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บทวิจารณ์หนังสือ (Book Review)

Asia's Innovation Systems in Transition

Edited by Bengt-Åke Lundvall, Patarapong Intarakumnerd, and Jan Vang. 2006. Cheltenham: Edward Elgar. 322 p. ISBN 978-1-84542-713-9

The best thing that governments can do to encourage innovation is get out of the way, or is it? This book does not focus on this issue of state intervention. It does provide several examples of governments in Asia playing lead roles – with varying degree of effectiveness and competence -- in institution building and policy to promote successful transition of their national innovation systems. Comprising 12 chapters written by different authors or sets of authors, it gives insights, practical examples, and theory-framed analyzes useful for policy makers and scholars of innovation systems. Chapter 1 explains the key concepts of innovations systems, institutions and transition. It describes the different ways Asian countries are entering knowledge-based (as opposed to labor- cost-based and resource-based) competition. Chapter 2 focuses on the need to build and build on specialized capabilities at the regional level when a country enters knowledge-based competition. Chapters 3 to 11 are case studies that illustrate the various roles of and interactions among institutions that make up the national innovation system, and the problems that need to be resolved particularly by government to make these institutions effective agents that promote innovation, entrepreneurial attitudes and skills, and the transition from resource- and labor-based to knowledge-based economy.

If a policy maker or adviser had time to read only one chapter, Chapter 2 would give the best return on time and thought. It offers conceptual guides and empirical examples of how Asia's newly industrializing nations, Thailand included, can best master the transition to knowledge-based competitive advantages. The chapter includes an illustration – the shrimp farming industry of Thailand -- of the complex challenges and the variety and number of organizations and bodies involved in creating and transferring knowledge and technology within a heavily resource-based industry.

The example from the shrimp aquaculture industry highlights the numerous technological and social innovations as well as regulatory regimes needed to be developed, adopted and

enforced through the combined effort of farmers, industry associations, government research institutes and regulatory bodies, processors and exporters, and private firms. The case laments the varying agenda and conflicting or divergent purposes of the different industry players that make it difficult to arrive at a common and shared vision of the shrimp industry's future development path in order to maintain its competitive edge in the world market. The analysis broadly advocates a knowledge-based trajectory, warning that as markets become more demanding (even as other shrimp-producing countries improve production and marketing efficiencies) there will be a more acute need to create or exploit opportunities to stay ahead in the market. Fulfilling that need requires a more sophisticated and complex institutional back up and a better way to manage and direct the numerous activities of the many institutions involved in the industry – in short, an effective innovation system responsive to industry's technological needs.

The problems and issues in the shrimp industry and the efforts (successful and futile) to address these are well known within the industry and to those who have been studying it. This chapter is the first piece of literature to cast and analyze the issues in the framework of an innovation system. However, as it was written before the predominance of the white shrimp species *Penaeus vannamei* over the black tiger *P. monodon* in the Thai cultured shrimp industry, the chapter could not account for the fact that in the end, the R&D system composed of government, university and industry institutions, which was established -- with strong government and industry backing, a sufficient financial support and sensible business model -- to close the life cycle and breed higher yielding and disease resistant tiger shrimp, did not quite make its intended impact. This was because its work progress was overtaken by the widespread shift to white shrimp culture that gathered momentum in 2003. As a result, the country came to rely heavily for its stock of white shrimp broodstock or seeds on Hawaii-based firms, which had taken the lead in developing specific-pathogen-free stocks. In effect, the Thai shrimp industry ended up practically importing an innovation. That said, the national shrimp R&D system was not entirely rendered redundant because its pooled scientific resources enabled a strong capability for training, research, management and policy advice in shrimp health, environment and food safety assurance. The strengthened and better-linked national institutions enhanced the industry' absorptive capacity for introduced technologies: ideas and processes were better filtered and improved by the R&D system. This contributed to a more effective local development or

adaptation of technologies that were subsequently diffused to the industry. At the other end of the market chain, innovations in the seafood processing industry in Thailand has achieved for the sector a sophistication that is more advanced than those of most of its neighbors. This has partly benefited the shrimp industry, which however had been for a long time exporting unbranded and undifferentiated products. This has recently changed with the Seal of Quality and other attempts to brand (rather than sell as a bulk commodity) shrimp products as part of the market access and food safety assurance programs.

For students of transaction cost theory and those looking for support to arguments for outsourcing and off-shoring, Chapter 3, based on the case study of India's IT service industry, provides a critique of as well as an "institutional alternative" to the transaction cost theory. One of the theory's practical applications is to tell decision makers whether it would be more effective for a country or a firm to make or buy a technology. The case also gives a good argument for "brain drain" as having a positive effect on India's economy.

