question
- CGE modelers have had to deal with it
  - Models based too closely on HO don't fit the data
  - Most obviously (for me, via Bob Stern): Estimates of price elasticities of imports are much smaller than they would be in HO models taken literally
  - We've used several of the fixes mentioned here

Specific Factors

- Also called the Ricardo-Viner Model, this was how Samuelson (1971) and Jones (1971) got the HO Model to behave
- Each sector has its own “specific factor”

  = Factor that is either
  - useless in, or
  - immobile to and from,

  all other sectors

Specific Factors

- Implications
  - Supplies likely remain positive at all prices
  - Supplies increase smoothly with price
  - There is no indeterminacy
  - Trade does not equalize factor prices (Hence, “Ohlin was right”)

Specific Factors

- Problems
  - Makes perfect sense for short run, but not for long run
  - Doesn’t solve problem of hypersensitivity of bilateral trade to trade costs
  - With specific factor in each industry, model no longer “explains” trade, except tautologically: countries export products of their abundant specific factors

Armington Preferences

- Due to Armington (1969), who used it in a macroeconomic, not HO, context
- Products are differentiated by country of origin
- Examples?
  - French wine
  - Italian shoes
  - Swiss watches

Armington Preferences

- Implications
  - Trade need not equalize prices of same "good" from different countries
  - Trade elasticities much reduced
    - hence hypersensitivity eliminated

Armington Preferences

- Problems
  - Trade now depends preference parameters as well as on factor endowments
    - France exports wine because people like French wine, etc.
    - (This is fine in CGE models, which don't seek to explain trade, but use trade data to inform trade policy)
  - Preferences give every country market power in trade

Lumpy Countries

- Due to Courant and Deardorff (1992)
- Countries have multiple regions, across which there is not FPE

Lumpy Countries

- Implications
  - May alter pattern of trade from HO prediction
  - Internal regions may specialize
  - Regional limits on trade? Hence lower elasticities?
  - Specialization at regional level without specialization nationally? Hence less specialization?
  - Continuum of regions?

Lumpy Countries

- Problems?
  - Don’t know yet
  - Hardly any of this has been worked out

Monopolistic Competition

- Helpman and Krugman (1985) put this in HO trade models, building on Spence-Dixit-Stiglitz preferences. Romalis (2004) generalized for empirical work
- Goods are differentiated by firm, while increasing returns at the firm level limit product variety

Monopolistic Competition

- Implications
  - Most obviously, model explains intra-industry trade
  - Implications for specialization and factor prices are the same as the standard HO Model, so it does not help much with some of that
  - Product-differentiated bilateral exports remain positive from any country that produces, avoiding hypersensitivity to trade costs

Monopolistic Competition

- Problems
  - Only makes sense for (some) manufactures and services, not for agricultural products, minerals, or some other inputs
  - Doesn't change extremes of specialization

Heterogeneous Firms

- Melitz (2003) put this into trade theory, following Hopenhayn (1992). Bernard, Redding, and Schott (2005) put it in the HO model
- Individual firms each have a randomly chosen productivity parameter, as well as differentiated products

Heterogeneous Firms

- Implications
  - Industry gets small, but doesn't disappear, when factor prices move against it, since most productive firms survive
  - Thus avoids extremes of specialization
  - Supply responds to prices through entry or survival of less productive firms

Heterogeneous Firms

- Problems
  - Hard!

Variable Trade Costs

- I (think I) suggested in Deardorff (1984) that HO would be better behaved if trade costs varied appropriately
- Assume that trade costs for a particular good along a particular route (pair of countries) rise with the volume of trade

Variable Trade Costs

- Implications
  - This makes bilateral export supply curves upward sloping even when supplies of goods are infinitely elastic
  - Indeterminacy of trade is eliminated
  - Volume of trade may then vary smoothly with size of autarky price differences

Variable Trade Costs

- Problems
  - Hard to imagine that this assumption could be valid
    - If anything, transport seems more likely to have decreasing costs, not increasing

Aggregation

- Davis and Weinstein (2001) suggest this in motivating part of their empirical work
- Industries that are observable are actually aggregates of unobservable industries with heterogeneous factor intensities

Aggregation

- Implications
  - Observed industries represent different mixes in different countries, leading to cross-country correlation between factor endowments and factor intensities, even with FPE (Davis and Weinstein)
  - In a multi-cone model, even though countries specialize in actual industries, observed industries operate at positive output due to products that unobservably belong to another cone
  - In response to price changes, instead of whole observed industry responding hypersensitively, only unobserved components do and observed industry responds gradually.

Aggregation

- Problems
  - This has not been worked out as a formal model (I think)

Conclusion

- It is unlikely that any one of these fixes will take hold by itself
- More likely that trade theorists will
  - Continue to use the unmodified HO model for most purposes
  - Choose among these fixes when necessary to deal with particular issues where flaws are most serious
  - Use several of these at once (as in Davis and Weinstein) as basis for empirical work
- Meanwhile, I will dream of a single fix that will make the HO Model both
  - Better behaved, and
  - As simple to use as the Lerner Diagram