A Research on the Innovation Promoting Policy for SMEs in APEC: Survey and Case Studies

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APEC SME Innovation Center

Korea Technology and Information Promotion Agency for SMEs
Forward

As the 21st century progresses, we have witnessed dramatic changes in today’s business environment: high technologies such as IT, BT and NT have been developed; innovative start-ups and spin-offs have been created; and enterprise innovation has been taking place. Particularly, innovative SMEs in member economies in APEC and OECD are playing pivotal roles in leading economic development of innovative SMEs. In an effort to achieve the 1994’s Bogor goals, APEC member economies have built common ground to strengthen SMEs’ innovative capacities with the recognition of the importance of SME innovation. In the Bogor goals, developed economies agree to accomplish free and open trade and investment no later than the year 2010 and developing economies no later than the year 2020.

These phenomena have served to remind member economies of the significance of SME innovation policies. Consequently, the APEC Economic Leaders and SME Ministers have adopted declarations on collaborative actions for SME innovation every year since 2000.

The APEC SME Innovation Center, thus, proposed a research project that contains surveys, analysis and synthesis, and comprehensive investigations on SME innovation policies among APEC economies in order to meet various needs of SME innovative policies. The main focus of the research project is placed on mutual learning, the establishment of cooperation network and efforts to reduce impediments to SME innovation. The center has undertaken the research partially funded by APEC after the approval of member economies.

To accomplish the goal of the research proposal, the APEC SME Innovation Center reviewed SME innovation theory through literature survey and has produced the research framework of SME innovation policy survey that covers six policy areas such as marketing, human resources, technology, financing, management innovation and clusters. Then, it has carried out survey questionnaires and on-site interviews of the current status of SME innovative promotion policies and related practices, targeting ten member economies in APEC.

As part of its ongoing programs, the APEC SME Innovation Center also held the APEC SME Innovation Policy Forum by inviting 25 experts on SME innovation policy at home and abroad as well as inviting policy makers from seven APEC member economies. Finally, it has conducted the study of analysis, comparison and typology of SME promotion policies and best practices and it has produced a comprehensive research report that presents implications, impediments and suggestions.
Overall, the research report contains policies of six areas and best practices from ten APEC member economies. Taking this opportunity, I would like to extend my sincere gratitude to the APEC secretariat and ten member economies including Australia, Canada, China, Japan, Korea, Malaysia, Mexico, the Philippines, Chinese Taipei and Thailand who greatly contributed to the successful completion of this report.

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I hope that the research report will offer a valuable source of information to policy makers, researchers in institutions for SME innovation and experts related to SME innovation.

Thank you.

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Executive Summary

APEC Leaders and Ministers set the Bogor goals in 1994, "free and open trade and investment in the Asia-Pacific by 2010 for developed economies and 2020 for developing economies," and recognized that innovation is the driving force of economic growth to meet the goals. APEC Leaders and Ministers recommended innovation policies for start-ups to have access to a variety of financing resources, research and development, commercialization, and marketing tools. They subsequently emphasized cooperation in building appropriate environments for SMEs in APEC.

As part of follow-up actions, the 2005 APEC SMEMM agreed upon the Daegu Initiative that member economies should voluntarily review Individual Action Plans (IAPs) about their economic and policy environments for SME innovation, both individually and collectively. Another follow-up action initiated establishment of the APEC SME Innovation Center which serves as the foundation for sharing policy experiences to effectively enhance the innovation capacity of SMEs in APEC. The APEC SME Innovation Center accordingly commenced with this survey research of SME Innovation policies in APEC early 2006.

The objectives of the research are set as follows: to develop an SME innovation policy framework and identify best practices for policy makers in APEC; to bring up a coherent environment scheme conducive to SME innovation at national, regional, local and firm levels; and to suggest joint efforts and cooperative activities by which to resolve impediments to SME innovation encountered by governments and firms in APEC.

The work has been carried out based upon surveys. The literature review and internet search has been made on innovation-related theories which include SME innovation in the knowledge-based economy, innovation systems and clusters, and trends in APEC, OECD, and EU for SME innovation. Questionnaire and interview surveys to member economies were conducted for collecting information about SME innovation policies, case studies for best practices, and impediments and difficulties in SME innovation.

