

**Innovation, Technology Transfers,  
Finance, and Internationalization of SMEs’  
Trade and Investment  
Policy Best Practices for ASEAN and East Asia**

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## List of Abbreviations

|           |  |
|-----------|--|
| AEA       | Asian Entrepreneurship Award   |
| AEC       | ASEAN Economic Community   |
| AMS       | ASEAN Member State   |
| ASEAN     | Association of Southeast Asian Nations                                     |
| EU        | European Union   |
| GVCs      | global value chains  |
| HDD       | hard disk drive  |
| ICT       | information and communications technology                                  |
| IPO       | initial public offering  |
| M&As      | Mergers and Acquisitions   |
| MEXT      | Ministry of Education, Culture, Sports, Science and<br>Technology of Japan |
| R&D       | research and development   |
| SEED      | Science Entrepreneurship and Enterprise Development                        |
| SME       | small and medium-sized enterprises   |
| TODAI TLO | The University of Tokyo Transfer Licensing<br>Organization                 |
| US        | United States  |
| UTEC      | University of Tokyo Edge Capital Co. Ltd.                                  |
| VC        | venture capital  |



## Executive Summary

The review of the Association of Southeast Asian Nation's Small and Medium-sized Enterprises (ASEAN SME) Policy Index conducted by the Economic Research Institute for ASEAN and East Asia (ERIA) showed that there is a lot to be done to attain best practice in the following policy areas: institutional framework, access to support services, cheaper and faster start-up, better legislation and regulation for SMEs, access to finance, technology and technology transfer, international market expansion, promotion of entrepreneurial education, and more effective representation of SMEs' interests. The most significant gaps and low regional standing are on technology and technology transfer; access to finance; promotion of entrepreneurial education; cheaper, faster start-up and better regulations; and access to support services.

The relative prioritization among the policy areas and indicators would be dependent on the stakeholders' assessment and judgment of each ASEAN Member State (AMS) and its level of economic development. In addition, it would be more beneficial if all the AMSs identified specific targets, timelines, and action plans in a concerted manner in moving forward to a more supportive policy and institutional environment for SMEs in the region.

In order to help narrowing policy gaps in AMSs, especially in the areas of technology development and transfers, access to finance, to boost more SME participation in trade and investment in ASEAN and East Asia, this project will document policy best practices in areas critical to fostering regional SME policy cooperation and providing practical policy implementations.

### **Best Policy Practices in SME Innovation and Technology Transfers**

From the comparative studies, the factors underlying successful government innovation financing programs can be summarized as follows:

First, in the more successful countries such as Singapore and Taiwan, there are ‘co-evolutions’ of innovation in the financing policy instruments and the levels of technological and innovative capabilities of firms. Different levels of technological and innovative capabilities of firms need different policy instruments. The ability to initiate and implement new policy instruments to fit the changing needs of firms at different levels of capabilities over time is very critical. Policymakers must understand the current needs and technological barriers facing firms in their countries. The ‘Me-too’ strategies based on copying other countries, which will no doubt have different needs and challenges, are not going to be effective.

Second, the more successful countries, like Singapore and Taiwan, and to a lesser extent Malaysia have a higher level of flexibility, policy coordination, and learning. They offer a much greater variety of policy instruments and cater them ‘selectively’ to the particular needs of industrial sectors, clusters, technologies, types of firms, or even individual firm demands (the so-called ‘firm-specific’ or ‘pre-packaged’ incentives). Incentives should be formulated and executed to complement and contribute to the overall industrial technology development strategy. This is illustrated in the venture capital and business-angel financing cases in Singapore, and the mandate of Ministry of Economic Affairs in giving opinions on the prospects of newly listed firms in Taiwan’s stock markets. In addition, when incentives do not work for some particular types of firms, they should be adjusted to fit the demands of these firms. For example, Singapore’s research and development (R&D) tax incentives for start-up companies can be converted into grants since these firms do not make profits in their initial years of establishment.

Third, developing technological and innovative capabilities of firms takes a long time. Hence, the amount, duration, and continuity of government-supporting schemes are crucial. They reflect policy priorities and the commitment of governments on this issue. The case studies have illustrated that the governments of Singapore and Taiwan are very committed to offering these schemes.

Fourth, policymakers must have a deep understanding of what constitutes innovations and innovation systems, and how they evolve over time. This is an important prerequisite for formulating effective policies. There is a sharp contrast between Thailand, and Singapore and Taiwan in forming innovation

financing measures. While the former narrowly focused on R&D-led innovation, the latter broadened their incentives to other activities important in innovation processes, both in-house and outside of a single firm. Incentives can also cover innovations in services, business models, solutions, and other types. The difference between Thai and Singaporean incentives to promote their countries as R&D hubs is also another good example of the different levels of understanding of government officials regarding the global R&D processes of transnational corporations.

Fifth, innovation financing policies require other corresponding policy initiatives to make them work successfully. In addition to financing innovation schemes, government initiatives that produce qualified human resources, attract foreign talent, and help organizations to work together are very necessary. Examples of this synergy are the cases of public research institutes in Taiwan and entrepreneurial universities in Singapore.

Sixth, institutional factors shape the choices and effective implementation of these policies. These factors include laws and regulations, unity and capability of government bureaucracy, trust, entrepreneurship, attitudes on corruption, and the role of government in supporting private firms. It is important to note that institutional shortcomings can be, to some extent, corrected. Successful countries can use financing innovation incentives as well as other government mechanisms (such as using public research institutes as intermediaries in innovation systems in Taiwan) and initiatives (like Malaysia's credit rating agencies for SMEs and Singapore's promotion of business angel networks) to overcome or mitigate these shortcomings.

## **Best Policy Practices for Internationalization of SME Trade and Investment**

The ASEAN and East Asia region includes economies at very different levels of development. For example, Thailand is a middle-income country that is extensively integrated into global and regional markets, including through participation in global value chains. By contrast, Myanmar is one of the least-developed economies. It has been relatively isolated for decades, and is now going through an extensive reform process, including a focus on product market integration with the international economy. In both countries, SMEs

make up the vast majority of the enterprises and play a key role as sources of jobs and incomes. Although at very different levels of sophistication and competitiveness, SME internationalization is a policy priority for both countries, with particular focus on the ASEAN and East Asia region.

The ‘stages of internationalization’ framework provides a potentially useful guide to reflect on the implications of the differences for SME internationalization between less-developed economies such as Myanmar, and more-developed economies such as Thailand. In general, the differences are less in the kind of barriers and types of required policy responses, but more in the formulation of the known policies to make sure that they respond to actual needs and that they are feasible in terms of constraints on implementation (e.g., by the relevant agencies and capacities of firms). In the context of the ‘stages’ framework, it may be possible to go further in considering the likely differences and their implications.

Given the relative lagging state of domestic enterprises in less-developed economies such as Myanmar, far less firms will likely be involved in, and have knowledge of, international activities of any kind. Therefore, the policy emphasis will need to be on the preparation stage. A key challenge and priority is helping SMEs get ready for internationalization, using the various policy measures already noted (e.g., information, financing, and developing enterprise linkages). The needs and measures will be similar, but detailed design and implementation requirements will have to differ to ensure their relevance and effectiveness for domestic SMEs. For example, in the case of information on potential markets and buyers, the use of information technology (IT) is likely to be less effective in economies such as those of Myanmar and Cambodia in terms of SME capabilities and access, and state of infrastructure development (e.g., power, communications). Therefore, more emphasis is likely to be needed on face-to-face activities such as workshops and printed materials. Support for later stages of internationalization—active engagement and growth and expansion—will become relevant and necessary as domestic SMEs internationalize more and more.

Regional cooperation initiatives can complement and enhance country-specific efforts at internationalization. These can be particularly important to less-developed economies given their constraints in resources, experience, and knowledge. The rationale for a regional approach are (i) economies of

scale for resources and activities (e.g., training); (ii) leveraging through the sharing of information, knowledge, and experience (e.g., markets, regulations, and business opportunities); (iii) strengthening a region-wide culture of partnership and collaboration between government and business; (iv) updating and adjusting best policy practices based on region-wide learning; and (v) building on the key role and potential of cross-border value chain linkages.

Based on an assessment of the barriers to internationalization and examples of best policy practice, the following actions may be considered for regional cooperation to support SME internationalization:

- *Expand cross-border SME financing mechanisms:* Financing, particularly trade and supply chain finance, is a key constraint on SME internationalization, especially in the wake of the 2008 global economic crisis. Therefore, facilitating the cross-border flows of financing and financial instruments, such as credit, credit guarantees, and particularly trade and supply chain finance, is important to expand SME internationalization. This could include a focus on regional cooperation related to trade and supply chain finance, in the broader context of regional financial sector liberalization and cooperation. An important potential regional initiative is an agency/mechanism for providing SME credit information to reduce credit risks and lower the barriers for SME access to financing given the information gap between lenders and SMEs. Japan's effective SME rating system, the Credit Risk Database Association that uses both quantitative and qualitative information, is a suggestive example.
- *Expand cross-border and regional workshops and training:* Internationalization workshops, particularly targeted at particular value chains of regional importance and market immersion programs, could play an important role in providing practical information and knowledge to regional SMEs given multi-country participation. For example, this could focus on delivering accredited management and technological training leading to regional certification, similar to some of the training programs offered by the Asian Productivity Organization. This can also help support the building of cross-border alliances and partnerships among the participants.

- *Establish comprehensive, SME user-friendly online information portal:* To respond to the information barrier, and allow greater sharing of market and business-related information, a region-wide online SME-oriented portal could play an important role. It could include information on market and industry trends, and key issues; business opportunities and related leads; business matching on a region-wide basis; comprehensive listing of the region's enterprises in key value chains to facilitate identification of potential partners/suppliers/buyers; comprehensive information on rules, regulations, and procedures in the region's markets; and a list of internationalization-related advisory services and associated organizations and individuals in the region. The European Union's (EU) SME Internationalization Portal provides a useful example. It is a database that lists semi-public providers of specialized services (e.g., local chambers of commerce) for companies planning to enter international markets; and links to other EU-backed sources of support and advice such as the European Commission's Market Access Database that provides market access information for individual non-EU growth markets.
- *Establish the ASEAN Economic Community (AEC) SME Business Centres to support SMEs exporting (directly and indirectly) and investing in the region:* These centres, established in selected locations in the AEC, would provide support and assistance to SMEs for doing business in AEC and East Asian markets. This can include (i) business development services (e.g., focused market information, business and marketing advice, matchmaking support, and physical facilities such as desk/secretarial support and meeting rooms); (ii) legal services support (e.g., access to practical legal information, referral to service providers such as lawyers and tax advisors); (iii) standards and technical issues (e.g., information on required certification, quality, and labeling); and (iv) human resources-related support (e.g., access to specialized skills including languages, and referral to training sessions and expertise). The EU business centres, particularly the EU SME Centre in China, could provide useful experience and guidance.
- *Establish a regional 'SME Internationalization Best Practices Centre':* There have been many SME internationalization best practices studies, and even more on general SME best practices. An AEC/East Asia best practices centre that can be easily accessed and used by firms could serve an important role in supporting SME internationalization. It could provide

extensive and practical information to the region's SMEs on best (and worst) practices, including case studies focusing on specific firms, in particular value chains and markets; a practical and supported framework for self-assessment of existing operations; and strategies for firms on adapting and implementing best practices. Ideally, over time, this could be linked to regional advisory services such as the suggested AEC SME business centres.

- *SME internationalization through cross-border value chain linkages:* There is strong interest in many of the region's economies in strengthening cross-border economic linkages, particularly involving border areas. Such cross-border linkages in key value chains can contribute to the development of local communities; product market diversification; and the upgrading of participating economies and firms, including SMEs. This could be especially effective in linkages between less-developed economies such as Myanmar, and more-developed economies such as Thailand. The garment and textile value chain provides an example – building on the agglomeration of garment and textile SMEs in Mae Sot (Thailand), and a planned industrial zone in Myawaddy (Myanmar) to take advantage of proximity to Thailand. Firms in Myawaddy (e.g., Thai and other Asian investors) can provide low-cost labour for lower-value and lower-skill activities such as cut/make/trim (CMT); while SMEs in Mae Sot can provide materials and parts for CMT activities and focus on higher-value and higher-skill activities such as quality assurance, packaging, and shipping (logistics services). Such cross-border cooperation can provide opportunities for SMEs in Myanmar and Thailand to internationalize, starting in a more limited and manageable way, with neighbouring countries and expanding over time within the framework of global value chains.

### **Innovation and University Entrepreneurship: Experiences from Japan**

Approximately a decade has passed since the incorporation of national universities. During the past 10 years, different kinds of initiatives for academic entrepreneurship have been taking place, although most of them do not seem to have produced good role models for university entrepreneurship.

Japanese universities have learned a lot from universities outside of Japan, particularly from leading universities in the world including University of California at Berkeley, Stanford University, Massachusetts Institute of Technology, University of Cambridge, University of Oxford, and Imperial College London, among others.

With some solid and successful examples of academic entrepreneurship such as PeptiDream, the innovation ecosystem practices at The University of Tokyo could be an effective model in Japan for university-based entrepreneurship and innovation. Its tripartite structure, consisting of the university's Office of Science Entrepreneurship and Enterprise Development Program, currently the Office of Innovation and Entrepreneurship; TODAI TLO Ltd., the technology transfer office dedicated to the university; and the University of Tokyo Edge Capital Co. Ltd. (UTEK), a venture capital arm dedicated to the university, plays a collective role in encouraging university entrepreneurship. The university's initiatives in entrepreneurship education, incubation, mentoring and consulting, and graduate entrepreneurs' networking, as a joint effort with the Alumni Office, help cultivate university entrepreneurship. The Asian Entrepreneurship Award program and the extension of the innovation model to the Kashiwa-no-ha Campus of the University of Tokyo are models for partnership involving local governments, corporate sponsors, great research universities in Asia, and entrepreneurs from Asian countries and economies. The evolution of the innovation ecosystem at the University of Tokyo is moving forward to the goal that the university will contribute more to the world through innovation based on university entrepreneurship.



# CHAPTER 1

## Best Policy Practices in Small and Medium-Sized Enterprise Innovation and Technology Transfers for ASEAN and East Asia

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*Most small and medium-sized enterprises (SMEs) are latecomers facing two disadvantages: they are behind in research, development, and engineering capability, and they are dislocated from international markets, whose demands help stimulate technological advance and innovation. Policies to stimulate SMEs' technological development are thus divided into two groups: (i) supply-side policies that aim to increase incentives to invest in innovation by reducing costs, and (ii) demand-side policies that are public actions to induce innovation and/or speed up the diffusion of innovation.*

*Policies can be implemented through tax incentives, grants or direct subsidies, low-interest loans, and government direct equity participation—all of which have pros and cons. We summarize several lessons learnt from the experiences of Taiwan, Singapore, Malaysia, and Thailand. Different levels of technological and innovative capabilities of SMEs need different policy instruments. The more successful countries have greater flexibility and policy coordination and learning. The amount, duration, and continuity of government-supported schemes are crucial. Policymakers must have a deep understanding of what constitute innovations and innovation systems, and how these evolve. Successful innovation financing policies require corresponding policy initiatives. Lastly, institutional factors shape the choices and the effective implementation of these policies.*

**Keywords:** SMEs, innovation, Asia, demand-side policies, supply-side policies

# 1. Introduction

East Asian countries are latecomers to industrialization. While they enjoy the advantage of utilizing the technological and institutional advances created by the forerunner countries (Gerschenkron, 1962), they also face two disadvantages in competing in the global market:

- (i) They lack research, development, and engineering capability, and their poorly developed industrial and technological infrastructure operates in isolation from the world centres of science and innovation.
- (ii) They are dislocated from international markets, whose demands help stimulate technological advance and innovation (Hobday, 1995).

