CROSS-BORDER PRODUCTION NETWORKS AND THE OPEN ECONOMY

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Production Networks

• Spread of production across borders, creating new linkages among countries

• A new form of intra-industry trade:
  – Europe: horizontal (including FDI)
  – East Asia, etc.: vertical (including FDI)
Some Stylized Facts

• Regional trade grows relative to total trade – evidence
Chart 1: Indonesia Imports from Region/Total Imports from World

Share

Year

East Asia
Japan
USA
Chart 4: South Korea Imports from Region/Total Imports from World
Chart 5: Hong Kong Imports from Region/Total Hong Kong Imports from World


Share:
- East Asia
- Japan
- USA
Chart 6: Singapore Imports from Region/Total Imports from World

Chart showing the percentage of Singapore's imports from East Asia, Japan, and the USA from 1980 to 2004. The line for East Asia shows a steady increase in imports from 1980 to 2004. The line for Japan shows a decrease in imports from 1980 to 1998, followed by a slight increase. The line for the USA shows a fluctuating trend with a slight decrease overall.
Component trade grows

- The spread of production sharing and production networks:
  - Increases the share of components trade in total trade
  - Particularly in sectors like machinery
Bilateral Production Sharing

• Example: U.S.-Mexico: auto sector
• Simple Loop: U.S.-made parts and components exported to Mexico for incorporation into automobiles shipped to the U.S.
• Mexican exports (of autos) contain high share of U.S. value-added (parts and components); but little Mexican value-added: assembly and some parts
Benchmark Macro Model

• Under fixed rates: n-1 problem
  – fixed rates
  – open financial markets
  – independent monetary policy
Benchmark Macro Model

• Peso depreciation or devaluation:
  – raises peso price of imports and reduces imports
  – reduces dollar price of exports and raises exports
  – Mexico’s trade balance expected to improve
Production Sharing I

• Currency depreciation or devaluation:
  – raises peso price of imported components, thereby raising peso price of exported automobiles
  – reduces dollar price of automobiles
  – net effect on dollar price depends on Mexican value-added in final product
Production Sharing II

- Depreciation or devaluation of Mexican currency will reduce U.S. price of automobiles in proportion to Mexican value-added
- Decline in dollar price raises demand for autos, which raises demand for components
Trade Balance Response Weakens

• Trade response depends on Mexican value-added:
  – while exports rise, as in the benchmark model, imports rise rather than fall
Implications

• Sensitivity of trade to exchange-rate changes is reduced
• A partial disconnect or separation between production-sharing sectors and rest of economy
• Improved policy degrees of freedom?
Complex Production Networks

• Country A, an emerged economy, imports components from a less developed country (B) and from an advanced country (A) for incorporation into a final good (or a downstream intermediate product) to be shipped to country (A).

• Example: Singapore
Chart 8: Malaysia Imports of SITC Category 7 Parts/Total Category 7 Imports

[Graph showing the percentage of Malaysia's imports of SITC Category 7 parts relative to total imports from 1980 to 2004, with data points for World, East Asia, Japan, and USA.]
Chart 10: Singapore Imports of SITC Category 7 Parts/Total Category 7 Imports
Chart 11: Singapore Exports of SITC Category 7 Parts/Total Category 7 Exports
Complex Production Networks

• A developing economy (China) imports high-tech components from the U.S. and Japan, as well as medium-tech components from countries like Singapore and Malaysia for assembly into finished goods to be exported to the U.S.

• Exchange rates matter
Chart 13: Chinese Exports of SITC Category 7 Parts/Total Category 7 Exports
Exchange Rates Matter

• China fixes to the U.S. dollar; there is a revaluation of the renminbi to the dollar
• Scenario One: Singapore fixes to the dollar
• Scenario Two: Singapore fixes to the yuan
• Scenario Three: Singapore prices exports in U.S. dollars
Exchange Rate Options

• Rate volatility less harmful to trade: weakens case against floating?
• More intra-industry trade; reduced asymmetries: improve case for fixed rates?
China as the intermediary

- China’s entry into WTO raises possibility of Chinese exports to the U.S. replacing exports from East Asian countries
- It’s a question of value-added and associated shifts in trading patterns
- Now, country X needs to pay attention to its exchange rate with the yuan and the yuan’s value in dollar terms
Regional Integration Initiatives

- Unhealthy proliferation of bilaterals?
- Rules of origin are the bane of efficient production sharing
- Shift from trade discrimination to “single-market” issues
Contagion

- Clustering and membership in production networks: implications
- Spillover effects: “fundamentals” may not matter
- Convergence of cycles
- Policy cooperation
Sequencing

• Major policy issue: how to sequence trade, financial, and monetary integration and coordination?

• Europe’s example: a true sequence

• East-Asia: simultaneity needed: production networks require a system of effective service links; free movement of goods, assets and persons; regulatory coordination