The research framework contains following items for comparison and identification of best practices: innovation environment in place conducive to SME innovation; promotion programs in marketing, HRD, technology, financing, management innovation and cluster policy; and best practices associated with specific promotion programs.
Executive Summary

SME Innovation Policies of Member Economies

Australia

The Australian government has the priority in promoting the commercialization and high-tech start-ups in SME innovation policies. Because of high risk embedded in high tech new start-ups, market failures could occur in creations of venture firms and commercialization activities. The Australian government has a priority and focus on high technology new start-ups and commercialization. This priority and focus can vitalize SME innovation especially in high-tech industries such as BT and IT and also eliminate governmental budget inefficiency. The institutional environments are friendly and effective for the SME innovation processes. Australia experienced significant institutional changes during 1990s improving national competitiveness, overall economic and regulatory/governmental efficiency in labor market, financial market and final goods market is quite advanced compared to other member economies. The regulatory environments for SMEs and new start-ups are especially suitable and friendly for high-tech industries development, which requires various and lively business experimentation. For efficiency of policy intervention, the Australian government entitled the operations of equity investment strictly to private institutions, and do not intervene in government-sponsored incubators’ operations and investments. Despite of these strengths, Australian economic environments have several weaknesses in promoting SME innovation such that Australian economy does not possess large-sized global players in high tech industries and thus has very low business R&D intensity compared to other advanced economies. The Australian government may need to consider a strategic development plan for specific technologies or industries.

Canada

Canada is a high-income member economy that boasts a high population of R&D performing SMEs. The flagship program is carried out by the largest government research institution, NRC. It is named as NRC-IRAP program, which has long history of fostering innovative SMEs. NRC-IRAP and strong R&D tax credit policy underlies behind the innovative SMEs research and development. In addition, the well-developed human capital and venture capital resources enable to fund SMEs that engaged in emerging technologies. The strength of Canadian system can be also identified with the well-woven support from both federal and provincial governments. In many cases, these supports can be delivered through not-for-profit organizations. These organizations play a critical role in building high value added cluster of
Executive Summary

SMEs, such as the medical research cluster in Montreal, Québec. As Canada has a relatively strong link with US economy through NAFTA, the strong support for SMEs can attract the US high-technology SMEs. Canada has to attract high-value added facilities of foreign MNCs as well. However, inviting R&D centers of MNCs demands further incentives to attract talented personals regardless of nationality. Therefore, it would be plausible to consider a special tax rate for those who work in R&D. In fact, Québec has already started the personal income tax credit for foreign researchers, which provides implication for other provincial governments.

China

China has favorable environments for SMEs innovation such as 1) huge-sized domestic markets, i.e. high consumer purchasing powers, 2) basic research capabilities of PRIs and universities in high technology areas, and 3) a large number of high quality human resources. These favorable economic environments are all conducive to SMEs innovation. Based on these favorable economic environments, the Chinese government has chosen cluster-based SMEs innovation policies. National clusters and incubators, which were established by the central government and local governments, provide diverse supports for spin-offs and high-technology start-ups. Since these clusters and incubators are closely located with PRIs and universities with high technology capabilities, new start-ups and SMEs can have technological supports. Incubators provide consulting and financial network services for SMEs innovation. Clusters can also provide natural networks with other competitive firms, information flows and financial networks. Even though China possesses high potential of basic researches and high technology, these capabilities are only confined to small portion of total Chinese SMEs. Most of Chinese SMEs are still in low-skilled, labor-intensive industries based on cost-competitiveness. The upgrading of overall competitiveness of Chinese SMEs is challenging tasks for the Chinese government. Moreover, Chinese policy measures for SMEs innovation are still in infancy, which only started in the late 1990s. Compared to other advanced member economies with long history of SMEs supports, Chinese SME innovation policy measures are small in size and in extents.