Several latecomer firms, especially in Japan, Korea, Taiwan, and Singapore, have been able to exploit their advantages and overcome their disadvantages by increasing their technological capabilities. Some small and medium-sized enterprises (SMEs) became large, even global, firms, but most left the market or remained weak in technology and innovation. What factors determined these outcomes? While strategies and behaviours were decisive, policy content and implementation also mattered significantly.

This paper aims to shed light on how policies supported innovation in and technology transfer to SMEs by examining the experiences of Taiwan, Singapore, Malaysia, and Thailand. Two criteria were used to select them:

- (i) SMEs should be economically significant. Although Japan and Korea are technologically successful, their economies are dominated by large firms.
- (ii) Serious industrialization and technological development should have taken place around the same time. The four selected economies started in the 1960s.

Although the industrialization strategies of Singapore, Malaysia, and Thailand depend considerably on foreign direct investment, technological spillovers to local firms (especially SMEs) were significantly higher in Singapore. We will examine the extent to which these economies are influenced by different

technology and innovation policy content and implementation. By adopting a history-friendly and longitudinal approach, the paper will trace any co-evolutions between government policies and the increase in technological capabilities and innovation in firms in the four economies and determine how they happened. This will shed light on the types of policies that will stimulate innovation in firms at each level of technological capability and economic development. The empirical results draw extensively on ‘Towards Effective Policies for Innovation Financing in Asia’, a study under my leadership for the International Development Centre of Canada in 2010–2011.

Section 2 describes the significance and process of and barriers to innovation and technology transfer for SMEs. Section 3 examines types of policy intervention, and the pros and cons of government instruments: tax incentives, grants, loans, and equity participation. Section 4 considers the four countries’ policy experiences. Section 5 provides conclusions and recommends policies for countries at different levels of development and for regional cooperation.

## **2. Innovation in and Technology Transfer to Small and Medium-Sized Enterprises: Significance, Process, and Barriers**

Latecomer firms’ technological capability levels are classified in different ways. The most comprehensive and best-accepted classification is by Bell and Pavitt (1995), who developed their framework based on Westphal *et al.* (1985) and Lall (1992). They differentiate ‘production capacity’ from ‘technological capabilities’. Production capacity incorporates resources used to operate existing technological systems (to produce goods at given levels of efficiency and given input combinations). Technological capabilities are resources needed to generate and manage technological change. These include skills, knowledge, and experience, as well as the institutional structures and linkages necessary to produce inputs for technical change. Bell and Pavitt also distinguish among ‘depths’ of technological capabilities. A basic level of capability permits only minor and incremental technical change, while intermediate and advanced technological capabilities may result in more substantial, novel, and ambitious change. Functionally, they classify capabilities into types: facility user’s decision-making and control, project preparation and implementation, process

and production organization, product —centre, linkage development, and capital-good supply (Table 1.1).

Alternatively, Amsden (2001) has simplified the classification of technological capabilities into production capabilities (the skills to transform inputs into outputs), project execution capabilities (the skills to expand capacity), and innovation capabilities (the skills to design entirely new products and processes).

**Table 1.1. Bell and Pavitt's Industrial Technological Capabilities: An Illustrative Framework**

|   | PRIMARY ACTIVITIES  |   |   |  | SUPPORTING ACTIVITIES   |   |
|---|---|---|---|--|---|---|
|   | INVESTMENT  |   | PRODUCTION  |  | Developing Linkages   | Capital-Good Supply   |
|   | Facility User's Decision Making and Control   | Project Preparation and Implementation  | Process and Production Organization   | Product Centred  |   |   |
| <b>Basic Production Capabilities (capacities to use existing production techniques)</b> | Engaging prime contractor. Securing and disbursing finance. Officiating at opening ceremony                     | Preparation of initial project outline. Construction of basic civil works. Simple plant erection  | Routine operation and basic maintenance of given facilities. Efficiency improvement from experience in existing tasks | Replicating of fixed specification and design. Routine quality control to maintain existing standards and specifications | Procurement of available inputs from existing suppliers. Sale of 'given' products to existing and new customers | Replication of unchanging items of plants and machinery   |
| <b>TECHNOLOGY CAPABILITIES (CAPABILITIES TO GENERATE AND MANAGE TECHNICAL CHANGE)</b>   |   |   |   |  |   |   |
| <b>BASIC</b>  | Active monitoring and control of feasibility studies, technology choice and sourcing, and project scheduling    | Feasibility studies. Outline planning. Standard equipment procurement. Simple ancillaries engineering                                       | Commissioning and debugging. Improved layout, scheduling, and maintenance. Minor adaptation                           | Minor adaptations to market needs, and incremental improvement in product quality and mechanical properties              | Searching and absorbing new information from suppliers, customers, and local institutions                       | Copying new types of plants and machinery. Simple adaptation of existing designs and specifications |
| <b>INTERMEDIATE</b>   | Search, evaluation, and selection of technology and sources. Tender and negotiation. Overall project management | Detailed engineering. Plant procurement. Environment assessment. Project scheduling and management. Commissioning. Training and recruitment | Process improvement. Licensing new technology. Introducing organizational changes                                     | Licensing new product technology and/or reverse engineering. Incremental new product design                              | Technology transfer to suppliers and customers to raise efficiency, quality, and local sourcing                 | Incrementally innovative reverse engineering and original design of plant and machinery             |
| <b>ADVANCED</b>   | Developing new production systems and components  | Basic process design and related R&D  | Process innovation and related R&D. Radical innovation in organization  | Product innovation and related R&D   | Collaboration in technology development   | R&D for specifications and designs of new plant and machinery                                       |

Source: Bell and Pavitt (1995: 84).

‘Learning by interacting’ with other actors is more important than ever as it is difficult for firms to innovate without relying on external knowledge. To leverage external knowledge, firms have to go beyond the conventional ‘technology or knowledge transfer’, which implies simple and one-way transfer from knowledge providers to recipients. ‘Knowledge diffusion’ is a two-way process. Its success depends on the recipients’ capacity to absorb and assimilate that technology. As pointed out by Cohen and Levinthal (1990) and Leonard-Barton (1995), a firm’s absorptive capacity enables it to search and access external technological knowledge, and to identify suitable technological choices. A few case studies show that when technology was imported by recipient firms to complement in-house technological effort rather than only to produce new products, diffusion was more likely to succeed in upgrading their technological capability (Katrak, 1990).

Many firms, especially SMEs, face difficult barriers to increasing their technological capability to upgrade and innovate. They are passive learners with limited absorptive capacity to select, acquire, absorb, and upgrade external knowledge. The innovation system concept stresses that the flow of technology and information among people, enterprises, and institutions is key to an innovative process. The concept includes the interaction among the actors needed to turn an idea into a process, product, or service on the market (Lundvall, 1985, 1988, 1992). Some barriers are internal to the firms while some are external (the unfavourable innovation systems in which firms are located), contributing to the following (Chaminade and Edquist, 2006; Woolthuis, *et al.*, 2005):

- (i) Infrastructure provision and investment failures.
- (ii) Transitional failures. Firms are less capable of foreseeing the emergence of new technological paradigms.
- (iii) Lock-in failures. Firms are locked into acquired existing technologies and technology systems.
- (iv) Formal and informal institutional failures. Laws, regulations, norms, and routines hamper innovation and capability building.
- (v) Network failures. Knowledge intensity of exchange is too weak, or linkages are too strong, leading to blindness to what happens outside the network.

- (vi) Capability and learning failures. Firms have insufficient competencies, limiting their capacity to learn, adopt, or produce new technologies over time.
- (vii) Unbalanced exploration–exploitation mechanisms. The system might be capable of generating diversity but lacks the mechanisms to make adequate selections, or it may have refined selection procedures but not the capability to generate diversity.
- (viii) Complementarity failures. The systems’ competencies might not complement each other.

An important aim of technology and innovation policies in developing countries is to eliminate or mitigate these failures and barriers, i.e., changing firms’ learning behaviour from ‘passive’ to ‘active’.

### **3. Types and Instruments of Government Policies Stimulating Innovation and Technology Transfer**

Policies to overcome systemic failures that prevent firms, especially SMEs, from increasing their technological capabilities and ability to leverage external knowledge can be classified into supply side and demand side.

The aim of supply-side policies for innovation in firms is to increase incentives to invest in innovation by reducing costs. These incentives include direct funding of firms’ research and development (R&D), fiscal measures, debt- and risk-sharing schemes, and technology extension services. Supply-side instruments encourage investments that otherwise might not be undertaken as liquidity constraints caused by capital market imperfections can be substantial when it comes to innovation.

Demand-side policies are public actions to induce innovation and/or speed up the diffusion of innovation by (i) increasing demand for innovation, (ii) defining new functional requirements for products and services, and/or (iii) improving user involvement in innovation (Edler, 2009). For SMEs, in particular, demand for their innovation (new or significantly improved products or processes) is insufficient or unarticulated. Policies to increase

new public and private demand and/or to articulate existing demand are much needed.

Both supply- and demand-side policies can be deployed by several instruments such as tax incentives, grants or direct subsidies, low-interest loans, and government direct equity participation. An R&D tax incentive has been adopted in many countries since it is generic and applies equally to all R&D-performing firms. The government can, therefore, avoid criticism for picking the winners. Nonetheless, the incentives might be viewed as less effective than direct government subsidies, which can target particular activities, clusters, or sectors. The effectiveness of tax incentives also depends largely on the definition of R&D, administration of incentives, eligibility of firms, and form of incentives (OECD, 2002).

Grants can be more effective than tax incentives in encouraging specific activities, sectors, clusters, or firms, but they require higher government capabilities to select and meet targets. The selection and management processes are also complicated and can be subject to political interventions as well as opportunities for corruption, cronyism, and nepotism. Loan programs are more popular in countries with problems giving direct grants to the private sector for innovative projects, simply because loans have to be paid and need collateral guarantees. Equity financing can be used selectively, like grants. Recipients can also get the money up front, which means investment risk can be substantially reduced. Having government co-invest in a project can increase its creditability. Still, writing off bad projects financed by public funds is problematic. Table 1.2 summarizes the advantages and disadvantages of these instruments.



**Table 1.2: Innovation Policy Instruments: Advantages and Disadvantages**

| Type                 | Advantages  | Disadvantages  |
|----------------------|---|--|
| Tax Concession       | <ul style="list-style-type: none"> <li>- Non-discriminatory, open to all</li> <li>- ‘Arm’s length’ instrument; activities chosen by industry</li> <li>- Maintenance of firm’s confidentiality</li> <li>- Speedy processing (where approval is ‘automatic’)</li> </ul> | <ul style="list-style-type: none"> <li>- Of no benefit to unprofitable or start-up firms</li> <li>- Subsidizes ‘existing’ activity that would have occurred anyway (unless based on incremental performance, which is hard to police)</li> </ul> |
| Repayable Loan       | <ul style="list-style-type: none"> <li>- Can be targeted widely or focused</li> <li>- Priorities or scope (type, timing, size) set by government</li> <li>- Specific proposals can be made by firms</li> </ul>  | <ul style="list-style-type: none"> <li>- Requirements (e.g., collateral) work against small and medium-sized enterprises and start-ups</li> <li>- Procedures are long and cumbersome.</li> </ul>   |
| Grant                | <ul style="list-style-type: none"> <li>- Benefits focused activities, sectors, clusters, some types of firms</li> <li>- Allows prioritization and, therefore, are appropriate for innovative projects</li> <li>- No need to write it off</li> </ul>                   | <ul style="list-style-type: none"> <li>- May be subject to criticism for being unfair</li> <li>- Government must have the ability to <i>select</i> recipient.</li> </ul>   |
| Equity Participation | <ul style="list-style-type: none"> <li>- Benefits focused activities</li> <li>- Firms get investment money up front, reducing risks and uncertainty and increasing creditability.</li> </ul>  | <ul style="list-style-type: none"> <li>- May be subject to criticism for being unfair</li> <li>- Government must have the ability to <i>select</i> recipient.</li> <li>- Must write off <i>bad</i> projects</li> </ul>                           |

Source: Author.

## **4. Supporting Firms' Innovation and Technology Transfer: Policy Experiences of Selected East Asian Economies**

The East Asian economies discussed here started serious industrialization in the 1960s and achieved remarkable growth rates. Singapore saw one of the most impressive economic growth records in the last four decades, with 7.6 percent gross domestic product (GDP) growth per annum over 1960–2009. Singapore's per capita GDP of US\$72,724 in 2012 (on purchasing power parity basis) stands as one of the highest in Asia. Singapore's national innovation system was transformed from one with primary emphasis on technology adoption—particularly the assimilation and diffusion of technology by leveraging inward investments by transnational corporations (TNCs)—to one with a more balanced approach that significantly encourages indigenous innovation capability, including basic and strategic R&D, and the creation of local high-tech firms (Wong and Singh, 2012). Singapore's innovation financing schemes co-evolved with the development of its national innovation system. Its earliest schemes targeted innovation diffusion and capability development to transfer technology, particularly from TNCs. These schemes remain the most common innovation assistance program. From the late 1980s, the government also focused on developing applied, and then basic, R&D capabilities, particularly through the use of grants and tax incentives. Start-up support schemes were first implemented in response to the policy focus on high-tech entrepreneurship during the late 1990s. Technology commercialization schemes, which began in the mid-2000s, are the more recent development in innovation policies (Wong and Singh, 2012).

Similarly, Taiwan's average annual growth rate has been an impressive 8 percent in the past three decades. Taiwan is now a high-income economy with GDP per capita (on purchasing power parity basis) of US\$39,059 in 2012. It adopted the 'second mover' strategy of entering the global high-tech market only after the product matured and exploiting manufacturing and project execution capabilities (Amsden and Chu, 2003). The government-sponsored research institutes were important in implementing the strategy. They assimilated advanced technology from overseas, then rapidly diffused the technology to local firms. The institutes have also increasingly served as the coordinating platform nodes for promoting the creation of indigenous

technology via innovation networks and strategic R&D programs (Wong, 1999). As a result, although not yet technologically on a par with their Western counterparts, many Taiwan firms, which started as SMEs, have enhanced their technological and innovative capabilities and climbed up the global value chain. Like Singapore's, Taiwan's innovation financing policies, together with other government interventions (especially the intermediary role of government research institutes), have been significant in the learning processes of Taiwan's firms. These programs also co-evolved with the development of Taiwan's firms' technological capabilities and innovation system. The schemes of the 1960s–1980s focused on developing absorptive capacity to take advantage of foreign technologies. During the 1990s, the schemes began to focus more on helping firms develop new products, enhancing R&D capabilities, and encouraging the emergence of start-up companies in emerging sectors such as biotechnology (Liu and Wen, 2012).

The experiences of Malaysia and Thailand have been significantly different from those of Singapore and Taiwan. Although Malaysia and Thailand have made remarkable socio-economic progress over the past four decades (with average annual GDP growth rates of more than seven percent) and attained middle-income status, both are stuck in the 'middle-income' trap: the inability to produce differentiated and sophisticated products and climb up the global value chain. The national innovation systems of Malaysia and Thailand are weaker and more fragmented than those of Singapore and Taiwan (Thiruchelvam, *et al.*, 2012; Intarakumnerd, *et al.* 2002). Likewise, firms in Malaysia and Thailand have lower technological capabilities and exhibit more 'passive' learning patterns. The innovation financing schemes of these two countries have not co-evolved as much with the development of technological capabilities of firms and national innovation systems. Thailand, in particular, has been unable to quickly modify its schemes. Most policy instruments in Thailand are limited to tax incentives and only for R&D. In Malaysia, however, several grant schemes target firms' different development stages. Such schemes in both countries have been hindered by fragmented policies and government agencies' inability to monitor, evaluate, and learn from policy implementation.

