

Innovation in East Asia: its Time for a New Policy Agenda

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Policy Issues

- A key development policy issue for the past 25 years or so – the Asian growth/development ‘miracle’
- But how/should other countries learn from them – catch up theory/‘common sense’ – leads many to suggest others should follow/imitate these examples of success
- World Bank, OECD, UNIDO, UNCTAD, EU, Consultants, governments, academics – draw on Asian experience to suggest paths and lessons for poorer developing countries
- While direct lessons and ‘models’ cannot be transferred – important insights from the Asian experience which can be extremely useful for other developing countries and regions

Typical policy recommendations

- export-led growth paths
- open markets (to foreign investment, imports)
- privatisation/de-regulation/business friendly policies
- high technology production
- government support for knowledge-based industries and industrial clusters
- science/technology parks

Lesson Making

- Argument: 'lesson drawing' in this direct way reflects a deeply flawed understanding of how latecomer development occurs
- Even worse - many of the 'lessons' run contrary to the Asian evidence! (some of the 'explanations' occurred well after the take off)
- E.g. Korea and Taiwan operated closed internal markets; focus of exporting for the first 20 years was 'low technology'; most science and technology parks came well after the miracle!

Asian Achievements

- In 1962 Taiwan and Korea GNP per capita levels of the poorer African nations - by 1986 moved up rankings by 47 and 55 places; GDP growth 8% - 10% p.a. (company growth much faster)
- In 1960s Hong Kong and Singapore - poverty, unemployment and poor housing - little manufacturing - by 1980s - full employment, rising wages
- Low-cost assembly moved to China, leading to its rapid growth (before China, Malaysia, Indonesia, Thailand, Vietnam, Philippines etc.)

Much of world growth, trade, manufacturing - shifted to East/South East Asian region

Research focus: the Asian 'latecomer' firm

- Much research on Asia focuses on macroeconomic, trade and government policy issues – little research on (a) firms and (b) technology acquisition
- My Research Question: how did *firms* in East Asia acquire technology and catch up with leaders?
'latecomer firms' defined by two sets of developing country disadvantages:
 1. Dislocated from international sources of technology, science and R&D, etc.
 2. Cut off from demanding users, leading international markets, user-producer links, clusters, networks, industrial districts etc.

'Latecomer' firms not only distinct from Western and Japanese 'leaders' but also 'followers'

Samsung HQ: Seoul



*ExpensePlus icons appear
in color on
the Samsung
mobile phone*



Samsung – entered electronics exports in a small way in 1969 (from insurance, property and paper) – in 2004 it was spending \$4.6 billion on R&D/1600 US Patents – 123,000 employees; 17 R&D Centres around the world – a leader in semiconductors, mobile phones etc.

Approximate Phases of Technology Catch up (Korea and Taiwan) in Electronics

Phase 1 (early 1960s to mid 1970s): assembly stage

- Firms (such as Samsung, Hyundia, L-G, Tatung) and dozens of others began assembly of standard, simple goods, supplying foreign TNCs (from Japan and USA) - often in sub-contracting arrangements (so called 'OEM' system)
- TNCs buyers supplied designs and brands - and distributed in the developed country markets (e.g. consumer electronics, computing, telecommunications, electrical appliances).

Phase 2 (mid 1970s to mid-1990s): manufacturing innovation stage

- Local firms mastered manufacturing process innovation, learned product improvement skills - TNCs buy, brand and distribute.

Approximate Phases of Technology Catch up (Korea and Taiwan) in Electronics

Phase 3 (mid-1990s onwards) - Innovation stage

- New product design capabilities, in-house R&D, own distribution networks and brands – caught up with world leaders in high technology products such as mobile phones, DRAMs, PCs