Japan

The Japanese government has the foremost comprehensive and extensive supports for SMEs innovations and competitiveness acquirements. The financial supports, especially through direct loan programs and guarantee programs for SMEs innovations, are quite enormous in a way that governmental direct loans to SMEs consist of more than 10% of total outstanding lending to SMEs in Japan. Financial guarantees for SMEs liabilities are more than 10 times of direct loans
Executive Summary

programs. These financial supports for SMEs have a long history more than 40 years. Management consulting services, on which recently Japanese government has a policy priority, even dispatches the fulltime-hired-specialists and -consultants to SMEs in a specific time period. Concerning SMEs technological innovation promotion, the Japanese government introduced US-styled SBIR programs to enhance governmental efficiency in technology supports. Beside these substantial governmental supports for SME innovation, the existence of a large number of global players in high tech industries such as in the areas of electronics, automotives, engineering and information technology is certainly favorable to SMEs innovation. With technological collaboration and, sometimes, fierce competitions with global business groups, Japanese SMEs are inevitable to innovate and upgrade competitiveness for survivals. On the contrary, the governmental supports for SMEs still have the tendency of supporting weak SMEs to sustain its financial viabilities. The governmental intervention beyond market-failures can result in lagging industrial restructuring and overall economic inefficiencies and also to SME innovation.

Korea

The characteristics of SME support policy in Korea lie in a government’s unified system, in which SMBA, as a strong policy executor, is responsible for both establishing and implementing the SME support policy. In 2005, SMBA laid out and pushed for a strategy that helps SMEs develop into innovative SMEs. The Korean government has also introduced certification systems of innovative SMEs. Venture business certification, introduced in an effort to overcome the 1997 financial crisis, technology innovation certification and management innovation certification are major certification systems that are being implemented. In case of SME support program, the government and SMEs are providing a program in a way that is equivalent to the type of matching grants. With the development of Korean e-business, the government has established the online system from the application to ex-post monitoring and provided support programs which help improve conveniences for SMEs.

Malaysia

For more than four decades Malaysia’s economic growth has been sustained through an open global trading environment. In particular, Malaysia strives to sustain itself as an attractive investment location for FDI. In the late 1990s, the complex economic factors such as rising China, Asian currency crisis, and the prevalence of supply chain management made Malaysia aware of the importance of industrial linkage and competitive local SMEs. Therefore, the
characteristic of the SME innovation policy in Malaysia is mainly focused on marketing by integrating local SMEs into the global supply chain of MNCs. As a main way of innovating SMEs, the government introduced the Industrial Linkage Program (ILP) and the Global Supplier Program (GSP) initiated by SMIDEC. They aim at enhancing SMEs participation as reliable and competitive suppliers and parts and components or services to MNCs. In other words, they are to develop the capability of SMEs to meet the requirement of MNCs by providing skills development/training program. The main SME innovation policy in Malaysia enhance the technology capability of local SMEs to cope with the demand of MNCs by letting participated in the GSP manage all training program for SMEs. Also, it shows that industrial linkage between MNCs and local SMEs could be more developed by bottom-up activities than top-down activities.

**Mexico**

Mexico has upgraded its policy for SMEs significantly in terms of both institutional aspect and the amount of subsidy. Mexico realized the high value added economy cannot be achieved just by simply clinging to the previous strategy of utilizing 'maquiladoras,' the assembly MNCs. Although MNCs are critical in vitalizing Mexican economy, a new approach must be added. The increased incubation activities and recently unfolding of TechBA program exhibits the confidence of Mexico in generating new knowledge economy. TechBA is a package program that provides international business acceleration centers for SMEs. The Mexico government may consider the types of SMEs that apply for the package. Many of them are high-growth SMEs - ‘would be’ large firms in the future, but some could be niche players. Therefore, differentiated cares for the different types could be considered. Mexico has potential to exploit double positioning of Latin America and North America. Innovative products can be mixed with cultural advantage. Fostering IT based SMEs will provides the opportunities for developing technology-based service SMEs. For the purpose, the development of human resource with multi-lingual capability is critical.

**Philippines**

The strength of Philippine’s SME policy lies in the integrated approach as can be observed in the *Margna Carta for SMEs*. Under the law, the subsequent development of strategic plans has been written down, and the Philippines government has implemented diverse policy measures covering wide areas including marketing and financing. However, the resources are too limited to produce visible impact. The institutional structure is sound, but the investment in research and development is still far short of provoking sizable business clusters of technological
Executive Summary

innovation. The concentration of R&D personnel in university and government research institutes reflects weakness of technology-based SMEs. To encourage innovative SMEs, the current tax incentive schemes and debt-financing oriented strategy needs to be reviewed. The Philippines has to build infrastructure to attract the foreign direct investment. The infrastructure development policy must address the educational infrastructure as well as the construction of road and other physical infrastructures. As for technological innovation, the low share of science and engineering graduates is reported. What kinds of skill are in need to attract foreign investment can be surveyed and targeted for future HRD policy. In addition, a special incentive scheme to link MNCs and local suppliers is preferable to foster value-added suppliers and to create jobs.

