

The Macroeconomics of Innovation: Innovation and globalization

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Economics of innovation

Innovation and globalization

Outline:

- What is globalization?
- World trade in historical perspective
- Theories of trade and growth
- International knowledge and technology flows: theory and evidence
- International financial flows
- International aspects of IPRs

What is globalisation?

- “The increased interdependence of economies across the world”
- Dimensions of globalization include trade, technology, finance and labour migration
- Rise of Internet and falling costs of transport and communications make it easier/cheaper for firms of any size to gain access to foreign markets
- Firms may export their products, source inputs from abroad, outsource part of their production
- Financial flows lead to investment in any country
- Most importantly, technology transfers across boundaries can be increased

World trade in historical perspective

- International trade as a proportion of world GDP has risen very rapidly in last forty years
- Trade/GDP ratio:
1970 13% -> 1990 20% -> 2005 28%
- These trends differ greatly from historical levels of trade/GDP:
1870 5% -> 1914 8% -> 1930 5%
- Large rise in trade between rich countries
- Countries with high growth rates often experienced rapid growth in trade

Theories of trade and growth

It can be difficult to know where to start here. Students may have done some aspects in other courses. Core approaches:

- Theory of comparative advantage

- Product cycle models

- Models of export-led growth

- Learning by doing models

- Technology catch-up models

Theory of comparative advantage

- Comparative advantage is an economy's ability to produce a particular good or service at a lower opportunity cost than its trading partners.
- The theory of comparative advantage introduces opportunity cost as a factor for analysis in choosing between different options for production.
- Comparative advantage suggests that countries will engage in trade with one another, exporting the goods that they have a relative advantage in.
- Absolute advantage refers to the uncontested superiority of a country to produce a particular good better.

Product cycle models

- A product life cycle is the amount of time a product goes from being introduced into the market until it's taken off the shelves.
- There are four stages in a product's life cycle—introduction, growth, maturity, and decline.
- The concept of product life cycle helps inform business decision-making, from pricing and promotion to expansion or cost-cutting.
- Newer, more successful products push older ones out of the market.

Models of export-led growth

- An export-led growth strategy is one where a country seeks economic development by opening itself up to international trade.
- The opposite of an export-led growth strategy is import substitution, where countries strive to become self-sufficient by developing their own industries.
- [NAFTA](#) was an example of a new model of export-led growth whereby Mexico became a base for multinational corporations to set-up low-cost production centers and to provide cheap exports to the developed world.

Learning by doing models

- Learning-by-doing is a concept in economic theory by which productivity is achieved through practice, self-perfection and minor innovations.
- The concept of learning-by-doing has been used by Kenneth Arrow in his design of endogenous growth theory to explain effects of innovation and technical change. Robert Lucas, Jr. (1988) adopted the concept to explain increasing returns to embodied human capital.
- Yang and Borland (1991) have shown learning-by-doing plays a role in the evolution of countries to greater specialisation in production.
- In both these cases, learning-by-doing and increasing returns provide an engine for long run growth.
- Recently, it has become a popular explaining concept in the evolutionary economics and resource-based view (RBV) of the firm.

Technology catch-up models

- Catch-up is a process during which the countries that are behind the technological borders try to reduce their technological gaps.
- For a company or country in the catch-up process, a suitable level of technological capabilities and absorption capacity is necessary as a fixed advance requirement.

International financial flows

- a) Long-term foreign direct investment flows
- b) Short-term capital flows (shares, bonds, etc)

Foreign direct investment (FDI):

- FDI should directly raise domestic productivity (i.e. GDP p.w.), and some of this retained in domestic economy (suggests \uparrow rate of economic growth)
- FDI may transfer skills or knowledge to domestic firms (suggests \uparrow growth)
- FDI may increase competition for domestic firms (\uparrow or \downarrow economic growth)

Short term financial flows

Controversy over role of short term flows

- Positive effects: ease capital market constraints and raise competition in financial markets
- Negative effects: focus on short run, introduce instability (via asset prices and exchange rates)
- Stiglitz (2000): capital market liberalization needs to be done slowly and with care. Asian crisis reduced growth rates. China and India less affected, both had capital controls.
- Credit crunch and collapse of confidence in global banking supports Stiglitz

Private capital flows into emerging markets and developing countries

US \$ billions	1996-98	1999-01	2002	2003	2004	2005	2006
Private capital flows, net	167	75.7	90.1	168.3	239.4	271.1	220.9
Private FDI, net	142.2	177.8	154.7	164.4	191.5	262.7	258.3
Private portfolio flows, net	61.7	-1.1	-91.3	-11.7	21.1	23.3	-111.9
Bank loans, deposits, etc, net	-36.7	-101.1	26.0	14.5	25.1	-17.0	73.6
Source: IMF, World Economic Outlook							

Trade openness and growth

By way of summary, there are **four** key mechanisms at work in models of trade and growth

- Trade increases potential **market size** (via exports)
 - Increasing market size \Rightarrow more profits and, possibly, ‘scale effects’ (\uparrow growth)
- Trade increases domestic **competition** (via imports)
 - Increasing competition \Rightarrow less profits (\downarrow growth) ... although there may be an incentive effect (\uparrow growth)
- Trade and **factor price equalisation** (FPE)
 - FPE, if it holds, \Rightarrow marginal product of capital equal across countries (diminishing returns reflect world averages, growth rates convergence)
- **Dynamic comparative advantage** (DCA) \rightarrow

Growth and trade continued

- Dynamic comparative advantage (DCA)
 - Assume countries have multiple sectors (e.g. low tech and high tech)
 - International trade creates specialisation (static theory of comparative advantage), which means some countries increase size of high (low) tech sectors
 - This affects growth if inherent differences in sectoral growth rates, or scale effects, vary between sectors.
 - DCA \Rightarrow countries' growth rates may diverge (e.g. richer countries (+ a few) may grow faster)

International aspects of intellectual property rights

- Historically each country choose IPRs
- This gives incentive to ‘free ride’ on others inventions
 - Solution was introduction of “national treatment” (i.e. give foreigners same rights as domestic inventors) in 19th Century by various international agreements
- However, “national treatment” on its own leads to sub-optimal length of protection (since we assume countries ignore welfare in other countries).
 - Solution is introduction of TRIPs, but this also means poorer countries have to pay more