What is a national innovation system? The dominating definitions of a national innovation system are: 1) the network of institutions in the public and private sectors whose activities and interactions initiate, import, modify and diffuse new technologies, 2) the elements and relationships which interact in the production, diffusion and use of new, and economically useful, knowledge and are located within or rooted inside the borders of a state, 3) the national institutions, their incentive structures and their competencies, that determine the rate and direction of technological learning in a country, and 4) a set of distinct institutions which jointly and individually contribute to the development and diffusion of new technologies and which provides the framework within which governments form and implement policies to influence the innovation process.

The book is generally a study of the development and the transition process of national innovation systems. The country cases enable an appreciation of why transition is difficult and give examples of how it might be carried out. Transition involves changes in several, usually, interlinked institutions. To follow up from this premise, a useful definition of "institution" is offered by the authors as "norms, rules and conventions, formal and explicit, informal and implicit". Thus, the implication is that institutions are difficult and can be slow to change and that inducing them to do so requires a wide range of incentives to change as well as disincentives for continuing to adhere to traditional ways that do not contribute to or undermine innovativeness and

competitiveness. The task becomes hugely complex with numerous institutions and players interacting in complementary, parallel or conflicting ways. The book warns that just because major policies are put in place and new organizations established (such as science parks and technological institutes) it does not follow that the institutional setting also changes. "Old ways to do things do not disappear just because the formal organizational framework is modernized." A number of country experiences illustrate this policy pitfall. Usefully, it discusses and analyzes examples of national experiences to address it.

Thaksinomics and innovation. The chapter on Thailand ("Thailand's national innovation system in transition") describes the country as undergoing a slow and difficult transformation in its innovation system, and gives a detailed analysis and sometimes unsettling findings. For instance, readers from academia may find unflattering the finding that Thailand's universities are ranked much lower by industries as a source of information and ideas for innovation than clients and customers, competitors, suppliers, the internet, scientific and trade journals, and trade fairs and conferences. (If it is any consolation, universities are three steps from the bottom, which is occupied by government and non-profit research and technology institutes). In Korea, academia is a bit more important as a source of information but still lower than clients, competitors, the parent company, suppliers and the internet. Thus, the common recommendation found in the different chapters for university-industry alliances, reforms in education and training to emphasize creative thinking, policies and incentives to encourage university researchers to establish closer links or get directly involved with industry through such actions as serving in industry boards, providing advisory services or developing collaborative research. The Japanese model shows how a strong industry-university-research and technology organizations alliance has moved Japanese light and heavy industry from imitating to innovating and, in more recent times, as a provider of cutting edge technology to its knowledge-based i.e. biotechnology, nanotechnology, medical, information, and other high-tech industries.

The Thaksin government's move to reduce reliance of universities on the national budget, thus attaining "greater financial autonomy", was seen as a way to press universities to become more relevant to industry; "it forced them to earn revenue by catering to the R&D needs of industry". But a 2003 study by Mahidol University suggests the need for deeper changes in attitudes among academics towards industry and industry towards academia. It found serious but

not intractable “gaps in industry-academia collaboration”. These include the *lack of continuous cooperative projects and motivation to cooperate*, which was attributed to the passivity of industries in initiating cooperative projects and, on the part of universities, their tendency to dominate a cooperative relationship; *unclear goals and objectives of a collaboration,* the reasons for which include the perception of industries that there are no tangible and substantial activities for collaboration with academia, and on the part of academia, that they see linkages with industry more in terms of asking for help than achieving a project together for mutual benefit; *lack of mediators* who understand both sides and could foster better relations between them; and *lack of analysis of problems from the perspective of industry*.

The chapter was written by one of the editors, Dr. Patarapong who was project manager of the Thailand National Innovation System study at the National Science and Technology Development Agency (NSTDA). It discusses the policies of the Thaksin government (in power at the time of writing) to promote national competitiveness by encouraging the various institutions to change and building a coherent framework for a national innovation system. Such framework was made by integrating the diverse objectives and fragmented efforts of educational institutions, research and technology organizations, financial intermediaries (i.e. banks), private industry, and the trade and industry associations such as the Thai Chamber of Commerce and Federation of Thai Industry (called private bridging organizations). The chapter stresses that government played a strong role in the transformation. And the one-tambon-one product (OTOP) program and the Village Fund were presented as a move to stimulate innovativeness and enterprise among the rural people, and an example of the government’s focus on “enhancing meso- and micro-level foundations” for international competitiveness. It would have been more instructive if the chapter provided evidence that OTOP and the Village Fund indeed served as an impetus for innovativeness in rural Thailand.