Chinese Taipei

The most apparent characteristic of Chinese Taipei is that the economy has been dominated by SMEs, rather than large enterprises. It enabled Chinese Taipei to have little suffering from Asian financial crisis. However, during the 1990s the significant increase in the outward FDI of Chinese Taipei has led to the increase in unemployment rate. Thus, the government has made great efforts to reduce it by nurturing new technology start-ups and expanding the scope of SME business operations. Toward this end, the Chinese Taipei government has focused on the establishment of BIs as one of foundation of economic development. The strategy for the development of BIs comes from the “Challenge 2008 National Development Plan.” In particular, Asian Entrepreneur Development Center (AEDC), one of the elements of the plan, has played a critical role in building a high quality incubation network that stimulates start-up and innovation activity. The main SME innovation policy in Chinese Taipei shows that the role of BIs has been critical in stimulating the knowledge production and technology innovation of tenant SMEs by intermediating between all kinds of resources and the tenants, rather than providing only simple financial and space assistances.

Thailand

The SME innovation policy in Thailand is the reflection of economic structure problems resulted from the strong reliance on foreign capital not involved in indigenous technology development during the last three decades. In addition, huge foreign debt and high non-performing loans (NPLs) of large enterprises were one of the main reasons for the 1997 economic crisis in Thailand. Therefore, the government has emphasized the innovation of SMEs as an alternative engine for economic recovery and sustainable economic development. As a
way of innovating SMEs, the government has focused on the indigenous technology capability development of SMEs in specific sectors such as automotive, food, tourism and software sectors. In terms of building indigenous technology capability, one of the main policies is the industrial Technology Assistance Program (ITAP) launched by the NSTDA. The main contents of the program are composed of industrial consultancy and technology acquisition service by linking technology experts and SMEs, and providing SMEs with the opportunity to obtain first-hand information on technology advancements and innovations through arranging overseas technology trips. The main SME innovation policy in Thailand shows that the indigenous technology development has been mainly based on the paradigm shift of role of government research institutes from a knowledge source to a knowledge intermediary by providing SMEs with indirect services that enable them to enhance technology capability.

**Comparison Analysis of Six Policy Areas**

**Marketing**

The elements of comparison in marketing policy are government procurement, export promotion and integration of SMEs into the global supply chain of MNCs. First of all, in terms of government procurement, three of the ten APEC member economies, Australia, Canada and Korea, have mainly considered it as a measure of SME innovation policy. The Australian government procurement process is transparent and open, and not to discriminate against. In the case of Korea, public institutions are required to purchase SMEs’ technological products that have been approved for performance by the government, thereby promoting technology development of SMEs. Unlike two member economies, the Canadian government has not directly promoted procurement for SMEs and instead stimulated it by having SMEs seek local subcontracting contracts. Secondly, the commonality of marketing policies in the ten APEC member economies can be attributed to the focus on export promotion. The export promotion policy for SMEs could be divided into financing, information and consulting, and brokerage supports. The focus of export promotion in China and Chinese Taipei is on financing supports such as loan guarantee and grants. The focus in Korea and Japan is on information and consulting services that enable SMEs to participate in the global market. In the Philippine, the main focus of export promotion is on brokerage supports that link SME exporters and foreign buyers. Finally, as a way of marketing, the inclusion of SMEs in the supply chain of MNCs and their indirect involvement in exporting activity can lead to the significant diffusion of technology and more efficient business models, thereby raising the international competitiveness of SMEs in the global market. This policy is dominated in member economies
Executive Summary

in which their economy is mainly dependent on MNCs. The representative member economy is Malaysia.