We will now examine in detail the four economies' policy instruments to find similarities and differences in content and execution.

#### 4.1. Tax Incentives

**Table 1.3: Comparison of Tax Incentives in Thailand, Malaysia, Singapore, and Taiwan**

|  | <b>Thailand</b>  | <b>Malaysia</b>  | <b>Singapore</b>   | <b>Taiwan</b>   |
|--|--|--|--|---|
| <b>Year of Operation</b>                                 | <b>1996</b>  | <b>1982</b>  | <b>1960s</b>   | <b>1991</b>   |
| <b>Type</b>  | Tax incentives on expenditures                                     | Tax incentives on expenditures   | Tax incentives on expenditures   | Tax credits   |
| <b>Coverage</b>  | R&D (strict definition), training, collaboration with universities | R&D, commercialization of R&D  | Pioneer activities, R&D, R&D hub (covering R&D outside Singapore), design, acquisition of intellectual property right and automation equipment | R&D, training, using certain technologies   |
| <b>Focus (sector, cluster, technology, type of firm)</b> | General  | General, specific (biotechnology, information and communications technology, East Coast Development Region), and firm-specific (pre-packaged incentives) | Pioneer status (strategic activities and sectors)<br><br>- Convertible to grants for start-ups   | General and specific (automation, energy saving, pollution control, digital technologies) |
| <b>Project-by-Project Approval</b>                       | Yes  | No   | No   | No  |
| <b>Effectiveness</b>                                     | Number of approved   | Increase in number of  | Increase in number of firms  | Number of approved tax  |

|  |   |  |   |   |
|--|---|--|---|---|
|  | projects increased but still from limited number of firms | projects but decline in number of applying firms | doing R&D in Singapore, especially transnational corporations | deductions in Taiwan new dollar has increased but no significant changes in number of applying firms. Increase in employment, GDP, and net tax revenues |
|--|---|--|---|---|

Singapore, Thailand, and Malaysia have R&D tax incentives based on R&D expenditure (double deduction) while Taiwan has adopted R&D tax credits. Singapore's tax incentive system, like other financial incentives, has evolved according to the country's strategy and level of technological capability, unlike in Thailand and Malaysia. When Singapore wanted to attract the labour-intensive electronics industry from the US and Japan, its government offered 'pioneer status,' with attendant tax holidays of up to 15 years and other benefits, to TNCs to invest in *strategic* projects in Singapore. From the late 1980s to the late 1990s, when the strategy shifted to position Singapore as an R&D hub of TNCs, the government launched the Research and Development Tax Deductions Program. Unlike in other countries, this deduction included R&D activities that took place outside Singapore (but were related to and benefited those in Singapore), although the deduction rate was lower than for those of local activities. It seems that Singapore's government officials have an understanding of how global R&D networks of TNCs operate and what constitutes an R&D hub. Beginning in the late 1990s, when Singapore emphasized indigenous innovation by high-tech entrepreneurs, the government initiated the R&D Incentive for Start-Up Enterprises. It was designed to meet the needs of R&D-intensive start-ups, which usually spend the first few years developing products and incurring losses. Tax exemption is therefore not useful to them. It also allowed these start-ups to convert their tax losses to cash grants during the initial years. Since 2010, firms have been able to deduct 400 percent of their expenditure from their income, subject to a cap of SGD800,000, from innovation activities, including not only R&D but also design, registration and acquisition of intellectual property rights and acquisition of automation

equipment. The government realizes that successful innovation needs more than R&D: it needs the support of a combination of several activities.

Taiwan's tax credit program covers not only direct R&D activities but also expenditures on critical activities to upgrade firms' activities: automating production, reclaiming resources, controlling pollution, using clean and energy-saving technologies, and using digital information technologies more efficiently. The experience of Taiwan illustrates that, like Singapore, it understands how to implement government incentives to tackle companies' technological upgrading problems.

Malaysia implemented its double deduction program more than 10 years earlier than Thailand. Malaysia's R&D tax incentive schemes are also much wider in scope than Thailand's, dealing not only with R&D activities but also the commercialization of R&D findings. Apart from double deduction of R&D expenditure, Thailand's Board of Investment initiated a scheme in 2003 to promote 'Skill, Technology and Innovation' by offering one to three more years' tax exemptions for companies already receiving tax privileges for investing in production so they could meet the requirements for in-house R&D, in-house training, and R&D collaboration with local universities. Malaysia's tax incentive system is more selective than Thailand's. It has tax incentives for targeted industries such as information and communications technology (ICT) and biotechnology, activities such as medical device testing, and geographical clusters such as the East Coast Economic Development Region. Incentives customized on the merit of each case—the 'pre-packaged incentives'—have also been introduced recently. Unlike Thailand, therefore, Malaysia has both generic and selective tax incentives.

Regarding the efficiency of tax incentives, only Thailand scrutinizes companies wanting to apply for R&D tax incentives and on a project-by-project basis. This makes the application process cumbersome. The level of trust in Thailand's society is low and its government has been worried about false claims. Thus, the Department of Revenues (responsible for double deduction of R&D expenses) authorizes the National Science and Development Agency (the largest public research institute) to verify whether submitted applications are R&D projects and whether their proposed expenses are appropriate. Since many proposals are submitted, the average approval period is as long as five to six months. Similarly, project-to-project approval is required for firms wanting to take advantage of the Board of Investment's 'Skill, Technology and Innovation' program. The number of approved projects, however, has

increased over the years. Likewise, in Taiwan, after 2000, the number of approved Taiwan new dollar tax deductions has increased year by year, but the number of companies applying for such incentives has not significantly changed. Large firms in Malaysia and SMEs in Thailand mainly benefit from R&D tax incentives.

Only Taiwan has conducted a formal study on the impacts of its tax incentives. It found that tax credits for encouraging R&D, training, and automation have induced further R&D investment, leading to more jobs and higher GDP. As a result, there have been significant positive net effects on tax revenue (Liu and Wen, 2012). In Thailand, however, although one cannot observe direct causation, results from community innovation surveys illustrate that innovative firms used R&D tax incentives more than non-innovative firms.

## 4.2. Grants

**Table 1.4: Comparison of Grant Schemes in Thailand, Malaysia, Singapore, and Taiwan**

|   | <b>Thailand</b>               | <b>Malaysia</b>   | <b>Singapore</b>   | <b>Taiwan</b>  |
|---|-------------------------------|---|--|--|
| <b>Year of Operation</b>                                    | 1990s                         | 2000s (becoming more unified)   | 1970s  | 1980s  |
| <b>Level of Significance Compared with Other Mechanisms</b> | Not significant               | Very significant  | Very significant   | Very significant   |
| <b>Coverage</b>   | R&D, prototyping, pilot scale | The whole spectrum (pre-R&D, R&D, commercialization, acquisition of other firms' intellectual property right) | Wide-ranging and evolving according to the needs and capabilities of firms | Wide-ranging and evolving according to the needs and capabilities of firms |
| <b>Focus (sector, cluster,</b>                              | General                       | Both general and specific (technologies,  | Both general and specific (sectors,  | Both general and specific (sectors,  |

| technology, type of firm) |                                    | sectors, clusters, products)                                       | technologies, types of firms)  | technologies, products)  |
|---------------------------|------------------------------------|--|--|--|
| <b>Effectiveness</b>      | Too small to have critical success | Criticism of lengthy approval processes and duplication of schemes | Effective older policies, e.g., Local Industry Upgrading Program, enhancing linkages between transnational corporations and local firms, but only moderate success with recent policy on promoting high-tech start-ups | Inducing substantial R&D investment from recipient firms, supporting creation of new industries or products. Small and medium-sized enterprises benefited significantly. |

In Singapore, grants are the key instruments for financing technological capability development and innovation. Singapore has also had a greater variety of grant schemes targeting all activities in the value chains, and evolving according to the country's level of development and the technological capabilities and needs of firms. In the 1970s and 1980s, Singapore initiated schemes such as the Local Industry Upgrading Program to promote technological diffusion from TNCs to local enterprises. The Economic Development Board subsidized for two years a percentage of the salary of a manager sent by a TNC to work in a local enterprise. As of 2010, more than 200 TNCs and 1,000 local suppliers had been involved in the program. Grant schemes were also given to individuals and companies to promote critical skills such as ICT. In the 1990s, when firms in the country needed to increase their R&D capability, the government initiated a grant scheme to leverage Israel's R&D capability by funding feasible R&D collaborative projects of firms in the two countries. Since the late 1990s, whenever the government has wanted to promote high-tech entrepreneurship and basic R&D, it has initiated grant schemes. For example, the Technology Innovation Program covers 50–70 percent of equipment, materials, labour, software, and IP costs of projects operated by individual SMEs and consortiums. The Innovation Voucher



Scheme provides SMEs with grants to pay for consultancy and technical services provided by reputable local and overseas universities and research institutes. The government also uses this scheme to promote inter-firm collaboration by allowing up to 10 SMEs to pool their vouchers. Singapore astutely uses government schemes to tackle systemic failures of its national innovation systems, i.e., linkages among local SMEs, and between local SMEs and public research institutes and universities.

The Technology Enterprise Commercialisation Scheme, a competitive grant scheme, was launched in 2008 to support locally owned technology-oriented start-ups and SMEs at the proof-of-concept stage (to conceptualize ideas) and the proof-of-value stage (to carry out further R&D and develop a prototype). Specific grant schemes commercialize technologies developed by universities, encourage polytechnic institutes to conduct translational research on R&D outputs from universities and research institutes, and bridge the gap between universities' seeds and firms' needs by allowing collaborating firms to license technology once proven, but to be under no obligation if the project fails. Some grant schemes are aimed at strategic service sectors (e.g., aviation and animation) and strategic and future-oriented technologies and capabilities (e.g., logistics capability, environmental technology capability, medical technology capability, marine capability, and tourism technology). These schemes are under the management of responsible sector-specific development agencies. Some grant schemes have been provided by universities to their students to start their own businesses. These recent government schemes targeting early-stage companies, however, have had only moderate success. For example, only one-fifth of surveyed firms were aware of the Innovation Voucher Scheme. Start-ups that have taken part in the recent schemes gave an average rating of 3 on the 5-point Likert scale on three criteria: meeting firms' immediate objectives, improving their long-term growth prospects, and helping them move to the next growth stage. The bureaucracy involved in the application processes must be lessened and awareness of the various schemes raised.

For many years and in various programs, Taiwan has been using grants as financial instruments to encourage firms to enhance their technological and innovative capabilities. As in Singapore, programs in Taiwan have co-evolved with the development of firms' capabilities. Several programs are sector or even product specific. For example, when Taiwan firms gained production capabilities as subcontractors of TNCs and wanted to move up the global value chain by attaining product development capabilities, Leading Product

Development was implemented in 1991 to subsidize costs in R&D for high-tech products and know-how such as those produced by the ICT, aerospace, pharmaceutical, and semiconductor industries. About 800 of 1,600 cases were approved, about evenly divided between SMEs and large firms. The results of the Leading Product Development were impressive, as TWD1 of grant induced about TWD10 investment in R&D, TWD21 investment in production, and TWD42 in sales. On average, one project generated 3.7 patents and 2.9 derivative products (Liu and Wen, 2012). Similarly, when the government wanted to promote local start-ups, it adopted as a model in 1998 the US Small Business Innovation Research Program, which provided grants to firms in three phases: feasibility studies, R&D, and commercialization. A more generic grant scheme, the Industrial Technology Development Program, was initiated in 1999 to fund the preliminary study and R&D phases of firms aiming to develop forward-looking industrial technologies. TWD1 of grant induced TWD2.46 of R&D and TWD4.89 of capital investment (Liu and Wen, 2012). In the 2000s, grants were given specifically to strategic technologies and industries such as conventional technology development, commercialization of biotechnology, and the knowledge-based service industry.

Similarly, Malaysia's Ministry of Science, Technology and Innovation has been providing various types of grants that cover the whole spectrum, from basic and applied research and prototype development (Science Fund) to development of technology for commercialization (TechnoFund) and innovation (InnoFund). The TechnoFund supports the development of pilot plant and upscaling of laboratory prototypes, and field trials and testing. It also has provisions for the acquisition of IP rights from local and overseas entities to be further developed locally during the pre-commercialization stage. The InnoFund has two categories of grants. The first is allocated to assist individuals and sole-proprietors, micro, and small enterprises in developing new or improving existing products, processes, or services with elements of innovation for commercialization (Enterprise Innovation Fund). The second grant type is used to assist community groups in converting knowledge and ideas into products, processes, and services that improve the groups' quality of life (Community Innovation Fund). This kind of support is for innovation at the bottom of the pyramid. In addition, the Cradle Fund provides support at the pre-R&D phase.

On another front, the Ministry of International Trade and Industry also provides several matching grant schemes to SMEs for business start-ups, product and

process improvement, productivity and quality improvement, and the enhancement of *targeted* capabilities in design, labelling, product packaging, and market development and brand promotion (including their activities abroad). Apart from these general grant schemes, some schemes promote *strategic* technologies, industry clusters, and products. The Multimedia Super Corridor R&D Grant Scheme was set up to assist local companies and joint ventures in developing multimedia technologies and applications that would contribute to the overall development of Multimedia Super Corridor. The Biotechnology R&D Grant Scheme was established in 2001 under the National Biotechnology Directorate to support biotechnology R&D activities and the commercialization of research findings in specific areas of national importance to the biotechnology industry. Matching grants for developing halal products are also available. All these schemes can be seen as attempts to promote technological and innovative capabilities in the private sector and to forge relations between industry, universities, and public research organizations. Most funds are devoted to applied and problem-solving research projects under the TechnoFund. Although the administration of these schemes has not been formally assessed, it is problematic because project approval takes a long time.

In administering grant programs, Thailand is an exception. Grant schemes are limited in variety and size. The country relies more on indirect support to private firms through such means as tax incentives. Giving *public money* to private firms gives rise to allegations of cronyism and corruption. Neoclassical economists, who dominate national economic policy agencies (and academia), do not like the idea of selective government interventions in particular industrial sectors, activities, clusters, and firms as these appear to be working against the market mechanism. The prospect of loss of public money, if grant projects were to fail, is not acceptable to government authorities, especially those in charge of the budget. As a result, grants are given mostly to public research institutes and universities. R&D grants such as those awarded by the National Science and Technology Development Agency to private firms have recently been significantly reduced, even practically stopped. The most successful grant giver has been the Industrial Technology Assistant Program, started in 1992, which provides up to 50 percent financial support for hiring consultants (freelancers or university professors) to help solve SMEs' technological problems. More than 1,000 firms have received financial support from this program. Results, however, have been mixed. The factors correlated with success appear to be active involvement of executives of firms, clarity of project goals, finding the 'right' and devoted experts, and, importantly, the

National Science and Technology Development Agency’s industrial technology assistants, who act as intermediaries between firms and experts.

Thailand’s National Innovation Agency (NIA) also offers a grant scheme to support up to 75 percent of expenses for prototyping and pilot-scale activities of firms. It gives smaller grants than agencies in other countries (about US\$160,000 for three years) and gave grants to only 56 projects during 2003–2007. Recently, the NIA has focused more on the strategic sectors of bio businesses, design and solutions, and energy and environment. In 2011, the NIA adopted the idea of an ‘innovation coupon’: it gives grants to private firms equal to 90 percent of the project cost to hire listed innovation service providers either for feasibility studies or pilot project implementation. The Federation of Thai Industries, the largest association of manufacturers, is a partner in the scheme to help the NIA select the right projects. The results are yet to be seen.

