Session III

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1 Summary of Reports

Discussions were held in Session III aided by 4 reports created in the following order according to region (Regional Perspectives). Reporters, report themes and report summaries are as follows.

1. Dr. Poh-kam Wong (Singapore)

Associate Professor, National University of Singapore Business School
Director, Entrepreneurship Centre, National University of Singapore

"Emerging Silicon Valley-Asia Entrepreneurial Links: A New Form of Cross-Border Innovation Collaboration"

This report focuses on and extracts problems concerning current conditions, where indigenous innovations gained from a rise of R&D investments in recent years in Asian countries are not being commercialized, and addresses the importance of a social network role as a measure to resolve these concerns. The report looks at an example of the relationship between Silicon Valley in the US and Asia (SV-Asia Entrepreneurial Links, hereinafter referred to as SV-Asia EL).

Silicon Valley has long attracted foreign scientists and researchers, including those from Asia. The reporter points out that the relationship between scientists, researchers and entrepreneurs who reside in the same region (most at the same time) contributes to the commercialization of technology, and this extension is growing.

SV-Asia EL is defined as 1) business activities that extend to SV and Asia, and create respective resource flows, 2) locating opportunities and acquiring resources for this search, and 3) establishing and developing related activities. The reporter breaks these down based on a number of elements.

These include deep interest and many suggestions, while the reporter proposes 1) shifting to policies that promote the transfer of entrepreneurs and 2) promoting international networking, as implications for innovation policies of Asian countries.

In addition, the reporter describes in the conclusion that 1) innovation policies must include developments beyond R&D policies and commercialization of international technologies, and 2) demands new policy approaches by governments in Asia concerning the growing links between Silicon Valley and Asia, to act as a new form of international cooperation in commercialization.

2. Ms. Yung-Chun Emily Lai (Taiwan)
Policy Analyst, Science and Technology Information Center,
National Science Council

"Taiwan: A Unique Style of Innovation"

The report focuses on the growth process in Taiwan, and the policy orientation that supports this, and hypothesizes that the growth from 1980 to today has depended on an outward orientation that is sensitive to technology. The growth and shifts occurring in strategic industries at the same time, and measures taken during that time, for example, establishing the Industrial Technology Research Institute (ITRI) and Hsinchu Science-based Industrial Park, innovation policies that reflect the technological deficiencies in the private sector, policies that spread and promote technology, including measures to improve the mobility of engineers, the transferring of factories to the Chinese mainland and other reviews were conducted.

The progress of innovations in Taiwan based on returning engineers with a wealth of experience in the product technology and manufacturing technology fields, patent grants and acquisitions and R&D focusing on development were verified using statistical data.

The major players in innovation cited were leading national agencies (STAG, CEPT, MOEA, NSC, etc.), businesses (small & mid-sized business networks: Core-Satellite System, TNCs, etc.), research organizations (ITRI, CSIST, etc.), venture financing (venture capital and angels), and their roles were referenced.

The announcement of results (publication, quotes) and the number of patents acquired for the development of scientific fields in Taiwan from 1980 to the first few years of the 21st century were verified as indices.

Furthermore, various, multiple networked policies and systems that support innovations in Taiwan were shown to have been provided. The strengths and weaknesses of Taiwan's 'unique' system were discussed as consequences, and Taiwan's position on globalization were indicated.

The conclusions proposed in this report are 1) Taiwan's unique process innovations are presented, 2) Taiwan's strategies are linked with the strengths in other countries and regions (especially R&D advanced in Japan, strong businesses in South Korea, specialization of Singapore's finances/services, cost dominance and market share of China), 3) greater technology mobilization and exchanges, and 4) the promotion of joint Asia Pacific economies through greater innovatives.

3. Subhrendu Shekhar Bhattacharjee (Bangladesh)
Senior Assistant Secretary,
Ministry of Science and Information & Communication Technology

"Regional Innovation Policy for Growth in the Asian Pacific Area: Regional Perspectives"

This report was an introduction that touches on globalization trends, localization, complementary characteristics, globalization as the final result, selecting the title for the 10th ST Management Seminar and its relationship to past themes, and describes variations in innovation policies in countries in this region.

Next, the following are new perspectives on innovation and their importance.

1) Factors that create competitiveness for the survival of products in a borderless economy,
2) Their core technology innovations,
3) Balance in innovation policies for growth under the protection of the WTO, IPR, etc. for sustenance,
4) Essential innovations for future economic performance in this region.

In addition, this report argues that innovation systems interact with a set of systems that feed government, society and the market economy, that they are linked

with not just one country but other countries, that their main task is growth in the Asia Pacific region, and that it is important not just for countries who have achieved development in the region, but for countries with middle-range and low incomes.

To foster innovation, human creativeness and skills at a global level, expenditures on R&D, capital investments and inputs such as direct investments from foreign countries are cited. The report indicates that although organizational diversity and skills that shift innovations to the product level are classified into the success or failure of the innovation, specific organizational attitudes in the Asia Pacific region; i.e., conservatism reflected in government policies and family ownership have prevented organizational changes.

The principle of promoting innovation has benefits such as turning today's competition into cooperation, promotes business-to-business cooperation in particular, and external cooperation for this, achieves substantial interaction with marketing, engineering, production and other research without isolating innovation, and brings with it innovative skills for business environments. Therefore, the formation of a network cluster is proposed. This is a cluster formation of various companies to stimulate information and learning, is affected from without, and has opened further global contacts.

