Innovation, development and STI system policies

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Development and innovation

- The connotation of innovation with "high-tech" is wrong and unfortunate, because
  - Development = innovation (change and transformation)
  - Innovation is important in "low-tech" as well
  - The distinction between imitation and innovation is not as strict as many would make us believe

South-East Asia

- South-East Asian development as an example of "factor accumulation"?
  - Was SE Asian growth just a matter of high investment in fixed and human capital? (when we "correct" labour productivity for these factors, very little total factor productivity is left
  - This macroeconomic view of SE Asia hides the tremendous transformation that was behind this growth spurt (social and economic)
    - Sectoral structure, trade, knowledge accumulation, and policy

The traditional catching-up based growth pattern

- Agricultural societies adopt (and adapt) Western technologies, and start to industrialize (develop a manufacturing sector)
- There is a range of technology transfer channels, such as licensing, industrial espionage, FDI, (return) migration
- Capability building is necessary to adopt this foreign knowledge
- Continuous technology upgrading (e.g., OEM) until a contribution to the technological frontier is realized (e.g., Samsung) → necessary capabilities change over the development process

New opportunities in the era of globalization

- Manufacturing-based growth has become complemented by
  - Service-based development
  - Resource-based development
- Both include an element of leap-frogging (skipping stages)
- Both are based on specific local capabilities and resources, but also on FDI

STI policies and innovation systems

- Capability-building for innovation-based development does not happen in isolation
- Knowledge is transfered and implemented by a range of actors, each with their own expertise and role
- A succesful development policy activates and engages all of these actors, with a strategic development vision as a guidance (developmental state)

Agri-based (sustainable) development

- Public and semi-public knowledge institutes who have state-of-the-art agri-bio knowledge, and can develop new knowledge as well as transfer knowledge to other actors
- Institutional setup (e.g. land ownership) that accomodates rapid technology diffusion
- Foreign firms and donors who contribute specific knowledge
- Entrepreneurs who can innovate to add value added to the production chain by processing
- A government who has a strategic vision and stimulates each actor to play its role

National systems

- There is no single optimal system, instead each system is the result of its own historical development
- A wide range of systems can achieve development, but rarely any system can do without significant government coordination and involvement (especially the US system)
- Policy is context specific (IPRs may work in one context, but will have an adverse effect in a different system)

A word on policy evaluation

- Quasi-experimental or truly experimental methods are all the rage for policy evaluation
- They can be very insightful for the direct effects of a policy, but
- Innovation policy is all about indirect effects, therefore
- These methods must be complemented by a detailed effect-chain analysis