### 4.3. Loans

**Table 1.5: Loan Schemes in Thailand, Malaysia, Singapore, and Taiwan: A Comparison**

|   | <b>Thailand</b>                                  | <b>Malaysia</b>                    | <b>Singapore</b>                                      | <b>Taiwan</b>  |
|---|--|------------------------------------|---|--|
| <b>Year of Operation</b>                                    | 1990s  | 1970s                              | 1970s   | 1980s  |
| <b>Level of Significance Compared with Other Mechanisms</b> | Significant                                      | Significant                        | Not significant                                       | Significant  |
| <b>Coverage</b>   | Increasingly focused on research and development | The whole spectrum                 | Evolving according to needs and capabilities of firms | Wide-ranging and evolving according to needs and capabilities of firms |
| <b>Focus (sector, cluster,</b>                              | General  | General and specific technologies, | General and specific activities                       | General and specific sectors,  |

|  |  |  |                      |                                       |
|--|--|--|----------------------|---------------------------------------|
| <b>technology, type of firm)</b>             |  | sectors, and activities  |                      | technologies, activities              |
| <b>Facilities Supporting Access to Loans</b> | SME credit guarantee   | SME credit guarantee<br>SME credit rating agency   | SME credit guarantee | SME credit guarantee                  |
| <b>Effectiveness</b>                         | Number of applications in some programs has dropped significantly. | Applications increased significantly, especially from SMEs, but 90% of recipient firms are bumiputra (Malay ethnic). | Not significant      | Number of approved projects increased |

Loans are a more prominent innovation financing mechanism in countries such as Thailand. The National Science and Technology Development Agency's Company Directed Technology Development Program has been providing soft loans of up to 75 percent of total project cost and less than US\$1 million per project for R&D, product and process upgrading and building, or refurbishing laboratories. The number of approved projects each year has been small (fewer than 20), however, and recently even smaller as selection criteria have become more stringent: activities of firms must be R&D related and employ technologies new to the industry. For example, acquisition of machinery not related to R&D is unlikely to receive a loan. Most Thailand SMEs, therefore, are not qualified since they do not have R&D capabilities, and the problems they face are more production related. Although the NIA provides zero-interest loans of up to TBH5 million for innovation projects for the first three years, setting up the scheme is problematic as loans have to be channelled through commercial banks whose usual selection requirements are not favourable to financing risky innovative projects. As a result, only 38 projects were approved during 2003–2007.

In Singapore, loan programs are a much less prominent government financing mechanism than grants and equity. As early as 1976, when Singapore was still trying to exploit technologies generated elsewhere. SPRING's Local Enterprise Finance Scheme was initiated to provide low-interest loans to automate and upgrade factories and equipment, and to purchase factories. More recently, a

program was set up to help SMEs acquire working capital and machinery. A loan insurance scheme to help SMEs secure loans by providing insurance against default has become available, as well.

Taiwan has several loan schemes, including for purchasing automating machinery for manufacturing and agriculture enterprises, revitalizing traditional industries, purchasing energy-saving equipment, promoting industrial R&D, and purchasing computer hardware and software. Firms in service industries such as the Internet and technical service providers are also eligible. The loan per company is about US\$2 million to US\$3 million. As of 30 April 2010, more than 50,000 cases had been approved. Both loans and approved projects are on a much greater scale than in Thailand. The SME Credit Guarantee Fund is also available to help SMEs secure loans from these government programs.

Malaysia has used loans as financial instruments since the 1970s and implemented many schemes for different purposes. Specific low-interest loan schemes for high-tech enterprises and entrepreneurs have been used to stimulate technology development and innovation. Loans for particular groups such as university graduates are also available. Schemes for strategic sectors (e.g., automotive, food), technology (e.g., adoption of automation technology, ICT), and activities (e.g., international branding) are also in place, as well as more generic schemes. Credit Bureau Malaysia (formerly known as SME Credit Bureau) was incorporated in 2008 to give independent credit ratings to SMEs, which usually lack 'reputational collateral' for access to finance. The ratings are based on information from the Central Bank and financial institutions. The bureau is popular and trusted, with a membership of 27,000 SMEs and 38 financial institutions.

#### 4.4. Equity Financing

**Table 1.6: Equity Financing Schemes in Thailand, Malaysia, Singapore, and Taiwan: A Comparison**

|  | <b>Thailand</b>   | <b>Malaysia</b>                                    | <b>Singapore</b>   | <b>Taiwan</b>                               |
|--|---|--|--|---|
| <b>Year of Equity Financing Operation</b>                        | <b>1987</b>   | <b>1984</b>  | <b>1983</b>  | <b>1983</b>                                 |
| <b>Stages of VC Investment</b>                                   | Expansion and mezzanine   | Growth and expansion                               | Early, growth, and expansion   | Established, mass production, and expansion |
| <b>Specialized Funds to Support Innovative Firms through VCs</b> | SME VC Fund, MAI Matching Fund  | MTDC, MAVCAP                                       | TRIDENT Platform   | Development Fund and SME Development Fund   |
| <b>Sector of VC Investment</b>                                   | Food and drink, machinery and equipment, household furnishings, wood products, costumes | Manufacturing, ICT, biotechnology                  | ICT, Biotechnology, medicine, genetic engineering, software and technology-enabled business services | Optoelectronics, biotechnology, electronics |
| <b>Formal VC Association</b>                                     | Thai VCA established in 1994  | MVCA established in 1995                           | SVCA established in 1992   | Taiwan VCA established in 1999              |
| <b>Business Angel Financing</b>                                  | Infancy stage of business angel clubs and networks                                      | Infancy stage of business angel clubs and networks | Has formal business angel network (SPRING)   | Has formal business angel network (TWBAN)   |

|   |   |  |  |   |
|---|---|--|--|---|
| <b>Government's Direct Equity Financing</b> | None  | None   | Several schemes both by government alone and co-investment with private VC   | Large government funds (Development Fund and SME Development Fund)                                      |
| <b>Effectiveness</b>                        | Low uptake in government VCs; private VCs are risk averse; fund of funds initiative failed because of insufficient demand. Lack of mentoring services | Helped sustain private sector R&D but not yet effective in creating new start-ups. | Surveys show moderate success of new programs but the overall number of high-tech start-ups increased significantly, especially in the past few years. | Helped increase high-tech start-ups but not significantly as only 28% of VC funds went to early stages. |

In Thailand, the venture capital (VC) industry was first set out by foreign VC funds in 1987. VC investments generally target growth and expansion in the venture life cycle. The major organizations providing VC funds to support entrepreneurial development are the Office of Small and Medium Enterprises Promotion, NIA, One Asset Management, Stang Holding, and (MAI) Matching Fund. The MAI Matching Fund, a fund of funds with assets of THB2,000 million, was set up to increase the number of newly listed companies (including VC-backed companies) on the MAI. However, the fund recently ceased operation. The Revenue Department also provides taxation schemes to support VC fund investments. These schemes assist VC funds and investors through corporate and personal tax exemption policies. VC funding in Thailand is THB720 million on average for about 10 years. Most VC funds invest 30 percent in the early stage and 70 percent in the growth and mature stages. The leading business angel in Thailand is the Thai-Chinese Business Association. The size of business angel investing is about THB90 million. The average deal



ranges from THB4 million to THB50 million, with no exit strategies (Scheela and Jittrapanun, 2010).

In Malaysia, the VC industry began in the early 1980s with the establishment of Malaysian Ventures, whose primary aim was to invest in high-tech industries. The Malaysia Venture Capital Association was established in 1995 to develop a VC industry to further support technological innovations. The government is a major source of VC financing: most VC funds are channelled to Bumiputra-owned and government-linked firms. The major organizations providing VC investment funds to support entrepreneurial activities are Malaysia Technology Development Corporation, established in 1992 to provide financial support for multinational subsidiaries, and Malaysia Venture Capital Management Fund, established in 2001 to support entrepreneurial activities of local high-tech firms. Only seven percent of total VC funds in 2004, however, were invested in the start-up phase.

In Singapore, the government launches innovation financing schemes and programs to support innovative firms, as most VC funds are set up with government co-funding (such as Temasek Holdings and Technopreneurship Investment Fund Ventures, which act as funds of funds), and are managed directly by government agencies or government-linked companies (e.g., Economic Development Board Investments, Vertex Management, Economic Development Board Life Science Investment). These government VC funds invest in various sectors but mainly in government strategic areas of ICT and, subsequently, biomedical sciences, clean technology, and digital media. To fill the gap of early-stage funding left by private VCs, a government VC firm called TDF Management was formed in early 1995. It provides seed funding to entrepreneurs and high-tech start-ups. Apart from funding through VC, the government provides 'direct' financing, especially to new entrepreneurs and start-ups. For example, the Economic Development Board launched the Startup Enterprise Development Scheme, a co-financing scheme to take dollar-for-dollar equity stakes in promising start-ups backed by third-party private sector investors in order to fill a market gap in seed-stage funding (Mani, 2004). In 2008, the Early-Stage Venture Funding Scheme was founded to match SGD1 investments in early-stage technology start-ups with another SGD1 invested by selected VC firms. Singapore has also tried to groom its angel investment network, as business angel investors often provide seed funding to support the early stages of new venture development. Business Angel Funds, managed by SPRING, co-funds pre-approved business angel groups. Business Angel Funds

and Startup Enterprise Development Scheme complement each other. A start-up that has already received funding from Startup Enterprise Development Scheme can still apply under Business Angels Funds for a follow-up investment up to SGD1.5 million. This is an example of how well financing innovation schemes in Singapore are coordinated, which is not usually the case in other countries. Schemes for promoting start-ups by particular groups of people, such as entrepreneurs under 26 years old, have also been made available. The effectiveness of these recent schemes is moderate. Results of surveys from around 300 start-ups revealed that about one-fifth of start-ups have participated in such government assistance schemes, with those in the very early stages of growth (i.e., pre-revenue firms) having a higher propensity to participate than those in later-growth stages. Still, since 2006, close to 5,000 new high-tech enterprises have been registered each year, and the growth rate of firm formation of high-tech enterprises has increased in recent years, partly because of government financing policy measures.

In Taiwan, VC financing began as early as 1983 with the implementation of the Regulation Governing Venture Capital Business Management to stimulate the development of the VC industry. VC investing is mostly done in the established, mass production, and expansion stages, where the government plays a major role. The Taiwan Private Equity and Venture Capital Association was established in 1999 to encourage economic development. The Ministry of Economic Affairs supervises the management of VC funds. The success of VC development in Taiwan can be tied to the social and economic bridge linking its high-tech industry with the US Silicon Valley. In addition to VC enterprises, Taiwan, like Singapore, also has government *direct* financing schemes. As early as 1973, the Development Fund was set up to directly invest in innovative companies and invest indirectly through VC firms. Strategic sectors such as biotechnology, aerospace, and optoelectronics were the priorities. To stimulate the technological development of SMEs, the SME Development Fund was established in 1994 to invest directly and indirectly through government and private VCs. These two large funds are the government's main investment arms to promote innovative firms as well as stimulate the growth of the VC industry.

The governments of Thailand, Malaysia, Singapore, and Taiwan play a major role in promoting innovation through VC financing schemes that support companies with high growth potential (public sector interventions). Although the VC mechanism aims to provide risk capital to firms operating in high-risk environments, VC financing programs are not effective in the early stage of

entrepreneurial development. VC investment in these four countries tends to come in at the less risky, later stages (expansion), reflecting the funding institutions' aversion to high risk. The angel investment network is not fully developed except in Singapore, where it is a significant source of capital during the early stages of high-tech development. To overcome difficulties in early-stage financing, the governments in Singapore and Taiwan have initiated 'direct' equity financing programs.

Only a small number of VC funds operate in Thailand despite the government policy to promote the VC industry. In 2010, only two VC funds applied for a VC license. The total funds raised by Thailand's VC industry represent 0.15 percent of GDP. In Malaysia, although the government is the main investor in developing technology-based start-ups, the VC market's growth is slow because of the lack of human capital and the risk-averse behaviour of local VC firms. In Singapore, local high-tech companies have effectively used a variety of assistance schemes such as Growing Enterprises through Technology Upgrade, Economic Development Board, SPRING Singapore, International Enterprise Singapore, and Political Risk Insurance Scheme. The effectiveness of more recent programs targeting start-ups, however, seems to be moderate. In Taiwan, new VC investments have grown as a result of the government tax credit policies to support VC companies (new investments grew from 1,155 cases to 1,850 cases between 1998 and 2000). The number of investments, however, decreased after the tax credits stopped.

## **5. Conclusion and Policy Recommendations**

This section elucidates key findings from the case studies of the four countries and proposes policy recommendations for other countries in the Association of Southeast Asian Nations (ASEAN) and East Asia.

### **5.1. Summary of Key Findings and Lessons Learnt**

The factors underlying successful government innovation financing programs can be summarized as follows:

- (i) In the more successful countries—Singapore and Taiwan—innovation financing policy instruments co-evolved with levels of technological and innovative capabilities of firms. Different levels of technological and innovative capabilities of firms need different policy instruments. The

ability to initiate and implement new policy instruments to fit the changing needs of firms at different levels of capability over time is critical. Policymakers must understand the current needs and technological barriers facing firms in the countries under study. Strategies based on copying other countries—which no doubt have different needs and challenges—will not be effective.

- (ii) Singapore, Taiwan, and, to a lesser extent, Malaysia have a higher level of flexibility and policy coordination and learning. They offer a much greater variety of policy instruments and cater them ‘selectively’ to the particular needs of industrial sectors, clusters, technologies, types of firms, or even individual firm demands (the so-called ‘firm-specific’ or ‘pre-packaged’ incentives). Incentives should be formulated and executed so that they complement each other and contribute to overall industrial technology development strategy, as illustrated in the cases of VC and business angel financing in Singapore, and the mandate of the Ministry of Economic Affairs in giving opinions on the prospects of newly listed firms in Taiwan’s stock markets. When incentives do not work for some types of firms, they can be adjusted to fit those firms’ demands. For example, Singapore’s R&D tax incentives for start-ups can be converted to grants, since those firms do not make a profit in their initial years.
- (iii) Developing firms’ technological and innovative capabilities takes a long time. The amount, duration, and continuity of government-supported schemes are crucial as they reflect policy priorities and the commitment of governments. The case studies show that the governments of Singapore and Taiwan are highly committed to fostering firms’ capabilities.
- (iii) Policymakers must have a deep understanding of innovations and innovation systems and how they evolve. While Thailand narrowly focused on R&D-led innovation, Singapore and Taiwan broadened their incentives to other activities important in innovation, both inside and outside a single firm, such as services, business models, and solutions, among others. The difference between incentives to promote Thailand and Singapore as R&D hubs is a good example of how their government officials understand the global R&D processes of TNCs.

- (v) Innovation financing policies require corresponding policy initiatives that produce qualified human resources, attract foreign talent, and help organizations work together. Examples of this synergy are public research institutes in Taiwan and entrepreneurial universities in Singapore.
- (vi) Institutional factors shape choices and policy implementation. They include laws and regulations, unity and capability of government bureaucracy, trust, entrepreneurship, attitudes towards corruption, and the government's role in supporting private firms. Institutional shortcomings can, to some extent, be corrected. Successful countries can use financing innovation incentives as well as other government mechanisms (such as using public research institutes as intermediaries in innovation systems as in Taiwan) and initiatives (such as Malaysia's credit-rating agencies for SMEs and Singapore's promotion of business angel networks) to overcome or mitigate these shortcomings.