HRD

As for the general education, HRD policy is not specifically designed for SMEs. However, the training programs that target SME employees can be observed in many member economies. SMEs do not have resources to provide well-designed internal training programs. Therefore, trade associations may work in collaboration with SMEs to build common training centers with the subsidy of the government. The investigation on training programs revealed the direct and indirect training programs in member economies. Chinese Taipei, Malaysia, Mexico, Philippines and Korea have reported direct training programs. Australia and Canada have rather indirect training programs by utilizing private training facilities. Japan has shifted from direct to indirect. China and Thailand reported no significant direct training programs, thus categorized as utilizing the indirect training. Direct training program is not in exclusive relation with indirect programs. When private education institutes do not function well, the government needs to act strongly, but if not it needs to act complementarily.

Technology

Technology policy has been reviewed mainly on the level of R&D tax treatment. It would be possible to divide member economies into groups based on the weighing between R&D tax treatment and R&D programs. Mexico has not invested enough in R&D to provide the growth momentum, considering the level of Mexican economy. It recently set up strong R&D tax credit policy. Canada has a reasonable level of R&D programs but strong R&D tax credit policy outweighs the government R&D program. Australia’s main tool is R&D tax credit. The second group, Japan, Korea, and Chinese Taipei belong to the group with high R&D investment and with balanced level of R&D program and R&D tax treatment. China, Malaysia, Philippines, and Thailand are biased to R&D program. Malaysia’s R&D tax credit is mainly for pioneering large firms and foreign MNCs, thus grouped in this category. The policy measures must consider the appropriate policy for development stage. The mixture of direct and indirect R&D subsidy for SMEs depends both on financial resources and on the strength of business R&D. R&D tax credit is critical to encourage business R&D but a precedent direct R&D program to fostering technology-based entrepreneurs could be required as the ‘seeds.’ In the similar manner, technological collaboration also needs to be conditioned depending on the situation. The relative
Executive Summary

strength of public research is to be checked before importing a successful foreign policy.

Financing

The ten APEC member economies are diverse in their economic development stages and financial market systems, and thus the methods of financing policies are inevitably various. The SME financing policies of ten APEC member economies can be divided into two broad groups, while still possessing diversities even within the groups: 1) investment-focused group and 2) loans-focused group. The investment-focused group shares the characteristics that government does not provide or provide only small proportion in recent years for systematic direct loan facilities. These economies do not have special banks or credit guarantee institutions for SMEs, but directly involve in creating venture capital funds to provide investments for innovative SMEs, or actively participate in the network formation of venture capitalists with start-ups. The loans-focused group shares the characteristics that governmental financing programs are centered on special banks or guarantee institutions to operate for systematic loans and guarantee services to SMEs. Only in recent years, these economies (except the Philippines) have created equity investment programs in recent years especially targeting at high-tech innovative SMEs. But still the loan programs are the main channel of financing support to SMEs. Japan, Korea, and Chinese Taipei have the longest history of governmental loan programs while Malaysia and the Philippines have relatively newly established the public loan systems after the Asian crisis.

Management Innovation

Support policies for management innovation include provision of policy information, SME counseling, spread of an innovative mindset and e-business support programs. As for management innovation, member economies’ support policies are varying depending on the development of economies and support systems. In general, Canada, Australia, Japan, Korea and Chinese Taipei are categorized as economies that implement strong support policies of management innovation. Our study shows that, among ten member economies, nine economies considered as weak in building an internal capacity of SMEs have established and offered consulting programs in order to enhance management innovation. In addition, Australia and Canada that have adopted an indirect support system have offered a direct support system for a SME consulting support program. This indicates that government’s active involvement(as types of a free or grant program) is needed to support SMEs which fail to build an innovative capacity by themselves. Meanwhile, lack of a systematic organization has made SMEs vulnerable to collect information on government support programs. An effective way to address such a problem SMEs face is to support SME e-business and to establish an integrated policy
Executive Summary

information system which can provide one stop service of government’s SME support program or business activities. Australia, Canada and Korea have built and operated an integrated policy information system, while Chinese Taipei has established an e-learning portal site to enhance knowledge base regarding SME management innovation. In case of e-business, Canada, Australia, Japan, and Korea have created a strong support policy. Even Australia that has adopted an indirect support system has a direct support system of paying part of the costs when establishing infrastructure for cooperative e-business. This clearly shows that government’s active support is a must in building infrastructure, such as broadband services or e-business systems, in which SMEs are successfully conducting e-business.