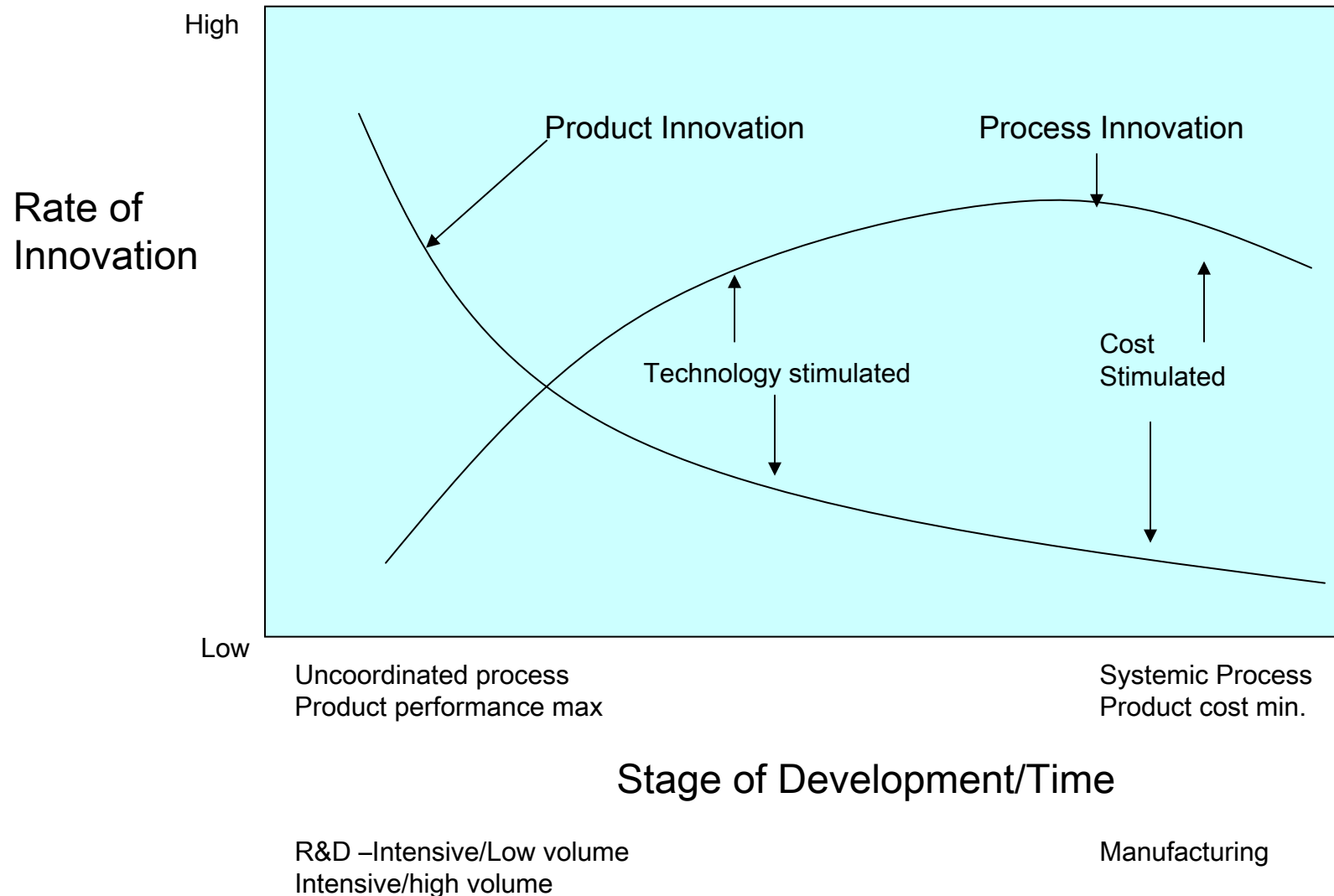
Key firm level features

- 20-30 years of ‘hard slog’ of technological learning, beginning with simple mechanical assembly
- Subcontracting (e.g. 70-80% of total Korean electronics exports in early-1990s) provided a channel for technology transfer - and exports – and economies of scale - TNC buyers provided advice on capital equipment, engineering, training, management etc.
- Despite success, firms still weak in software, basic research, and capital goods