## **5.2. Policy Recommendations**

We propose two sets of policy recommendations: one for ASEAN governments and the other for regional collaboration among ASEAN Plus Six countries.

### *5.2.1. Policy Recommendations for Individual Countries of ASEAN*

#### *Objective of Policies*

The overall objective of policies encouraging innovation and technology transfer in ASEAN members is to change behaviours of firms, especially SMEs—'passive' learners must become 'active' ones—and to mitigate 'systemic failure' in innovation systems that hinder firms from changing their behaviour. An important systemic failure is knowledge transfer from TNCs and large domestic firms to local SMEs.

#### *Changing Policymakers' Mindsets and Upgrading Government Agencies' Capacity*

Government officials should understand innovation, innovation systems, and the long-term benefits of government intervention in helping firms increase their innovative capabilities. Policies targeting specific industrial sectors, technologies, activities, and types of firms are desirable if the government has

the capacity to formulate, implement, monitor, and evaluate policies effectively. Such capacity should be built and enhanced.

### *Choice of Policy Instruments*

Policymakers must understand the pros and cons of each instrument and select them in accordance with their targets and bureaucratic capacity (which, of course, can be enhanced). Grants and equity participation are more effective for selective targets and in line with the nature of innovative projects (high risk, high uncertainty and not well defined). However, policymakers must be able to objectively select the right targets, take risks, and periodically monitor project performance.

### *Sectoral Priorities*

Priorities should not be limited to high-tech companies. Attention should also be paid to companies in traditional, resource-based, mid-tech, and service sectors (such as garments, wood furniture, food, agriculture related and agribusiness, automotive parts, tourism, and knowledge-intensive business services), where the countries under study have a competitive edge, and to companies that innovate products, processes, services, and business models, among others. Innovation should be defined broadly, including even new-to-the-firm incremental or problem-solving advances.

### *Typology of Policies for Different Firms' Level of Capabilities and Countries' Level of Development*

The case studies vividly illustrate that effective policies need to co-evolve with the level of firms' capabilities and countries' development level. We propose a policy matrix outlining different policy targets and instruments for different levels of firms' capabilities and countries' development. In reality, firms may not linearly progress from one stage to another.

**Table 1.7: Recommended Typology of Policy Measures**

| <b>Level of Countries' Development</b> | <b>Targeted Firms' Capabilities</b>  | <b>Policy Measures</b>  |
|--|--|---|
| Low Income                             | <ul style="list-style-type: none"> <li>- Production capability</li> <li>- Quality control</li> <li>- Absorptive capacity to select, acquire, evaluate, and upgrade external knowledge</li> <li>- Basic engineering capabilities</li> </ul>   | <ul style="list-style-type: none"> <li>- Grants targeting activities and capabilities</li> <li>- Grants for hiring TNCs' engineers and technicians to work for two years in local SMEs on targeted activities</li> <li>- Innovation coupons for SMEs for services offered by universities, PRIs, and private consultancies</li> </ul>   |
| Lower-Middle Income                    | <ul style="list-style-type: none"> <li>- Absorptive capacity</li> <li>- Automation</li> <li>- Advanced engineering and testing capabilities</li> <li>- Design for manufacturing</li> <li>- Detailed product design</li> </ul>  | <ul style="list-style-type: none"> <li>- Grants targeting activities and capabilities</li> <li>- Grants for hiring TNC engineers and technicians to work for two years in local SMEs on targeted activities</li> <li>- Innovation coupons to SMEs for services offered by universities, PRIs, and private consultancies</li> <li>- Tax incentives for targeted activities (with convertibility to cash subsidy for loss-making SMEs)</li> </ul>   |
| Higher-Middle Income                   | <ul style="list-style-type: none"> <li>- Basic product design (changing main features)</li> <li>- Applied and translational research</li> <li>- Branding</li> <li>- International distribution network building</li> <li>- IP management</li> <li>- Innovative start-ups (not only in high-tech sector)</li> </ul> | <ul style="list-style-type: none"> <li>- Grants targeting activities and capabilities</li> <li>- Grants for hiring TNC engineers and technicians to work for two years in local SMEs on targeted activities</li> <li>- Innovation coupons to SMEs for services offered by universities, PRIs, and private consultancies</li> <li>- Tax incentives for targeted activities (with convertibility to cash subsidy for loss-making SMEs)</li> <li>- Direct equity participation and government-owned and -sponsored VCs targeting early-stage activities</li> <li>- Government procurement of innovative products and services</li> </ul> |
| High Income                            | <ul style="list-style-type: none"> <li>- Fundamental research</li> <li>- Global branding and marketing</li> <li>- Creativity</li> <li>- Innovative start-ups (not only in high-tech sector)</li> </ul>   | <ul style="list-style-type: none"> <li>- R&amp;D tax incentives</li> <li>- Direct equity participation and government-owned and -sponsored VCs targeting early-stage activities</li> <li>- Government procurement of innovative products and services</li> </ul>  |

### *5.2.2. Policy Recommendations for Regional Collaboration among ASEAN Plus Six*

- Set up an intelligence centre for ASEAN Plus Six to collect information on incentive schemes provided by agencies in member countries and to disseminate information to firms across the region.
- Conduct region-wide training and brainstorming workshops among policymakers in charge of agencies providing incentives for innovation and technology transfer.
- Study the coordination of existing tax and financial incentives and the possibility of joint incentives across these countries.
- Include in the study the possibility of non-discriminatory or open incentives, i.e., firms registered in one member country would be eligible for incentives provided by government agencies in other countries.
- Encourage region-wide funding mechanisms to support innovation and technology upgrading for SMEs. The initiative may be carried out in two phases:
  - In the short and medium term, develop or expand networks among existing funding institutions to seamlessly support regional collaborative research and technology-upgrading projects that will lead to innovation and/or technological upgrading of SMEs. The following institutions have funding mechanisms for regional collaborative research: ASEAN Foundation, TEMASEK Foundation, Human Frontier Science Program, JST (SATREPS, e-ASIA JRP), Asian Development Bank, as well as private foundations including the Bill & Melinda Gates Foundation and the Mizutani Foundation for Glycoscience. These institutions should be convinced to fund not only research but also SME upgrading.
  - In the long term, establish a regional foundation to support regional collaborative research and technology upgrading of SMEs. The foundation can raise funds from the public and private sectors within and outside the region. It should be independent—not too close to a specific country or interest. It is essential to develop flexible funding programs that can be shaped as they grow. The new funding programs should support various levels of SME technological upgrading,



including production, engineering, testing, design, development, and applied and basic research.

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# CHAPTER 2

## Best Policy Practices for Internationalization of SMEs' Trade and Investment for ASEAN and East Asia

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*There are significant potential benefits to internationalization of small and medium-sized enterprises (SMEs), particularly for the Association of Southeast Asian Nations (ASEAN) and East Asian markets. Together, these will continue to constitute the fastest-growing region in the global economy. However, SMEs are constrained by considerable and diverse barriers to internationalization. There is a wide range of 'best policy practices' to support firms in overcoming such barriers that can guide the region's decision makers. At the same time, effective policies and programmes for SME internationalization in ASEAN and East Asia will have to be responsive to the emerging global and regional economic environment that will differ significantly from the growth years of most of the first decade of the 21<sup>st</sup> century. Against this backdrop, a simple framework is presented for SME internationalization and for considering examples of existing best policy practices. Areas requiring further attention in a changing regional environment are also identified. These include trade and supply chain finance; integration of SMEs as suppliers into global and regional value chains; thinking beyond exporting to innovating for Asian emerging markets, but in ways that differ from traditional concepts of innovation; and regional initiatives to support SME internationalization.*

**Key words:** SME internationalization; best policy practices for SME internationalization; SMEs and frugal innovation; SMEs and global value chains

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## 1. Introduction and Overview<sup>1</sup>

This paper aims to identify best policy practices for the internationalization of small and medium-sized enterprises' (SMEs') trade and investment for the Association of Southeast Asian Nations (ASEAN) and East Asia, with particular focus on ASEAN firms. Section 2 discusses the potential benefits of internationalization ('why'), and different ways SMEs can internationalize ('how'). If, as the discussion suggests, there are significant benefits to SME internationalization, then why is it that more of the region's SMEs with the potential do not follow such strategies? SMEs are constrained by significant barriers to internationalization, as discussed in Section 4. The best policy practices for SME internationalization have to support firms in overcoming such barriers. They must also do so in the context of an evolving global and regional economy. That is, the best policy practices for SME internationalization for ASEAN and East Asia will also have to be responsive to the changing characteristics of these economies over the medium and longer term. Understanding the likely characteristics of ASEAN and East Asia as markets is particularly important at this time, since the global and regional economy are likely to look very different in the coming decades from the growth years of most of the first decade of the 21<sup>st</sup> century: in many ways the past may not be the best guide to the future. This is the focus of Section 4. Against this backdrop, Section 5 presents a simple framework for internationalization and for discussion of what are considered related best policy practices. The concluding Section 6 suggests issues and approaches to complement traditional best practice for SME internationalization for a changing ASEAN and East Asian environment.

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<sup>1</sup> This paper builds on an earlier paper by Abonyi and Supapol (2012), also prepared for the Economic Research Institute for ASEAN and East Asia (ERIA).

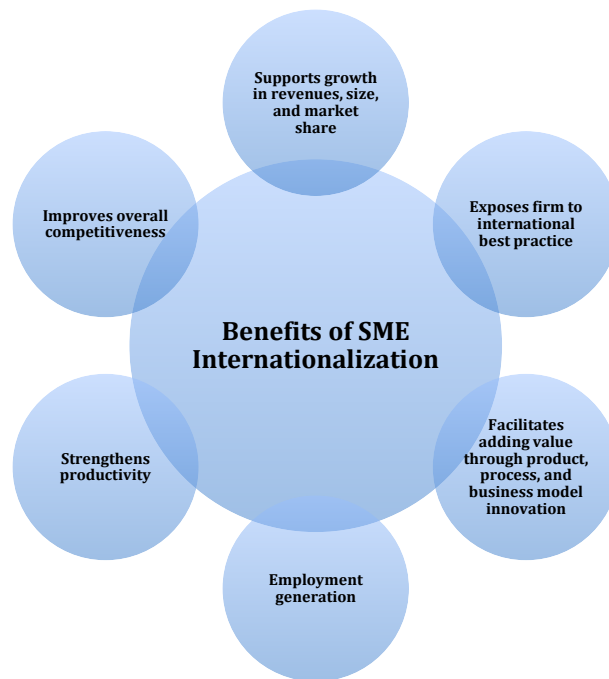
## **2. Importance of SME Internationalization**

### **2.1. Why Internationalize**

In general, internationalization enhances competitiveness, reinforces growth, and supports the long-term performance and sustainability of firms. For example, in European Union (EU) studies, internationally active SMEs report employment growth of 7 percent versus 1 percent for SMEs only active in domestic markets; and 26 percent of internationally active SMEs have introduced new products or services for their sector and in their country, compared with the average for all SMEs which is three times lower (Roland Berger, 2013). In short, exporting SMEs generally outperform their non-exporting peers.

The ability of SMEs to export is an indication of their competitiveness in global markets. It exposes firms to international best practice, and strengthens the possibility of adding value through innovation by improving products, production processes, and business models; can improve productivity through the adoption of new technology and know-how; and supports increasing sales, employment, and growth in revenues and market share, including through offsetting or ‘smoothing’ business cycles in different markets (see Figure 2.1) (OECD, 2010; 2013).

**Figure 2.1: Benefits of SME Internationalization**



It is important to note that most SMEs, particularly smaller ones, focus only on local or national markets, and do not consider ‘going international’, seeing it as unnecessary, costly, and risky. Many of these enterprises are low-tech, low value-adding firms—such as greengrocers, dry cleaners, and the local noodle stands— whose owners’ main goals are to secure a stable income: to provide a route out of poverty for people with limited education, capital, or experience. Internationalization is fundamentally an entrepreneurial activity that requires recognition of potential opportunities and a corresponding readiness to undertake new types of activities that require new skills and capabilities, and entail taking on more risk, e.g., entering new markets, and developing and marketing new products.

## **2.2 How to Internationalize**

*Internationalization involves increasing direct and/or indirect linkages to international markets and cross-border operations.* Policy attention is often focused on exporting in terms of selling goods and services directly to final customers in international markets. However, internationalization is much wider and can involve a variety of modes, including direct and indirect exports; licensing; franchising; joint ventures; strategic alliances; mergers and

acquisitions; establishment of wholly owned subsidiaries in foreign markets; and international subcontracting by exporting, or by supplying international firms/buyers in the domestic market, but subject to a variety of international standards and requirements. SMEs are likely to serve international markets from a domestic production base through direct or indirect exporting, including as suppliers in global value chains (GVCs) to domestic or international firms, a particularly important route to markets in key industries.

*The type of policy attention and support SMEs may need depends on their method of internationalizing.* For example, there are likely to be significant differences in the needs of an operating SME seeking to export existing products for the first time to final customers in China; an SME looking for international buyers in particular value chains, e.g., electronics or garments; and an entrepreneurial SME that has an idea for innovating a new type of product for new customers in China.

*On the 'supply side', the internationalization of SMEs increasingly takes place through participation as suppliers at various stages in GVCs.* In general, reaching international markets is challenging for SMEs. The fragmentation of production creates new opportunities for the supply of products (e.g., parts, components) and services, through linkages with larger firms and foreign buyers and affiliates, in a wide range of industries and value chains, e.g., electronics, automotive, garments, agro-industry. Participation in GVCs can bring both growth opportunities and increasing stability of demand to SMEs. It provides easier access to key inputs, including information on markets, technology, and best practice; and allows firms to increase productivity, expand markets, and strengthen the capacity for innovation. However, to be a supplier in GVCs places significant demands on SMEs' skills, managerial and financial resources, and capacity to meet a multiplicity of international standards. More fundamentally, to be such suppliers, SMEs must be internationally competitive. Therefore, a basic challenge of internationalization through participation in GVCs is to loosen constraints on SME competitiveness (e.g., productivity) (ECLAC/AL – INVEST, 2013).

*On the 'demand side', ASEAN and East Asia present opportunities for SMEs to innovate in new ways for new types of markets and consumers.* The international economic environment is likely to be characterized in the



coming years by continuing slow growth, particularly in developed economies, with relatively faster growth in the ASEAN and East Asia region (Section 4). But these markets differ significantly from developed economies, the traditional final markets for the region's (manufacturing) enterprises, e.g., substantially lower disposable incomes, fragmented markets, and large rural populations even as urbanization accelerates. This presents opportunities for entrepreneurial and innovative SMEs to develop new products and services, production processes, and business models, particularly suited to these markets.

