Approaching the Innovation Frontier in Korea: The Transition Phase to Leadership

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The East Asian ‘latecomer’ firm

What is a ‘latecomer firm’? - two sets of typical developing country disadvantages:

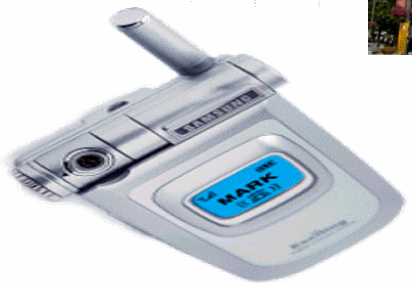
1. Dislocated from key international sources of technology, science and R&D
2. Cut off from demanding users, leading international markets, clusters, networks, industrial districts etc.

'Latecomer' firms not only different from Western and Japanese ‘leaders’ - but also 'followers‘ – latecomers operate from outside of the world innovation centres

How did Korean ('latecomer') firms catch up?

Samsung: Sales US$160bn 2007

HQ: Seoul



Samsung – entered electronics exports (transistor radios and B&W TVs in 1969 in a JV with Sanyo (from insurance, property and paper) – by 2007 spending US$5.6 billion on R&D - 2725 US Patents (2nd after IBM) – 123,000 employees; 17 R&D Centres around the world – a leader in semiconductors, mobile phones PCs, TFT-LCDs etc.

Export Driven Transition of Korean Firms: from OEM to Own Brand Manufacture (OBM) – Conventional View

	Technological Transition		Market Transition
1960s/1970s OEM	Learns assembly process for standard, simple goods	↓	Foreign TNC/buyer designs, brands and distributes (simple goods)
1980s ODM	Learns design and product innovation skills	↓	TNC buys, brands and distributes TNC gains PPVA*
1990s OBM	Designs new products & conducts R&D	↓	*Local* firm invests in distribution, branding gains PPVA

OEM = original equipment manufacture;
ODM = own-design and manufacture; OBM = own brand manufacture;

PPVA* = Post-production value added

Strategic Dilemma

- Dilemma - should Korean firms compete as R&D/brand leaders globally? Or should they continue with tested formula of fast, low cost 'catch up' innovation? (ie. innovating 'behind' the R&D frontier) – ie. throw away all the old strategies
- Policy view in Korea/World Bank etc.: 'go for knowledge-based economy', i.e. compete as leaders, increase R&D etc, develop own brands/distribution
- Strategy issues – major Korean firms want to be global leaders – some $100bn + corporations, now have in house products/R&D – recognized brands
- Research issues: what goes on in the transition phase?

‘Hidden’ risks of leadership strategy

- Risk of moving *too* quickly to leadership/knowledge economy often ignored - substantial *costs and risks* of own R&D/product development – own brand
- Problem of ‘competing with your customer’ – e.g. US/European OEM buyers might pull out if they confront direct competition from Korean suppliers
- Huge investments in marketing/distribution channels (can go wrong!) - brand development very expensive

Approach and methods

sample selection and design - 25 leading Korean firms – 7 sector groups - in-depth interviews/case studies (comparisons with world leaders); examples of local, foreign owned and joint venture firms; small, medium and large; export and local market

Sample of Firms According to Sector (not only the 'famous' firms!)

Group 1: Telecom service providers
Group 2: Electronic products and components exporters
Group 3: Capital goods and technology for the electronics industry
Group 4: Automobiles and auto input suppliers
Group 5: Foodstuffs
Group 6: New start–up enterprises ('venture' companies)
Group 7: Other firms (metals, cables, pharmaceuticals, medicines)

Sample

- 10 large/ very large firms: including *chaebol*: Korea Telecom, SK Telecom,

  Samsung, LG Philips, LG Electronics, Mando Corporation, LG Cable, Korea Zinc, Hyundai-Kia Motor Corporation, LG Chemicals
- 6 medium size (employing between 300 to 3,000 staff), TriGem Computers, Doowon Precision Industry, Korloy, 3M, Green Cross, Daesang.
- 7 small firms: Dong Yang Semiconductor Equipment, C&S Technology, Bosch, Choonwae Medical, Bolak, Hanil Feedmill, Kuk Dong Co
- 2 new micro-enterprises: n-Shaper Corporation, Techovalue.com.