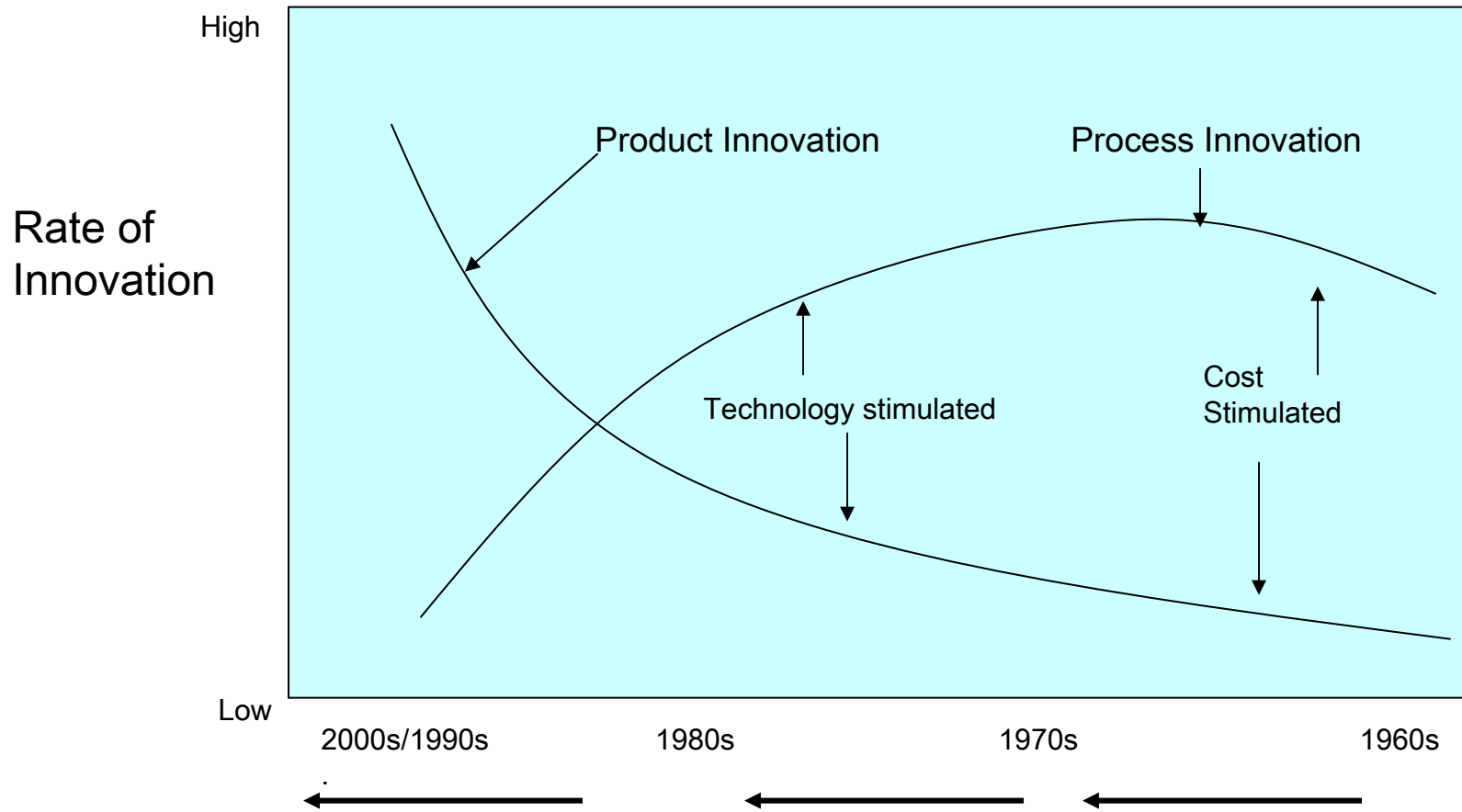
Key Features of Asian Innovation

- Phases only a rough approximation – not all firms followed the same stages (e.g. ACER entered in 1976 with 11 employees – now US\$14bn sales/No 2 world wide in notebooks, 2007)
- innovation incremental (not radical) – improvements to manufacturing and products - most innovation: low cost ‘behind the R&D frontier innovation’ (e.g. better designs for manufacture) – new product models
- not just ‘learning’ or imitation – some novel business models (TSMC in Taiwan a world leader in chip fabrication ‘only’; ANAM Korea, a world leader in chip assembly/test only)