SMEs can internationalize, or access markets, in ASEAN and East Asia in three general ways: (1) direct sales of final goods and services, exporting to 'retail' customers (business-to-consumer, or B-C); (2) as suppliers in regional production networks within the framework of GVCs—that is, selling parts, components, and tradable services to other enterprises who use them as inputs in their production and business systems (business-to-business, or B-B); and (3) innovating for new types of markets and retail customers whose characteristics differ significantly for developed economies, the traditional markets for the region's firms (business-to-[new types of] consumer). The three ways of internationalizing involve the following:

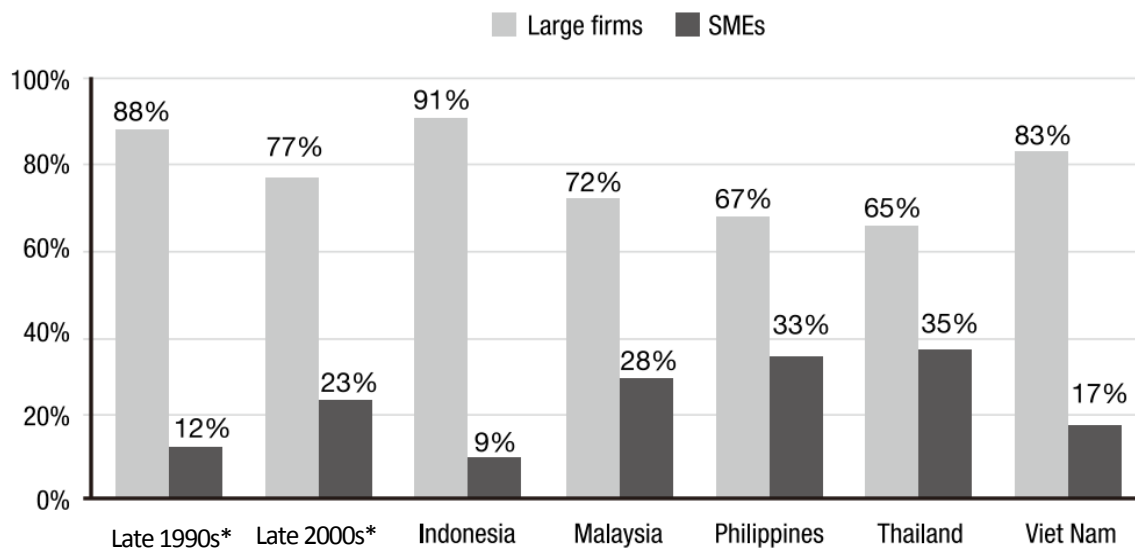
- *SMEs exporting existing products/services to ASEAN and developing East Asia final consumers (B-C)* involves selling (existing) goods and services to final consumers in a growing market. As discussed in Section 4, the region presents an expanding customer base characterized by increasing disposable incomes and rising consumer expenditures, supported by a demographic shift in a number of countries to a younger, better educated, and increasingly urbanized population. Therefore, the region presents expanding opportunities for SMEs to export existing products and services to growing regional markets, including new types of consumers.
- *SMEs as suppliers in production networks (B-B)* provide intermediate goods (e.g., parts, components, and services) to other firms within ASEAN and East Asia that are, in turn, supplying regional and global markets. The buyers of the output of the region's SMEs are generally multinational enterprises that may or may not originate in ASEAN and East Asia, and are international in their operations within the framework of GVCs, e.g., electronics and information technology (IT), garments, automotive. As

discussed in Section 4, this has been a key driver of growth in the region through expanding parts and components trade for final (developed) markets outside Asia, with China in a key intermediating role. Even with their slowing growth, developed economies are expected to continue to play a key role as final markets for the region's exports. At the same time, regional production networks are likely to increasingly focus on growing numbers of consumers within ASEAN and East Asia. Serving these markets as suppliers in regional production networks within the framework of GVCs will therefore require SMEs to have the capabilities to become suppliers within such networks, including starting at lower tiers, and to upgrade over time.

- *SMEs innovating for Asian emerging markets:* As noted, the expanding regional market and consumers will have different characteristics from richer consumers in developed economies, the traditional final markets for the region's exporting firms (discussed in detail in Section 4). Asian emerging market customers (i.e., in ASEAN and developing East Asia) for final products will therefore require first an understanding of the needs and constraints of these consumers; then the capacity to competitively provide goods and services that respond to such needs and constraints. This, in turn, requires increased capabilities of the region's firms (SMEs) for product market innovation that accommodates both rising aspirations and existing constraints, often referred to as 'frugal innovation'. Furthermore, the development of innovative products for regional markets may provide SMEs opportunities to also serve global market niches, or 'reverse innovation'.

*The benefits of internationalization seem clear, and various options are available for SMEs, yet many with potential do not internationalize.* Over 90 percent of companies in Asia are SMEs. They contribute more than two-thirds of employment; over 60 percent of gross domestic product (GDP); and are a significant source of product and process innovations. Yet they generate only around 30 percent of Asia's exports, though with wide variations among the countries of the region. For example, the average SME export share of five ASEAN economies (Indonesia, Malaysia, Philippines, Thailand, and Viet Nam) is about 23 percent (Figure 2.2), compared with that of East Asian economies which range from 40 percent to 60 percent, with China's SMEs contributing nearly 70 percent of the nation's exports (UNESCAP, 2012a; APEC, 2014; Sato, 2013).

**Figure 2.2: Share of Selected ASEAN SMEs and Large Firms in Exports**



*Note:* \* = 5 ASEAN Economies (Indonesia, Malaysia, Philippines, Thailand and Vietnam)  
*Source:* Sato (2013).

Most SMEs, including many with the potential and/or existing capability to internationalize, do not do so. This is because internationalization is constrained by many barriers that usually involve significant costs, uncertainty, and risks to all firms, particularly SMEs. This is the focus of the next section (3).

### **3. Barriers to Internationalization of SMEs for ASEAN and East Asia**

The region's SMEs face various barriers or constraints with respect to internationalization for an evolving ASEAN and East Asia, either as producers for the region's consumers or as suppliers in regional production networks in the context of GVCs. These barriers define, in part, the basis for policy initiatives intended to support SME internationalization. It should be noted that the barriers to internationalization are in the context of a still wider set of constraints that SMEs face in general, which limit their operations and

performance, as discussed elsewhere (e.g., Abonyi and Supapol, 2012). A number of studies have identified barriers to internationalization, including for SMEs (e.g., Leonidou, 2004; OECD - APEC, 2007; APEC, 2013). Many of these, following Leonidou (2004), classified existing barriers as internal and external, the approach also adopted here.

- *Internal barriers* are generally seen as the most important, and relate to firm-level capability and resource constraints, such as business culture and skills not well suited to internationalization; financial constraints at various stages of internationalization; difficulties with product standards and certification; constraints on accessing and using information and/or knowledge related to export markets and customers (final consumers or businesses as buyers in GVCs); lack of familiarity with cross-border marketing and distribution channels; limited capacity related to undertaking and/or managing logistics requirements; limited capability for effective promotion of the firm and its products; and constraints on product and process innovation, including related technology acquisition and adaptation.

- *External barriers* relate to the business environment both nationally and in international markets, such as (domestic) government rules, regulations and procedures related to exporting, importing, and procurement; rules, procedures, and requirements of firms providing key cross-border supporting services, e.g., banks, shippers, insurance companies; limited effective (national) initiatives supporting SME internationalization (e.g., export promotion financing); gaps and inefficiencies in national and cross-border infrastructure and logistics systems; inconsistencies among different national customs rules, regulations, and procedures; continuing protection, including non-tariff barriers in key regional markets; and general (national) constraints on SME operations and performance.

The wide range of barriers SMEs face with respect to internationalization is summarized in Table 2.1. A number of factors are particularly important, including (1) managerial mindset and organizational culture, (2) information, (3) financing, (4) role of clusters, (5) differences in level of development among the region's economies, and (6) stages of internationalization and their implications.

*Managerial mindset and organizational culture:* A key constraint on SME internationalization is managerial mindset and organizational culture. Most SMEs, particularly smaller firms, focus only on local or domestic markets. They do not consider ‘going international’, seeing it as unnecessary, too costly, too complicated, and too risky. Furthermore, delays and uncertainty in implementing the ASEAN Economic Community (AEC) 2015 has limited its credibility with the region’s business community (Abonyi and Supapol, 2012). Therefore, a critical first step to facilitate SME focus on ASEAN and (emerging) East Asia involves communicating effectively the potential benefits of internationalization; what it takes to internationalize; why it may be a good idea even for smaller firms; key challenges and constraints; support for an assessment of a firm’s potential for internationalization; and communicating credibly actual and expected progress in implementation and expected tangible benefits of AEC 2015. In this context, easily accessible case studies and sharing the experience of successful SMEs, ideally in the same value chain, can be particularly useful.

*Information:* The primary constraint cited by SMEs on accessing and competing on regional (e.g., ASEAN, East Asia) markets is lack of information, even in the current era of extensive and easily accessible information. This includes information on market characteristics and potential customers; on existing regional and bilateral trade and investment agreements and their business implications (see, for example, Abonyi and Supapol, 2012); and on regional rules, regulations, and procedures. Furthermore, many SMEs have limited ability to use existing data and information, and therefore how information is presented is a key factor in whether and how it will be used. In the context of the discussion (in Section 4) of the evolving characteristics of ASEAN and (emerging) East Asia, deeper knowledge of potential customers in the region is particularly important, as the challenge is to think beyond exporting, to innovating for the needs and circumstances of the particular customers in these changing markets.

*Financing:* Access to financing is a general constraint for small firms, and one of the two most-often-cited constraints (along with information) with respect to responding to international opportunities. It is particularly important given the bank-dominated financial systems in the region that constrain available financing for new ventures by small firms. The region’s banks generally base lending decisions on collateral and credit history, and

less on a business plan and projected future cash flows. This puts SMEs at a particular disadvantage, especially with respect to perceived higher risks of internationalization, given their limited collateral and credit track record. Access to finance is even more difficult for entrepreneurial SMEs and early stage ventures (e.g., new product development), where uncertainty and risks are higher still. A critical constraint specifically for internationalization is access to trade and supply chain finance, further constrained in the aftermath of the Global Financial Crisis of 2008 (discussed in Section 6). This includes difficulties for SMEs to get payment obligations from banks' guarantees, such as letters of credit, critical to trade. Therefore, policy initiatives can play an important role in providing access to financing for internationalization either directly (e.g., export finance programmes) or by reducing the perceived risks of commercial lenders and investors. In this context, familiarizing SME managers with different forms of export-related financing is particularly important (e.g., letters of credit, factoring, leasing).

**Table 2.1: Barriers to SME Internationalization**

| <b>Barrier</b>  |                           | <b>Factors</b>   |
|-----------------|---------------------------|--|
| <b>Internal</b> | <i>Managerial mindset</i> | <ul style="list-style-type: none"> <li>• Limited appreciation of potential benefits of and tangible opportunities for internationalization</li> </ul>        |
|                 | <i>Information</i>        | <ul style="list-style-type: none"> <li>• Limited information on markets, consumers/buyers</li> </ul>   |
|                 |                           | <ul style="list-style-type: none"> <li>• Problems with using available data/information</li> </ul>   |
|                 |                           | <ul style="list-style-type: none"> <li>• Limited understanding of market conditions, and customers/context (e.g., economic, socio-cultural)</li> </ul>       |
|                 |                           | <ul style="list-style-type: none"> <li>• Difficulties seeing foreign business opportunities</li> </ul>   |
|                 |                           | <ul style="list-style-type: none"> <li>• Constraints on contacting foreign customers</li> </ul>  |
|                 |                           | <ul style="list-style-type: none"> <li>• Limited knowledge of related government initiatives</li> </ul>  |
|                 |                           | <ul style="list-style-type: none"> <li>• Limited awareness of supporting regional initiatives (e.g., ASEAN, regional free trade areas/agreements)</li> </ul> |
|                 |                           | <ul style="list-style-type: none"> <li>• Shortage of working capital</li> </ul>  |

|  |                          |  |   |
|--|--------------------------|--|---|
|  | <b><i>Finance</i></b>    |  | • Limited access to trade and supply chain finance                            |
|  |                          |  | • Constraints on creditworthiness   |
|  |                          |  | • Shortage of start-up/early-stage financing                                  |
|  | <b><i>Functional</i></b> |  | • Lack of managerial skills for internationalization                          |
|  |                          |  | • Limited managerial time   |
|  |                          |  | • Insufficient trained personnel for foreign business                         |
|  |                          |  | • Constraints on production capacity/scale                                    |
|  |                          |  | • Difficulty meeting product/process standards                                |
|  |                          |  | • Constraints on product and process innovation for new markets and customers |
|  | <b><i>Logistics</i></b>  |  | • Lack of logistical (e.g., shipping) capabilities                            |
|  |                          |  | • Lack of warehousing facilities in foreign markets                           |
|  |                          |  | • Excessive transportation/insurance costs                                    |
|  | <b><i>Marketing</i></b>  | <b><i>Price</i></b>  |   |
| • Constraints on providing credit to customers |                          |  |   |
| <b><i>Distribution</i></b>                     |                          | • Limited knowledge of foreign distribution channels   |   |
|  |                          | • Constraints on using foreign distribution and marketing channels                                   |   |
|  |                          | • Problems identifying and arranging reliable foreign market representation                          |   |
| <b><i>Promotion</i></b>                        |                          | • Constraints on effective promotional activities (e.g., to retail customers, to GVC-related buyers) |   |
| <b><i>Procedural</i></b>                       |                          | • Lack familiarity with foreign procedures, documentation  |   |
|  |                          | • Difficulties communicating with foreign customers  |   |

|                 |                                    |  |
|-----------------|------------------------------------|--|
| <b>External</b> |                                    | <ul style="list-style-type: none"> <li>• Constraints on collecting payment (e.g., time)</li> </ul>   |
|                 | <b><i>Government</i></b>           | <ul style="list-style-type: none"> <li>• Limited effectiveness of support for key aspects of internationalization (e.g., financing, information)</li> </ul>  |
|                 |                                    | <ul style="list-style-type: none"> <li>• Limited effectiveness of communications on existing support for internationalization</li> </ul>   |
|                 |                                    | <ul style="list-style-type: none"> <li>• Differences in perspective on firm-level needs</li> </ul>   |
|                 | <b><i>Market</i></b>               | <ul style="list-style-type: none"> <li>• Strong competition in foreign markets</li> </ul>  |
|                 |                                    | <ul style="list-style-type: none"> <li>• Fragmented foreign (national) markets</li> </ul>  |
|                 |                                    | <ul style="list-style-type: none"> <li>• Unfamiliar foreign business practices and language</li> </ul>   |
|                 |                                    | <ul style="list-style-type: none"> <li>• Barriers, e.g., tariff, and especially non-tariff barriers</li> </ul>   |
|                 | <b><i>Business Environment</i></b> | <ul style="list-style-type: none"> <li>• General domestic SME-related business environment, e.g., business registration, customs and tax refund, technology acquisition, support for innovation</li> </ul> |
|                 |                                    | <ul style="list-style-type: none"> <li>• State of domestic infrastructure and logistics to support international business</li> </ul>   |
|                 |                                    | <ul style="list-style-type: none"> <li>• Limited effective support for enterprise clustering</li> </ul>  |
|                 |                                    | <ul style="list-style-type: none"> <li>• Foreign currency exchange risk</li> </ul>   |
|                 |                                    | <ul style="list-style-type: none"> <li>• Difficulties with procedures of firms supporting cross-border business, e.g., banks, insurance companies, shippers</li> </ul>                                     |

Source: Adapted and expanded from Leonidou 2004.

*Role of enterprise clusters and networks*<sup>2</sup>: Research has shown that not only is the smallness of SMEs an important constraint but also their limited interaction and linkages with other enterprises, which are more easily available to large firms. This is a particularly important constraint on internationalization, which requires more complex capabilities and resources

<sup>2</sup> Based on Abonyi and Supapol (2012).