The report touches on competition and industry organization policies, and indicates that the Asia Pacific region is put in a weak situation in the execution of its protective policies. In addition, the report describes the issue of IPR (Intellectual Property Rights).

The urgent scenarios for Bangladesh are 1) R&D activities are extremely insufficient, with a GNP of 0.4%, 2) R&D activities and innovations are conducted in different fields, 3) the innovation culture is outdated, thus 4) the focus should be on preparing innovators to be entrepreneurs, and 5) fostering an innovation culture.

In addition, the “10 Policy Messages”* from the reporter are described as being effective for the disparate countries in the Asia Pacific region.

*The following are the 10 proposed policy messages.

① Careful debt management, ② flexible exchange control, ③ regional adjustments, ④ fiscal reform, ⑤ deregulation and incentives for services, ⑥ legal system reforms that support market economies, ⑦ resource policies for innovation, ⑧ networks and clusters, ⑨ competitive policies, ⑩ proactive public policies for innovations.

4. Dr. Fatimah Mohd Amin (Malaysia)
Manager of the Research Management Centre (RMC),
Malaysian Institute for Nuclear Technology Research (MINT)

"The Importance of National Innovation System in the Globalization of Technology"

The reporter described in their foreword that 1) knowledge and innovation are driving forces of the economy, 2) the need to acquire competitiveness brought about by skills that create technology innovations through the use of knowledge production and external knowledge, 3) international progress in scientific and technological activities, 4) the importance of public policies and program designs to develop unique national skills in order to effectively participate in technology globalization, 5) skills in participating in globalization are related to effectiveness of a systematic framework in countries to promote technology learning, 6) countries in the Asia Pacific region are at different development stages, thus have capacities that differ according to technology learning, among other items.

Next, the report touched on the roles of the National Innovation System (NIS) and the government.

1) Importance of NIS in technical globalization,
2) Potential to explain participation in technology globalization of each country based on NIS analyses,
3) NIS, as a "national system", its incentives and competency determine the level of progress in national technology learning,
4) NIS in developed nation is a narrow approach to innovation grounded in R&D systems, hi-tech and science,
5) Analysis matched to developed nations and developing countries must include innovations of every type and all technology learning (learning through use, manufacturing and employment, or mutual learning between agents of the innovation system),
6) The capability to catch up on absorbing foreign technology for economic returns depends on ① societal capacity and ② technology compatibility,
7) Public policy must work to ① strengthen its capacity and capability to acquire, utilize and absorb knowledge and technologies that can be used globally in order to promote technology innovations, ② develop (physical,

human) infrastructures that attract hi-tech industry MNCs, and ③ strengthen capabilities to link with national systems of developed countries,

8) The report describes that science, technology and innovation policies are formed as essential parts of economic policy, while other related policies are ① education and training policies to develop human capital, ② financial policies to strengthen R&D and other innovation activities for public and private organizations, and ③ complemented with industry commerce policies to raise the capabilities of domestic businesses so that competitive products and services can be created.

In addition, the report touched on the meaning of technology globalization, and the 3 routes to technology globalization are shown as being ① internationalization of technology: technology intensive product exports, grating patents and licenses, establishing factories in foreign countries for new products and processes, ② creating global innovation, and ③ technological cooperation.

NIEs and Malaysia were compared in terms of their education system, R&D, financial affairs for innovation activity, and a comparative analysis of South Korea, Taiwan and Singapore vis-à-vis Malaysia for the interaction between agents in NIS in particular was shown. In addition, a progress index of technology globalization was shown for the three routes shown above.

The conclusions in the report were that 1) although internationalization of scientific and technological activities have started, these are limited, in particular, to countries forming 3 poles which possess NIS that fully function, 2) among developing countries, NIEs in East Asia have the greatest potential to participate in technology globalization, 3) East Asian NIEs have effective individual policy measures and strategies for technology learning, 4) South Korea and Taiwan have developed innovation skills through a cumulative learning process based on the application and imitating of foreign technologies, 5) Singapore has developed innovation skills based on the spillover effect from FDI by setting targets, 6) although FDI has been useful in transforming the industry structure in Malaysia, this is limited to links with MNCs and domestic businesses, 7) the determining factor in the success of NIEs is the usefulness of human resources who have received education and training in science, engineering and technology fields, 8) another determining factor is R&D, especially intense investments in R&D related to industry, 9) In terms of funding of innovation activities

in NIEs and Malaysia, although NIEs have seen rapid increases in funding from tax incentives and funding grants: venture capital, Malaysia is still at the beginning stage, and 10) the following are called for in order to participate in the GOT, particularly participation in new technologies; i.e., ① strengthening links with industry and science foundations, ② strengthening human resources, particularly the quality and quantity of R&D related human resources (especially in Malaysia), ③ improved technology skills at SMEs, and ④ furthering technology cooperation in science and technology between developing countries themselves and between and with developing countries.

2 Discussion

After each report, all participants sat around a roundtable and were involved in a Q&A session. In addition, after the end of the 4 reports, while an all-inclusive discussion on themes for Session II was held, there was no discussion on the particulars, thus this Q&A was dissimilar in some respects to the debate after each report.

The special characteristics of each country in the Asia Pacific region; i.e., the development stage, the existence of traditional indigenous barriers incidental to many of these countries, and the disparities in range and depth of external contacts through the 4 reports were revealed. Information sharing between the participants was of great benefit.