Comparing Asian firms with standard (MIT) Model



Comparing Asian firms with standard (MIT) Model



Asian Stages of Development: Reversing the Cycle

R&D -Intensive/Low volume
Intensive/high volume

Manufacturing

Thinking About Policy Lessons

- tempting to think other developing countries should ‘follow the lead’ of the Asian success cases - e.g. World Bank’s ‘Doing Business’ programme argues that poorer countries should adopt policies of most advanced Asian and developed economies countries (e.g. on owning property, starting-up businesses, liberalisation of markets etc)
- more than 2% could be added to the growth of the ‘most difficult countries to do business’ if they adopted the practices of the leading nations (World Bank: 2005, p3)

Key point: even IF they had the experience of Asia right (which they often don't) - it would still be wrong to recommend ‘follow the leader’ policies

A new version of an old debate

W.W. Rostow (1916-2003) – also proposed a ‘follow the leader’ approach



Classic Text: ‘The Stages of Economic Growth: a Non-Communist Manifesto’ (1960) - sold more than 260,000 copies in the first edition

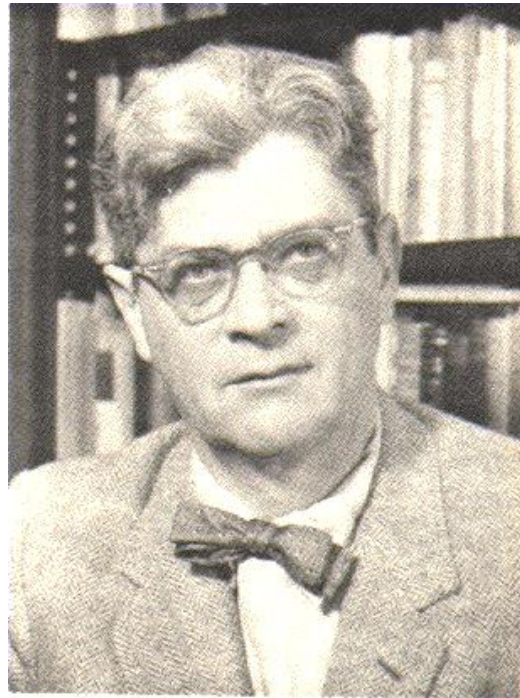
W.W. Rostow: stages of growth

- Contribution – growth model for developing countries - based on stages of economic development and take off of now-developed countries – Rostow used this for policy making lessons:

“It is useful, as well as roughly accurate to regard the process of development now going forward in Asia, the Middle East, Africa and Latin America as analogies to the stages of the preconditions and take off of other societies in the late eighteenth, nineteenth, and early twentieth centuries...” p153

- A similar agenda to that of today: i.e. the lessons of past industrialisers (e.g. Asia) should be applied directly to the developing countries of today

Gerschenkron's Argument



Alexander Gerschenkron 1904-1978

(Russian-born, Austrian-trained Harvard economic historian)

***rejected the ideas of Rostow as ill-conceived and a-historical
(research focus European latecomer industrialisation)***

Gerschenkron

- also viewed industrialisation as a 'stagelike' process - but disagreed with Rostow - (a) no automatic stages of development; (b) latecomers did not/could not pass through the same stages
- Why? - precisely because others had passed through them before and market and technological circumstances had changed
- Each country has its own distinctive resources and stage of backwardness – which would strongly influence any potential growth path

Alexander Gerschenkron (1962): *Economic Backwardness in Historical Perspective: a Book of Essays*, The Belknap Press of Harvard University Press, Cambridge Massachusetts:

‘this [Gerschenkron’s interpretation of stages] differs essentially from the various efforts in “stage making”, the common feature of which was the assumption that all economies were supposed regularly to pass through the same individual stages as they moved along the road of economic progress.....Thus, Rostow was at pains to assert that the process of industrialization repeated itself from country to country.....’ p355

Insights from Gerschenkron's analysis of European latecomer development

‘.....the industrial development of Europe appears not as a series of mere repetitions of the “first” industrialization but as an orderly system of graduated deviations from that industrialisation’

.....the higher degree of backwardness, the more discontinuous the development is likely to be’