Findings: Variety

- across the 25 firms (apparently all advanced) - a great deal of difference in innovation capability
- Only 2-3 'at the R&D frontier' - 18 firms were not contributing to technology frontier *via* R&D or new products/services (i.e. still mostly 'catch up')
- Others much weaker (serving local markets with simple products)

Group 1: Telecom Service Providers

- two largest firms: Korea Telecom (KT) (US$7.8bn) and SK Telecom (SKT) (US$6.0 bn turnover) - important national technological resource - both on a par with leading service providers worldwide
- Large highly competent R&D departments (e.g. KT 800 staff) – SKT first worldwide to introduce internet mobile services
- teams of researchers capable of future network scenario analysis, systems integration/definition, new digital service capabilities - working in partnership with leading technology vendors, such as Lucent, Nortel and Ericsson

Group 2: Electronic products and components

- employed 260,000 workers - sales US$160 billion, mostly for export – leadership in advanced products DRAMs, LCDs, TFT-LCDs, notebook/lap top computers, DVDP/DVDR
- 2007 Samsung Electronics – brand leader – global patent leader) – transformed /diversified since crisis in 1997
- LG Philips – global leader in TFT-LCDs etc

Other firms much weaker in electronics

- Exports dependent on a narrow range of hardware products –weak in 'knowledge-intensive' innovation (e.g. software, services, internet, advanced capital goods) –
- weak/low end brands – firms not yet capable of contributing to the world frontier (e.g. via R&D, new materials or radical new product designs)
- Fairly standard 'business models' – no evidence of 'disruptive', or 'open' or 'service intensive' innovation models – old corporate R&D lab model

Weaknesses in other industries

- E.g. cables, pharma, metals, medicines: innovation strategy still in low value product areas – not yet into specialised technology-based products
- 'Sandwiched' between: (a) low-cost competition from China etc and (b) high-end firms from Japan and Europe - not yet a leader (e.g. pharma):

"I have to say we are not a real global player - as compared with the Korean semiconductor industry for example – we are still a long way from the frontier - we are still in the process of catching up and focusing primarily on improving quality".

Weaknesses in capital goods technology

- Leadership (and transition to) requires access to advanced capital goods technology – several problems with many firms:
- (1) lack of physical presence in Korea of many foreign capital goods makers – heavy (high cost) dependence on arms length imports
- (2) Korean manufacturers of capital goods weak (mostly low techn/low cost, mechanical goods, old vintage + exposed to China etc)
- (3) Continuing dependence on foreign suppliers (e.g. Bosch, Lucas in autos/Varian in semiconductors)

So, Innovation Dilemma?

- Misleading - R&D/brand leaders *vs* latecomer/follower 'catch up' strategy - only applies to *some leading* firms in some *specific* product areas
- in many areas, this transition stage not yet realised (especially in complex higher price products, systems, services, software, capital goods)
- many Korean firms still able to repeat a profitable cycle of 'behind the frontier' catch up innovation - improving on existing designs and processes perhaps for many years to come (not necessarily a bad model!)

Also, idea of single 'firm strategy' misleading

- large firms (even *chaebol*) typically offer a wide range of technologies/products (including less advanced)
- No single innovation strategy but a *portfolio* of approaches depending on the product group
- 'hybrid' or 'portfolio' product and technology strategies, including 'leadership' and 'latecomer' elements

Transition is a complex process

- Usually not a simple catch up *vs* R&D (either/or) question - risks and costs of moving *too quickly* towards leadership have to be balanced against the benefits
- Risk 1: 'competing with your customers' – "if you move from OEM to own brand (OBM) then OEM buyers cancel"
- Risk 2: how to gain capital goods technology - many Korean firms lag substantially behind the technology leaders – arms length relations difficult/costly

Some face transition challenges

- transition to leadership requires international brand recognition – control over foreign marketing, distribution– close links with users = new strategic 'mindset' (from that of catch up):

  e.g. bold strategies towards new product creation

  + development of entirely new product categories

  = more intensive and creative innovation

- leadership requires 'flatter' organizations structures - than sometimes found in Korean firms – to unlock creative potential of staff
- also more creative overall business models needed (e.g. 'disruptive' or 'service intensive' models)

Transition, crisis and external shocks

- 'Transition' not just firm capability issue – even the most successful firms are subject to external shocks which can slow/stop catch up
- Patenting profile research by Dong-Un Park shows after 1997 crisis, Korean firms moved 'back' from basic/exploratory research to shorter-term product focus – a move to 'market responding' vs 'market creating' leadership strategies

Crisis and Transition

- Western-led financial/economic crisis could expose Korean exporters to long term recession in US/European markets – may force firms to turn to local and regional markets
- E.g. huge reduction in IT/electronics spending in USA and Europe now occurring – innovation vital to respond to this

Conclusion

- Huge, impressive innovation advances in Korea - 'strategic dilemma' (R&D *vs* catch up) argument is misleading – many firms follow catch up innovation - *and* new product/leadership innovation simultaneously – ie. *portfolio* innovation strategies
- arguably, the transition to leadership, including capital goods technology, remains the 'next innovation frontier' –may not be fully achieved for many years –
- could be threatened by the current crisis – if *chaebol* pull back from advanced research etc. – if innovation continues in Korea, firms will emerge stronger after crisis