Singapore’s pathway to high tech industrialization (Chapter 11) illustrates better the leading role of the state in the pursuit of an export-oriented strategy. With scarce natural resources, Singapore embarked on developing a highly state-coordinated and state-managed national innovation system that welded and harnessed the efforts of government, transnational corporations and local enterprises. In contrast, the Indonesian case (“At a crossroads”) points to among others the stifling hand of the state, characterized -- especially during the period 1966 to

1998 -- by inefficiency and incompetence in the public sector. It described the paralyzing and derailing influence on state policies and programs by partial interests, rent-seeking and opportunistic cronies, protectionism, as well as the many contending schemes propounded by various factions or personalities in government on how to develop the competitiveness of its industries. At bottom, the Indonesian case is an argument for not less but enlightened state intervention. The Singapore case as well as the ones of India, Japan, Korea, Hong Kong, and China give empirical support to government doing the "right thing". Singapore's case study provides two attributes of "enlightened intervention", namely, political credibility and policy consistency.

A light touch and doing it right. As a counterpoint, although it could also be seen as a support to the book's advocacy of government doing the right thing, the Economist's survey on innovation (October 11, 2007) cited a report of the McKinsey Global Institute, which asserts that the real problem holding back innovation in many developed countries is too much government in the form of red tape and market barriers. The survey offers some prescriptions for government to promote innovation: stop spreading money around trying to clone lots of Silicon Valleys (in other words, do not be enamored of clusters); avoid protectionism to force national firms to innovate and think globally; remove market distortions and do not over-regulate. The survey cites India's system known as the "Licence Raj" as an example of over-regulation and centralized planning stifling the creativity out of most sectors of the economy. The bureaucrats in Delhi, the survey said, "did not understand computer software well enough to regulate it so that by the time they did, innovators in Bangalore and other corners of India had gone ahead to create a world-class industry". It added that a similar story may be unfolding in China where smaller private firms are likely to be more innovative than the bigger ones that are reliant on government's largesse (i.e. overly generous subsidies).

No one-size-fits-all best practice. The book's last chapter (on China's experience) elaborates an important message -- that there is no such thing as a best practice policy that applies to all, a repudiation of the Washington Consensus, which does prescribe best practices for developing countries to adopt. The chapter instead recommends "experimentation-based policy learning," which is sensible, as apart from differences in political and government systems, there are the more fundamental as well as nuanced differences in cultural settings and traditions.

In this regard, the inclusion of the cultural factor in the case studies allows a deeper appreciation of the influence of culture on the innovativeness, competitiveness and entrepreneurship of the industrial and business communities of a country. The Chinese influences on the risk-taking propensities and abilities, and the practice of doing business in Thailand and Indonesia and the broader context of the Confucian traditions on those of China and Korea, are analyzed. The analysis is balanced i.e. some aspects of a culture (such as a well-entrenched social norm that does not encourage individualistic display of initiative or creativity) can be a barrier to, while other aspects can enhance, the development of a national innovation system. A lesson from this is that governments would do well to address the culture dimension in policymaking. It is fine to set up infrastructure and systems to attract investments and facilitate the transformation of ideas into technologies and goods, promulgate laws and regulations to govern behaviors, offer incentives and encouragement to try to stimulate creativity, but all these should have to be in consideration of the cultural setting where social values, norms and beliefs reign over laws and regulations, conventions, and even the laws of the market place. The book delicately illustrates a number of disruptive influences of some aspects of culture and traditions on political affairs, which leads to the reluctance of industry leaders or chief executives of firms to take the long-term risks associated with developing technological innovations (in favor of the lesser risks from, say, trading in commodities). But it also argues that the CEO of a family-run conglomerate, unencumbered by pressures and expectations from shareholders to create higher values quickly, would have a freer hand at investing in activities aimed at creating innovations whose pay-off is less certain and takes a longer time to be realized.

To wrap up this review we go back to the issue on the role of government in developing and enhancing a national innovation system. The book asserts and provides ample evidence of the primary role of the state in developing and enhancing a nation's innovation system. It describes examples of structures and systems (which government needs to provide) and their interactions (which government needs to promote) that are needed to facilitate transition of the innovation system to a science-based (e.g. Japan) or a high-tech (e.g. Singapore) trajectory. There are clearly activities and resources that government has to provide because the market alone cannot. Stimulating creativity in people might be one that government can assist the market to do. Already an excellent source of policy guides, the book could have been enriched with a

chapter on providing the stimuli for innovativeness and creativity in people. Such a chapter might have discussed a crucial issue, which the following statements refer to (from the Economist survey cited earlier): "It is individuals not governments or economic systems that are responsible for extraordinary breakthroughs; you can ordain the money but not the brilliance and free-thinking of individuals". As in the development of sports and a nation's athletic prowess, or in providing the conditions for its artists to create, there must be many ways government can wisely do to create the climate for its citizens' innovativeness and risk-taking ability to flourish.

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