Economic Backwardness, p44 and 45

'Graduated Deviation' in Asia

- Asian experience conforms to the view of graduated deviation - Japan the first to develop - then four 'dragons' enter with significant differences
- four dragons followed by second-tier countries of South East Asia (Malaysia, Thailand, Indonesia etc)
- China then enters, combining many of the 'old' strategies of East and S.East Asia (e.g. exports via foreign multinationals, large scale sub-contracting) BUT with radical new features: (a) large local market (b) huge supplies of cheap technical labour

Idea of 'Substitution' of missing prerequisites

Gerschenkron argued (against Rostow) that it was not a case of latecomers investing in a standard set of prerequisites or preconditions - but to **substitute** for 'missing' prerequisites

He argued that European history should be seen as a pattern of substitution of missing prerequisites, governed by the prevailing - and changing – degree of backwardness

Substitutes for missing pre-requisites in Asia

Missing Prerequisite for growth (e.g. as evident in US and Japan)	Asian Substitute for missing prerequisite
Strong entrepreneurial and managerial capacity	Korea – state sponsorship of the <i>chaebol</i> – helped grow a new ‘class’ of managers
	Singapore – subsidies for TNC subsidiaries – created investment and an industrial base
Large internal markets	Korea, Taiwan, Hong Kong - sub-contracting system allowed access to US/European export markets
Access to advanced technology/R&D resources	Singapore/Malaysia/Thailand – Through foreign direct investment TNC subsidiaries brought technology
	Korea, Taiwan - sub-contracting provided access to technology

Importance of Innovation

“the very concept of substitution is premised upon creative innovating activity, that is to say, upon something that is inherently unpredictable with the help of our normal apparatus of research”
Gerschenkron (p359-360)

In other words latecomer development is essentially an innovative activity – this was true for Asia

In the process of development we should expect to see as much innovation, variety and difference as you do at the frontier of scientific and technological advance
(Abramovitz 1986)

A New Agenda for Developing Countries

- Few (if any) direct historical lessons/models - for the reasons Gerschenkron pointed out – (e.g. export-led growth not open to all, electronics too ‘crowded’ with the entry of China, etc)
- Useful to think of ‘missing pre-requisites’ and how they could be substituted using specific local resources/skills etc – to develop scenarios for growth

A New Agenda for Developing Countries

- Reject 'follow the leader' thinking and approaches - search for new innovative paths which:
 - complement [not 'copy'] Asian economies (and developed countries)
 - build on a country's history, capabilities and opportunities
- Expect innovation and distinctiveness as a key element of future growth paths

Conclusion: 2 Areas of new research -
complementing (not copying) early industrialisers

- Task Force on rethinking industrial policies (led by Joe Stiglitz, Columbia, NY) – questioning conventional wisdom - applying new ideas to individual country experiences (e.g in Latin America and Africa, poor parts of Asia, India etc)
- my area: entrepreneurship/entry policies in Asia - others looking at technology, investment, trade, intellectual property etc. (new book, 2008 'Industrial Policies for the New Millennium) - what should be done in the post-Washington consensus/post-Bush era?
- Stiglitz (nobel laureate) and former Chief Economist of World Bank - highly critical view of modern globalisation/ and 'follow the leader' policies

Conclusion: new research – complementing not copying industrial leaders

- ‘LA Vision’ (Latin American Vision) – a new programme of research based at SPRU/CENTRIM. – large team (29 academic members) led by Carlota Perez, Martin Bell, Matias Ramirez, Fernando Perini etc.
- representatives of several countries of Latin America, bringing specialist, inter-disciplinary skills to examine credible new development paths for Latin American development

LA Vision

- Searching for new paths to development which combine local resource advantages with high value added output export opportunities
- Growth paths which embody fairness, employment creation, sustainability
- Beyond conventional 'import-substitution' and 'export-led growth' towards a new path which *complements and benefits from* other (e.g. Asian) growth paths

LA Vision

- aim: to frame the research agenda *with* policy makers to help shape a new vision
- fanciful/impossible?? recall that no-one foresaw or predicted Asia's growth paths in the 1960s – much of Asia (including Korea) was 'written off' by observers as suffering from 'Confucianism' and backwardness
- every chance that LA can achieve its aims if it rejects conventional wisdom and charts innovative new paths