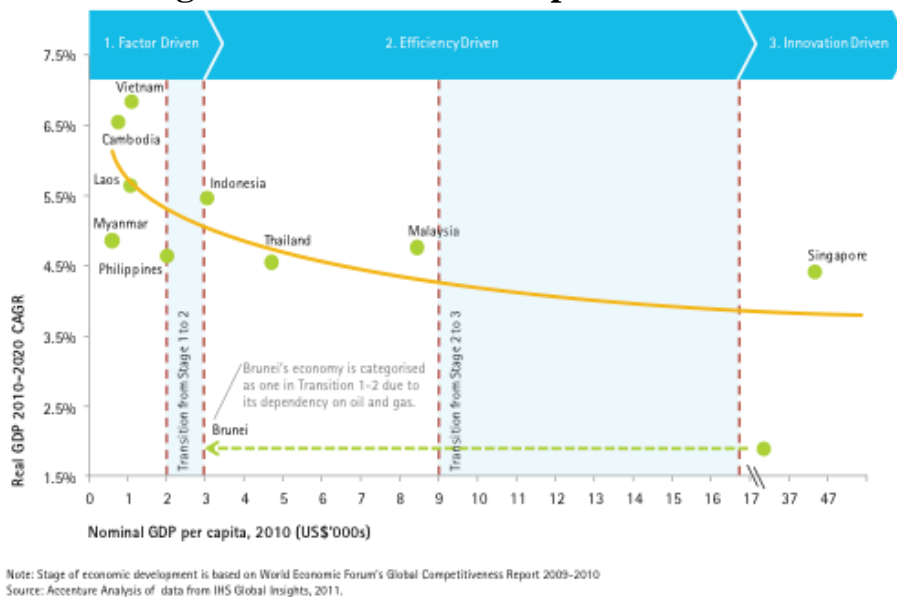


than purely domestic operations. It is also important in attracting international firms seeking competitive suppliers, who prefer to deal with groups or clusters rather than with individual small enterprises (e.g., BCG, 2009). Focused cooperation among SMEs, and between SMEs and larger domestic and foreign firms, and other supporting institutions (e.g., government agencies, research and education institutions), can help loosen constraints on accessing and competing in regional markets, and entering into and upgrading within regional production networks and GVCs (Abonyi, 2007). Enterprise clusters and networks can increase *productivity and efficiency* by providing easier access to specialized inputs and services, for example, support for meeting international standards and certification; enable rapid diffusion of learning and best practices, for example, on entry strategies to foreign markets; and encourage differentiation and specialization among firms to improve productivity. Clusters can help in the *commercialization of ideas* and *in new business formation*, by making more apparent opportunities for new companies and for new lines of business, including for international markets; and by providing a concentrated environment with available skills, suppliers, and buyers—including for larger enterprises and international buyers. Clusters and networks can also *stimulate and enable product market innovation* by helping to more easily identify unmet needs, encouraging the presence of a wide range of suppliers and institutions to assist in knowledge creation; and by providing linkages and partnerships among innovative enterprises.

*Different levels of development among ASEAN economies:* The different levels of development among the region's economies are reflected in measures such as size of GDP and per capita incomes. Porter's framework (2003) is useful in terms of the differing challenges of the region's SMEs (Figure 2.3). The CLMV countries—Cambodia, Lao PDR, Myanmar, and to an increasingly lesser extent Viet Nam—are at the factor-driven stage, highly dependent on natural resources, largely unskilled labour, and capital investment in basics such as infrastructure, to stimulate growth and strengthen competitiveness. *A key challenge here is to strengthen the capacity of SMEs to enter into GVCs and access international markets, as an important means to diversify the structure of their economies.* Malaysia and Thailand are at the efficiency-driven stage of development, requiring better production processes to improve overall productivity and competitiveness, and to increasingly focus on transition to innovation-driven development, as they face a 'middle-income trap'. *For these economies a key challenge is to expand the range of competitive SMEs for international markets, and strengthen not only their export capabilities but also their capacity to innovate products and services appropriate to the particular markets and consumers of ASEAN and East Asia (e.g., China).* The Philippines and

Indonesia have characteristics of an efficiency-driven economy, but also retain key features of the factor-driven stage. Singapore is ASEAN's most advanced economy with the highest GDP per capita, and is considered to be an innovation-driven economy, relying on sophisticated production processes and innovation to produce new products and services to sustain higher wages and associated standards of living. Different levels of development present differing policy challenges for supporting SMEs in general, and internationalization in particular. *For less developed economies, there is more a need for overall strengthening of SMEs. For internationalization, differences are mostly of policy emphasis, rather than basic differences in needs* (see Section 6).

**Figure 2.3: Stages of Economic Development of ASEAN Economies**



Source: Accenture (2011).

*Stages of internationalization:* Internationalization involves different stages that involve diverse, if overlapping, challenges and constraints, requiring different policy emphasis. The *preparation stage* involves pre-internationalization issues. For example, at this stage a key requirement is to make a credible case for internationalization; and key information needs relate to the benefits, challenges, and 'best practice' of internationalization; and identification and initial understanding of potential markets and customers. Basic capacity constraints on internationalization (e.g., managerial mindset, skills), and understanding of market entry requirements and options, are especially important. Constraints on working capital financing are of particular concern. The *active engagement stage* involves the start of the

implementation of internationalization activities. Key constraints at this stage relate to initiating contacts and ‘getting to know’ foreign markets and foreign buyers, e.g., through overseas trade offices, trade fairs, and missions; constraints on understanding and using cross-border logistics; knowing the rules and regulations for operating in foreign markets; and trade and supply chain finance. The *growth and expansion stage* involves strengthening and enlarging product market position. Key constraints at this stage relate to improving competitiveness, expanding production capacity, expanding knowledge of relevant range of standards and certifications, and diversifying distribution and marketing channels. There is a relationship between levels of development and stages of internationalization in that a country at a lower level of development such as Myanmar, compared with a more developed economy such as Thailand, will have firms mostly at the initial preparation stage, facing related constraints. More fundamentally, less developed economies face greater challenges and will have to put relatively more emphasis on basic and overall strengthening of SMEs, as a precursor to the pre-preparation stage for internationalization, an issue not addressed in this paper.

## **4. ASEAN and East Asia: Challenges and Opportunities for SMEs**

### **4.1. Introduction**

In order to understand the challenges and opportunities, and related policy requirements of internationalization for the ASEAN and East Asia region, it is important to look at key characteristics of the region as a market, and its likely evolution. It is particularly important to do so with some care, since *the performance of the global and regional economy is likely to differ substantially in the coming years from the rapid growth that characterized the region during most of the first decade of the 21<sup>st</sup> century. Therefore, what is considered best policy practice for SME internationalization at this time will need to be adjusted for policy measures to respond effectively to likely future conditions.*

In general, SMEs are faced with opportunities and challenges on two tracks: (1) Slow growth developed economies, in particular the United States (US) and the EU, the region’s traditional final export markets, will continue to play a key role over the medium term and beyond, especially for GVCs and related

production networks involving the intra-regional trade of parts and components aimed at producing final goods for these external markets. (2) At the same time, an expanding regional market will present significant growth opportunities for the region's firms. However, the ASEAN and East Asia markets and consumers will continue to have very different characteristics than those in developed economies, requiring innovations in products, production processes, and business models.

#### 4.2. A Slow Growth Global Economic Environment

In general, the international economic environment is likely to be characterized in the coming years by continuing uncertainty, volatility, and change. Growth prospects of the world economy are clouded by continuing structural imbalances and fragilities, reflected in the Global Financial Crisis of 2008, that to a large extent are still unresolved. The markets of the US, the EU, and Japan have been driving the ASEAN and East Asia region's growth, development, and structural transformation, including in the last decade. These developed economies, especially the EU, are continuing to face slow and uncertain growth, which together with a slowing China is impacting significantly on the region's economies through more uncertain global trade and financial conditions. This is the 'new normal' of global growth (Table 2.2).

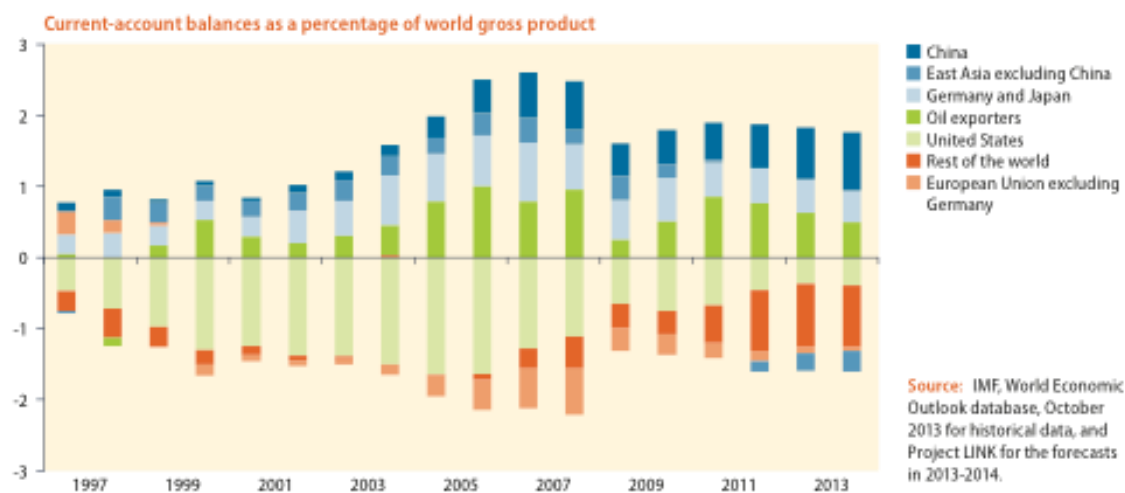
**Table 2.2: The 'New Normal' of Global Growth (2006, 2007, 2009–2016)**

|                                   | 2006 | 2007 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015<br>(P) | 2016(P) |
|-----------------------------------|------|------|------|------|------|------|------|------|-------------|---------|
| <b>World Output</b>               | 5.1  | 5.0  | -0.7 | 5.1  | 3.9  | 3.4  | 3.3  | 3.3  | 3.5         | 3.7     |
| <b>United States</b>              | 2.8  | 2.0  | -3.1 | 2.4  | 1.8  | 2.3  | 2.2  | 2.4  | 3.6         | 3.3     |
| <b>Euro Area</b>                  | 2.8  | 2.6  | -4.4 | 2.0  | 1.5  | -0.7 | -0.5 | 0.8  | 1.2         | 1.4     |
| <b>Japan</b>                      | 2.4  | 2.1  | -5.5 | 4.5  | -0.6 | 1.5  | 1.6  | 0.1  | 0.6         | 0.8     |
| <b>Developing Asia</b>            | 9.9  | 10.0 | 7.0  | 9.5  | 7.8  | 6.7  | 6.6  | 6.5  | 6.4         | 6.2     |
| <b>People's Republic of China</b> | 11.6 | 11.9 | 9.2  | 10.4 | 9.3  | 7.7  | 7.8  | 7.4  | 6.8         | 6.3     |
| <b>India</b>                      | 9.8  | 9.3  | 5.9  | 10.1 | 6.3  | 4.7  | 5.0  | 5.8  | 6.3         | 6.5     |
| <b>ASEAN 5</b>                    | 5.7  | 6.3  | 1.7  | 7.0  | 4.5  | 6.2  | 5.2  | 4.5  | 5.2         | 5.3     |

Source: International Monetary Fund, *World Economic Outlook*, January 2015; October 2008.

Global economic growth between 1990 and 2010 was driven primarily by developed country spending on consumption, particularly in the US and the EU. This led to the emergence of large trade and current account imbalances. For example, the US generated large current account deficits, financed to a large extent by foreign central banks that accumulated large holdings of dollar reserves. Developing countries, primarily in East and Southeast Asia, particularly China, were on the other side of these transactions, accumulating large current account surpluses and reserves. That is, debt-driven expansion of developed economies (especially the US and the EU) created markets for the exports of ASEAN and East Asia, acting as a locomotive for major surplus countries (e.g., generally East Asia, including China and Japan, and Southeast Asia, as well as Germany). In the process, credit-fuelled consumption led to increasing financial fragility in the US and the EU. The result was the most serious post-war economic crisis in 2008 that is as yet unresolved.

**Figure 2.4: Global Imbalances 1997–2014**



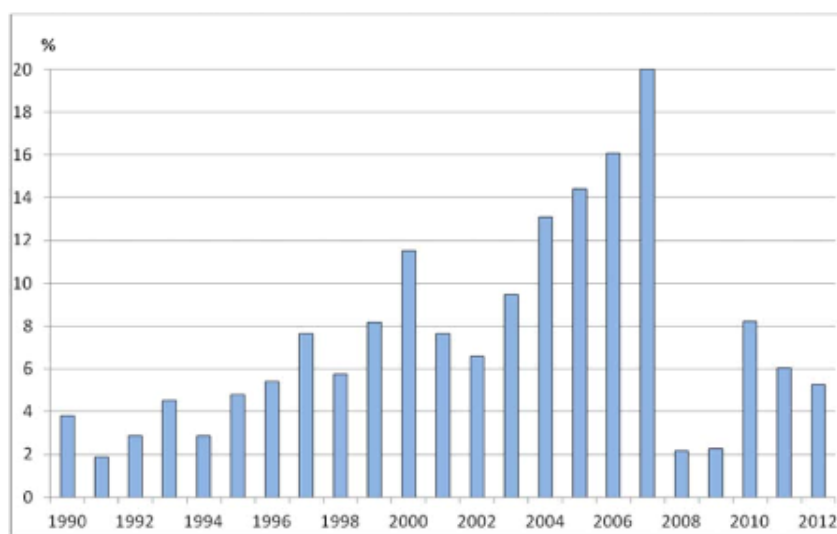
Source: United Nations (2014), *World Economic Situation and Prospects 2014*, Figure I.9, p.17.

The Global Financial Crisis (2008) resulted in significant adjustments in global trade imbalances, but it did not resolve their fundamental longer-term challenge (Figure 2.4). For example, developing Asia's surplus fell from \$400 billion to \$130 billion, and that of China from \$350 billion to \$210 billion or from 10 percent of GDP in 2007 to 2.6 percent of GDP in 2012; while the US current account deficit had fallen by \$200 billion by the end of 2012 (IMF, 2015). However, sizeable global imbalances remain, creating further uncertainty for long-term global growth; with China and Germany as leading surplus countries, and the US and (parts of) the EU as the large deficit countries.

Significant global production and expenditure shifts are necessary to balance global trade flows. This will require major readjustment by both the leading global surplus economies, particularly China and Germany, and by the deficit countries of the US and the EU. The adjustment of global imbalances will have to involve fiscal consolidation in developed economies, and constrained private spending. *Therefore, developed economies will not provide the kind of expanding markets to the region's firms, as in the recent past.*

A similar picture emerges for capital flows. The Global Financial Crisis of 2008 reversed the private capital flows that have contributed significantly to the region's growth, leading to a contraction of credit in these economies. This was the result of increased global risk aversion, and preference for safer assets; and to a reduction in international bank lending (Figure 2.5). The weakening of private capital flows from the EU to emerging markets was particularly significant, falling from a high of \$1,600 billion per year during 2004–2007, higher than US and Japan together, to around \$300 billion during 2008–2011.

