

# Frontier Innovation, Imitation and Knowledge Flows

Professor Charlie Karlsson  
Jönköping International Business School  
(JIBS) & European Regional Science  
Association (ERSA)

# The problem of catching up

- Lagging economies who adopts a catching-up strategy can achieve a substantially higher growth rate than frontier economies
- Lagging economies can become catch-up economies by increasing their ability
  - to absorb existing ideas, knowledge and technologies in frontier economies, and
  - to imitate existing products, production technologies and business models in frontier economies

# Two sets of economies facing different growth opportunities

- Frontier economies – growth critically dependent upon ability to add to the research frontier
- Catching-up economies – growth critically dependent upon the capacity to absorb state-of-the-art ideas, knowledge and technology, i.e., ability to imitate
- Conclusion: catching-up economies shall not in the medium term invest their limited resources trying to add to the research frontier

# Purpose

- To discuss innovation strategies for catching-up economies, i.e., how these economies can increase their imitation and knowledge absorption capacity

# Imitation policy areas

- Education
- Research
- Knowledge accessibility
- Technology trade and strategic alliances
- Imports
- Exports
- Foreign direct investments
- Infrastructure
- Labour market
- Entrepreneurship
- Attractiveness of the country

# Education (1)

- Increase
  - investments in language training, particularly English, in the compulsory school and in high-school,
  - the financial support for university students, including PhD students, to become exchange students,
  - the number of master and PhD programs taught in English, and
  - the universities' number of partner universities and international exchange programs

# Education (2)

- Increase the funding for
  - university researchers to be visiting researchers at foreign universities
  - foreign university teachers to come as visiting scholars and to teach master & PhD courses
  - bachelors to take their master's degree abroad and for students with master's degree to take their PhD abroad

# Research

- Create
  - incentive schemes for university researchers to co-author with researchers from other countries
  - research programs that also fund researchers from other countries
  - special programs for visiting foreign researchers
  - special programs for university researchers to be guest researchers abroad

# Knowledge accessibility

- Develop high capacity broadband access for universities and firms
- Secure that university students, researchers and firms have access to the necessary databases concerning scientific publications, patents, etc.
- Organise (sponsored) visits for business managers and engineers to important trade fairs around the world

# Technology trade and strategic alliances

- Support technology trade and remove all red tape related to such trade
- Create if needed special agencies to help firms finding the right technologies and doing the necessary negotiations
- See too that property rights are respected
- Give domestic firms full freedom in entering strategic alliances with foreign firms

# Imports

- Imported products carry two critical information bits:
  - the technology works
  - there exist a demand for the product
- Thus, reduce tariffs and other barriers for imports, in particular for knowledge-intensive and high-tech products
- Such products will inspire the next generation of export products

# Exports

- Firms learn from exporting how to improve their productivity and thus their competitiveness
- Try to help firms by reducing the fixed start-up costs
  - for new exporters and
  - for existing export firms to enter new markets

# Foreign direct investments

- Multinational firms (MNFs) are important for international knowledge and technology transfers
- Reduce red tapes, the handling times and corruption to make it easier for MNFs to make both brownfield and greenfield investments
- Be very restrictive with creating tax heavens for MNFs

# Infrastructure

- Devote enough resources to create an efficient and reliable communication infrastructure
- Make special efforts to develop air connections to the major hub in Europe and preferably also intercontinental connections
- Give high priority to upgrading the domestic road network
- Increase accessibility (transport system) to take advantage of knowledge spillovers to a wider extent

# Labour market

- Make special efforts to help well-educated nationals living abroad to return home
- Make it easy for foreigners (including their spouses) and in particular those with good skills and higher education to come and work in your country, i.e., ease up labour market regulations!
- Encourage employees to move between countries within the same firm (to take advantage of backward linkages)

# Entrepreneurship

- Support entrepreneurship of people with ideas adapting "international solutions"
- Focus on reducing the start-up costs and the start-up times for new firms

# Attractiveness of the country

- The probability that external workers, researchers, firms and institutions will move to a country or form collaborative ventures with parties in that country depends on the attractiveness of the country.
- Factors such as the quality of the infrastructure, institutions, communication, education, business climate, and national innovation system will determine this attractiveness.

# Final conclusions

- The critical thing is NOT the percentage of GDP spent on R&D!
- The critical thing is to enable countries to absorb knowledge created in other parts of the world!

Thanks for listening to me!