Clustering and Networking

BIs in the ten APEC member economies could be classified into 4 types; public sponsored, private enterprise, multi-invested and transitional type. Along with the organizational forms of BIs, they could be classified into the range of their functional supports from hardware supports centering on real estate (offering affordable space and facilities) to highly specialized software supports related to technology transfer services, linking global R&D community and the significant level of technology capacity. Public sponsored incubators are well presented in member economies such as Thailand, Malaysia, Mexico and Canada. In Thailand, Malaysia and Mexico, although there are a number of incubator programs, the performance has been limited in terms of institutional reach and collaboration between tenants and academic institutes since most of BIs are in the early and pilot stage of development. Unlike these three economic members, the representative feature of BI policy in Canada is the strategy for strengthening collaboration between SMEs and research institutes by attaching an incubator into each of the institutes within NRC. A private enterprise model could be found in the Philippines and Australia. Philippine encourages private BIs by providing a number of special fiscal and tax incentive (tax holiday, tax credit, etc). In Australia, the federal government is not involved in the operation of BIs. Instead, it provides supports for the self-reliance of BIs mainly in high tech industries. Multi-invested cooperation model could be found in Japan. Although MITI is the nodal agency for incubators promotion in Japan, most of BIs are joint efforts of local governments along with private corporations. The transitional model could be found in China, Chinese Taipei and Korea. In reality the dominant type of all of these three member economies is still public sponsored model. However, the recent BI policy direction of them has been placed on multi-invested cooperation model to make self-reliant operation possible.
Executive Summary

Analysis of Best Practices of Member Economies

The selected best practices are 1) Australia, COMET (Commercializing Emerging Technologies) program, 2) Canada, IRAP (Industrial Research Assistance Program), 3) China, Business Incubator of Zhongguancun Haidian Science Park, 4) Japan, SME support centers, 5) Korea, SME Technology Innovation Development program, 6) Malaysia, ILP & GSP (Industrial Linkage Program & Global Supplier Program), 7) Mexico, TechBA (Technology Business Accelerator) program, 8) Philippines, Financing Program Magna Carta, 9) Chinese Taipei, Business Incubator of Asia Entrepreneurial Center, and 10) Thailand, ITAP (Industrial Technical Assistance Program).

Australia, Canada and Mexico operate the extensive consultation program with financial grants, which provide technological and managerial consultation to SMEs and start-ups. These programs, among which Canada’s IRAP program has the longest history while the others has been recently established, are renowned for their success in stimulating SMEs’ innovation and commercialization. The combinations of financial supports and customized-consultation services are identified as the critical factor in their successes.

The selected best practices of Japan and Thailand are both the consultation services to SMEs, but Japanese consultation services focus on the management side while Thailand’s ones focuses on technological capabilities developments.

The selected best practices of China and Chinese Taipei are both the incubator policy focusing high-tech start-up companies. Both economies’ SME innovation policies focus on the innovative high tech start-ups, and thus the governmental financial resources and policy focus are centered around the business incubators that facilitate the creations of technology-based start-ups and spin-offs from PRIs or universities. Both economies share the commonality that PRIs have technological capabilities to disseminate scientific researches into domestic SMEs and or to promote high-tech spin-offs. With this strength of National Innovation Systems in both economies, the business incubator policies were highly successful in nursing and stimulating high-tech start-ups.

Korean SMBA established a basic plan to support R&D project and created the SME Technology Innovation Development program in 1997. This program was designed to foster SME technology innovation by partly providing fund to SMEs capable of their own product development so that they can use it for new product development. The government-led program to support SMEs, therefore, is being implemented to enhance SME development capacity and
Executive Summary

technology competitiveness.

Malaysia has the strategic focus of SMEs’ innovation policies in integrating domestic SMEs into global production networks mainly through MNCs. Thus the selected best practice also emphasizes the technological linkage and technological collaboration of domestic SMEs with MNCs.

Philippines recently established the SME support system, of which the major methodology are the financial loan and guarantee programs. Since the technological capabilities of Philippines domestic SMEs are still in infancy, the targets of governmental SME policies are placed on the creations of jobs and SMEs growth. This job creation role of SMEs can best be achieved by financial provisions such as loan and loan guarantee program. Philippine governments mandate the domestic banks to allocate a designated portion of loans to SMEs.

Typology of SME Innovation Policies

Based on the analysis of ten APEC member economies’ economic context in terms of technological capabilities and the dominant players in their economy, and also with survey responses and interview results, the overall strategy and directions of SME innovation policies can be divided into four categories. They are a group of High Tech. Start-Ups Development (HTSUD), a group of SMEs’ Competitiveness and Innovation Enhancement (SCIE), a group of Indigenous Technological Capability Development (ITCD), and a Group of Technology Transfer Utilization (GTTU).

The HTSUD can be characterized as the economies in which their governments promote high-technology venture firms, start-ups and spin-offs, which are based on both the basic technology capabilities of universities or PRIs and high entrepreneurship spirit in the society. These economies possess high capabilities of basic research but lack in the ability of leading basic research results to a market success because private sectors’ indigenous technological capabilities are neither mature nor existent. Thus, the governments of member economies in this group have focused on the promotion of high tech venture, start-ups, spin-offs. They also focus on commercialization of R&D results, while utilizing high potentials of basic research capabilities. Australia, Canada and China belong to this group.

The SCIE can be characterized as the economies in which government promotes the competitiveness and innovation activities of SMEs. Since these economies already possess substantial groups of innovative actors with indigenous technological capabilities, which are
global players, governmental roles for these innovative actors has been changed to be quite limited. Thus governmental roles have been shifted to more focus on the innovation and competitiveness of SMEs, which can be considered as relatively weak in the supply chains of production compared to domestic global firms. The measures for SMEs innovation policy are also mainly composed of direct supports for SME innovation and competitiveness, such as direct financing and extensive technology/management counseling services. Japan, Korea and Chinese Taipei can be included in this group. Chinese Taipei has little different aspects since the dominant players in the economy are mostly SMEs in global production networks. Chinese Taipei has more focused on the innovation and competitiveness relatively weaker parts of SMEs, which are start-ups and early stages of new business.

The ITCD and the GTTU have commonality in the respect that member economies pursue development of indigenous and adaptive technological capabilities on their own. Even though MNCs, which are dominant players in these member economies, provide employment and economic growth, the economies cannot be guaranteed for future economic growth especially in high tech industries without developing their own indigenous technological capabilities. However, the ITCD and the GTTU are different about the paths or methodologies to achieve indigenous technological capabilities. The ITCD endeavors to focus on the development of R&D capability of domestic SMEs with increase in its own R&D expenditures, while the GTTU promotes the industrial linkages with global MNCs and to utilize the technology transfers from MNCs to domestic SMEs. Thus, the policy measures for the ITCD are relatively focusing on technology financing and investment, while the policy measures for the GTTU are relatively focusing on collaboration with MNCs and direct financial loans support for SMEs. The ITCD consists of Thailand and Mexico, while the GTTU includes Malaysia and the Philippines.

**Suggestions for APEC cooperative agendas**

Trends and directions of SME innovation activities in each of APEC member economies should be understood ahead of developing an APEC-wide cooperation framework. For the sake of this, holding forums or workshops on SME innovation in APEC are highly important to enhance awareness of stakeholders including governments, intermediaries, and SMEs. It is strongly recommended that the stakeholders should be encouraged to raise their capabilities to become successful entrepreneurs as well. Then, member economies can make joint efforts to substantiate progress in management of innovation and innovation in management at individual, organization, member economy, and APEC levels.
Executive Summary

For APEC member economies to facilitate SME innovation, the following three approaches are proposed and their respective actions are individually suggested as below:

To explore ways to share innovation policies, best practices and outcomes in APEC: APEC-wide benchmarking should be provided with reference to exemplar cases in APEC. It is suggested that funding for the benchmarking should be made available to effectively facilitate the undertaking of industry-specific collaborations among governments, industries, academia, and research institutes in the APEC region.

To cooperate in developing policies for technology and management innovation, and human capacity building: It is suggested to draw a general framework for designing, deploying and assessing SME innovation policies in APEC. The framework particularly needs to focus on commercializing innovation in products and processes. Templates for human capacity building are also suggested to be included in the framework to cultivate innovation specialists.

To build a network of SME innovation policy experts and to support their continued cooperation: All the participants in forums or workshops associated with SME innovation in APEC are suggested to be developed into the *APEC SME Innovation Leaders Club*, a community of SME innovation leaders. The APEC SME Innovation Leaders Club should polish the network further.