**Figure 2.5: Aggregate Global Capital Flows (% of global GDP)**



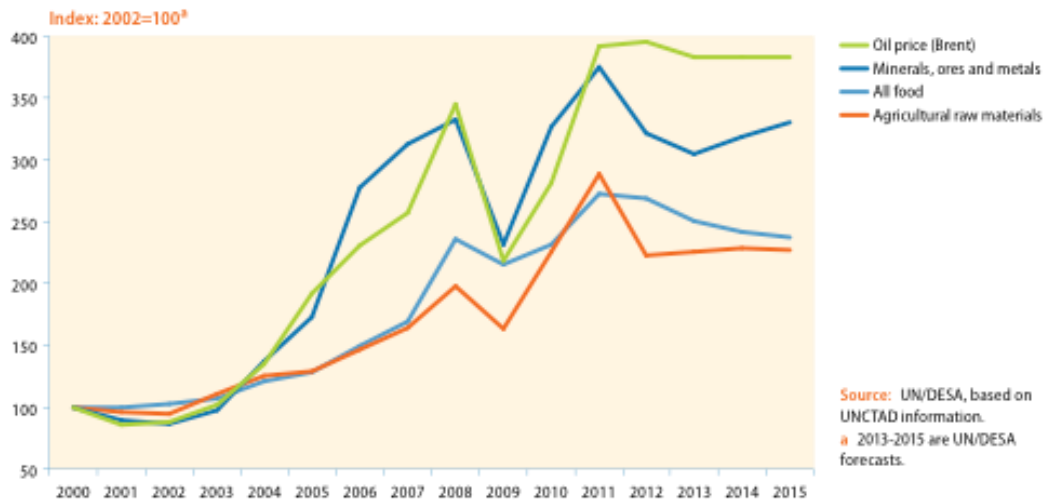
Note: Calculated as the average of gross capital inflows and outflows in USD divided by world GDP in USD.  
Source: IMF World Economic Outlook database.

Source: Ollivaud, P and C. Schwellnus (2013), Figure 2, p. 9.

The Global Crisis also created downward pressure and instability in commodity prices, especially resources (Figure 2.6). This is, in part, the result of slowing global growth and related reduction in production and trade, particularly in China, the primary market for resources. Therefore, rapid and sustained price increases in recent years may not be a good guide to the

future: the medium- and longer-term outlook for commodity prices is highly uncertain.

**Figure 2.6: Price Indices of Commodities (2000–2015)**



Source: UN, *World Economic Situation and Prospects*, 2014, Figure I.7, p. 15.

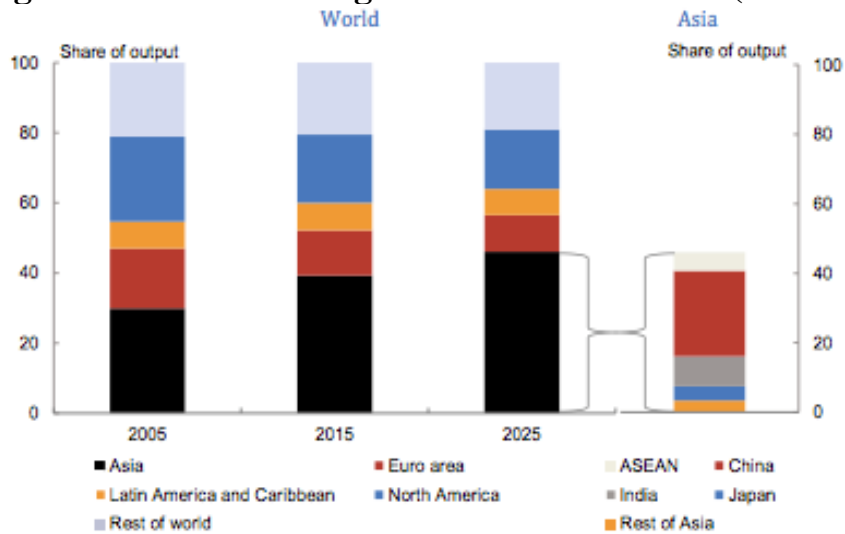
Following the global crisis growth continues to be weak; and there is expectation of prolonged sluggish growth of the global economy. Low growth of developed economies (US, EU, Japan) had been anticipated following the crisis. However, the slowing growth of (Asian) emerging economies was generally not expected.

### 4.3. Key Asian Emerging Economies: ASEAN and China

#### 4.3.1 Increasing importance of the region's economies

In recent decades, Asian economies, particularly ASEAN and East Asia, have achieved remarkable growth and development, much of it facilitated by China for global (developed) markets. This reflected the region's close integration into the global economy through regional production networks, within the framework of GVCs, supported by continuous improvement in business environments and cross-border linkages. The region's increasing overall economic importance is reflected in its growing relative aggregate share of global GDP (Figure 2.7).

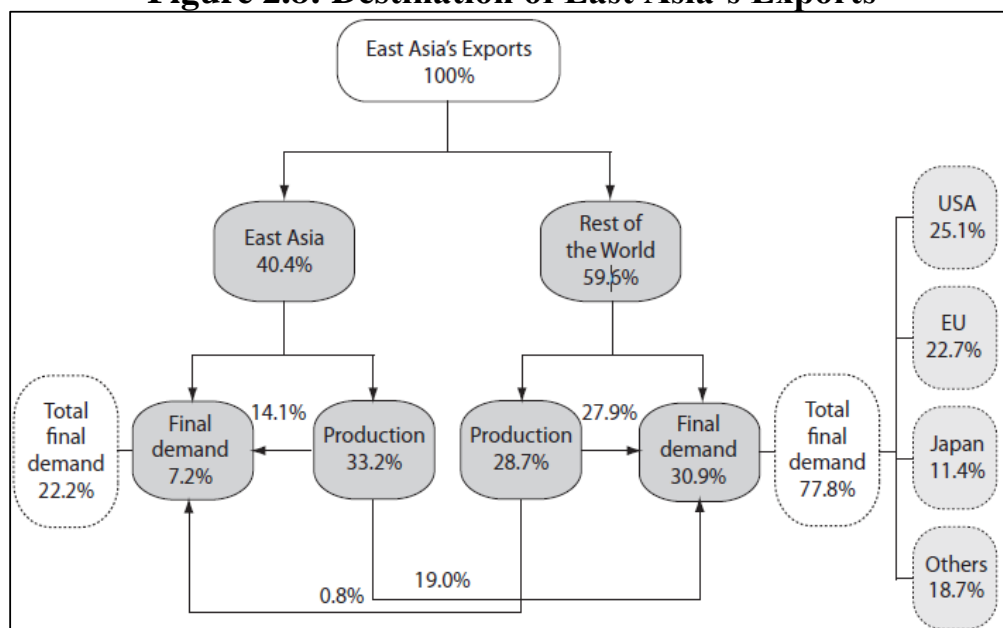
**Figure 2.7: Asia's Rising Share of Global GDP (in PPP)**



Source: Australian Government (2012).

As noted, the growth of ASEAN and East Asia has been driven largely by consumer markets outside the region, primarily in the US and the EU. In this context, the expansion of intra-regional trade, the foundation of Asian growth and development since the Asian Financial Crisis (1997/1998), reflects the role of the region's firms in production networks within the framework of GVCs in key industries such as electronics. The overwhelming share of ASEAN's and East Asia's final manufactured exports are to consumers in developed economies outside the region, particularly the US and the EU (Figure 2.8). For example, ASEAN's intra-regional trade is only around 25 percent of its total trade.

**Figure 2.8: Destination of East Asia's Exports**



Source: Kim, S., J.-W Lee and C.-Y. Park (2010), Figure 3, p. 9.



For the region's growth rates to remain above world rates, production and output structure will have to increasingly focus on expanding regional and domestic demand. However, the characteristics of Asian emerging markets (e.g., ASEAN, China, and India) and their consumers are likely to remain in the foreseeable future very different from developed economies, requiring adjustments and innovation in products, production processes, and business models.

#### *4.3.2 Asian emerging economies as a market (ASEAN, China)*

In general, the 'new normal' in global growth will likely result in changing markets and consumers for the region's firms. Given slow growth in developed economies and relatively faster growth in emerging economies, particularly in ASEAN and East Asia, these consumers will play a greater role in driving growth in the region. With growing population and increased incomes, 40 percent of global consumer spending is to come from Asia by 2030, particularly ASEAN and China, and also India (Euromonitor various reports and updates). For example, in ASEAN, growing disposable incomes, leading to rising purchasing power, coupled with demographic shifts in some economies to a younger, better educated population—projected to reach 650 million by 2020, half of it under the age of 30—and increased urbanization, will create a consumer market with distinct needs and strong buying power, providing new opportunities for the regions' firms.

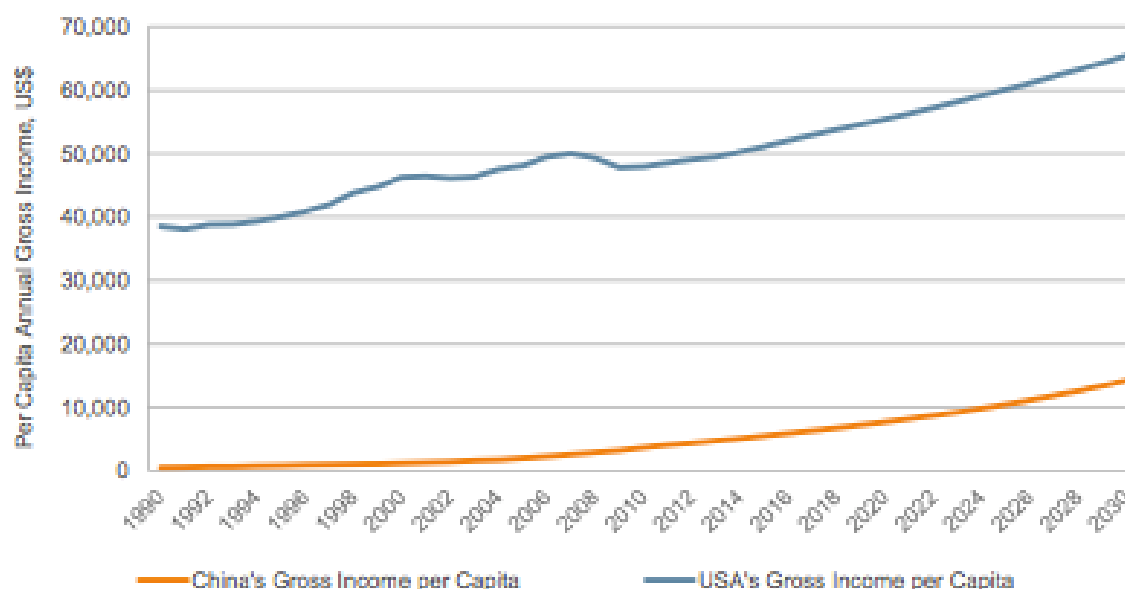
At the same time, although Asian emerging markets' (i.e., ASEAN, China, and India) aggregate weight in the global economy is increasing appreciably, spending levels in ASEAN (Table 2.3) and China (Figure 2.9) will remain considerably lower than those of developed economies such as the US, the region's traditional markets. A growing middle class notwithstanding, given present income levels and income distributions, lower income households will continue to be the backbone of the region's consumer economy. In addition, income inequality, fragmented consumer markets, and a high proportion of rural population, even with accelerating urbanization, will limit discretionary spending. Therefore, the Asian emerging economies represent a significant and growing market, but fundamentally different in nature from developed economies.

**Table 2.3: Nominal ASEAN 6 GDP per Capita Compared with US GDP per Capita (in %)**

| Nominal GDP per capita (exchange rate adjusted) | 2000  | 2010  | 2030  |
|---|-------|-------|-------|
| Indonesia                                       | 2.20  | 6.15  | 13.63 |
| Malaysia  | 11.55 | 17.78 | 25.35 |
| Philippines                                     | 2.84  | 4.22  | 5.50  |
| Singapore                                       | 65.04 | 91.59 |       |
| Thailand  | 5.65  | 10.16 | 18.83 |
| Viet Nam  | 1.12  | 2.44  | 5.47  |

Source: Based on Lawrence, R.Z. (2013), Table 5, p.6.

**Figure 2.9: Comparing Per Capita Real Annual Gross Income in China and the US (1990–2030)**



Source: Euromonitor (2014).

Over the longer term, income growth in Asian emerging markets (e.g., ASEAN and China) will generate a growing number of middle class consumers (US\$5,000–15,000 annual incomes), with substantial aggregate buying power.<sup>3</sup> Therefore, the focus of manufacturing in Asian economies is likely to shift over the longer term from production, trade, and investment to serve consumers in advanced economies to supplying growing regional

<sup>3</sup> Middle class in emerging economies has different definitions. For example, the definition used by the World Bank is consumers with incomes of \$10–\$100 per day. However, business-oriented analysts such as Euromonitor and Accenture use the range of \$5,000–\$15,000 per annum. Given the focus of this paper on business development (SMEs), the latter definition is followed here, as the first potentially understates the important business factor that lower-income customers will continue to drive the growth of consumption expenditures in the region in years to come.

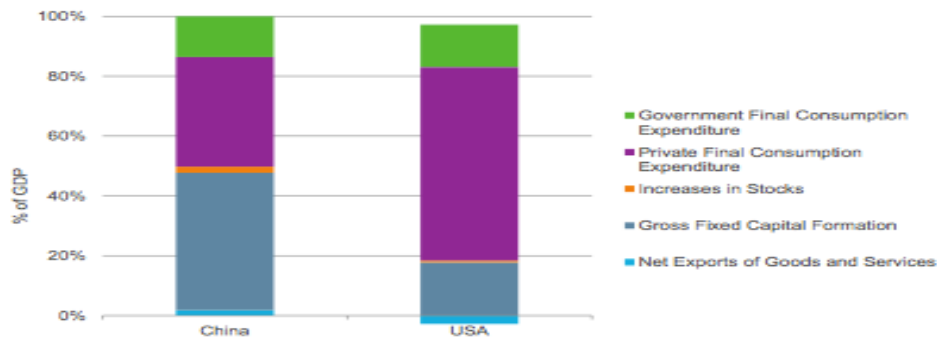
markets. But it will take considerable time before ASEAN and East Asian emerging economies, particularly China, are able to drive growth of the region, as have the US and the EU in recent decades.

#### **4.4. Changing Regional Role of China**

Given the central importance of China in the region's recent growth and production integration, its likely performance over the medium term is particularly important. China has become the largest single market for an increasing number of the region's economies, such as Thailand; and has accounted for much of the world's growth in demand for primary commodities. Therefore, the risks and uncertainty with respect to its economy are particularly important for the ASEAN and East Asia region.

China's growth has rested on massive investments in industrial capacity and related exports, made possible primarily through artificially low interest rates and low household income and consumption (as share of GDP). This investment-led growth was intensified in response to a sharp slowing of exports as a result of the Global Financial Crisis of 2008 and the slowing of developed markets (US, EU). Although this narrowed external imbalances by reducing the share of exports in GDP, it reinforced the gap between investment and private consumption. In particular, the share of private consumption in China's GDP had been constantly falling since the late 1990s, from over 55 percent to under 35 percent in 2013. A comparison with the US (Figure 2.10) illustrates the issue. This low level of consumption seems to be due less to very large household savings, and more to the low share of household income in GDP (e.g., Pettis, 2013). The gap between consumption and investment, and the resulting dependence on foreign markets, reflects an imbalance between wages and profits, between household and corporate incomes. This represents, in effect, a transfer from households to firms, particularly state-owned enterprises (SOEs) and state-linked firms, including to provincial and local governments. This is intermediated through a financial sector composed primarily of large government-linked banks, with artificially low interest rates that keep both returns on savings and the cost of funds for (e.g., SOE) investment artificially low, in the process leading to what is emerging as significant overcapacity in areas such as housing. Therefore, increasing consumption in China suggests challenging fundamental reforms in the basic structure of the economy and in key power relations (e.g., SOEs vs. households).

**Figure 2.10: Comparing China and the US**



Source: Euromonitor (2014).

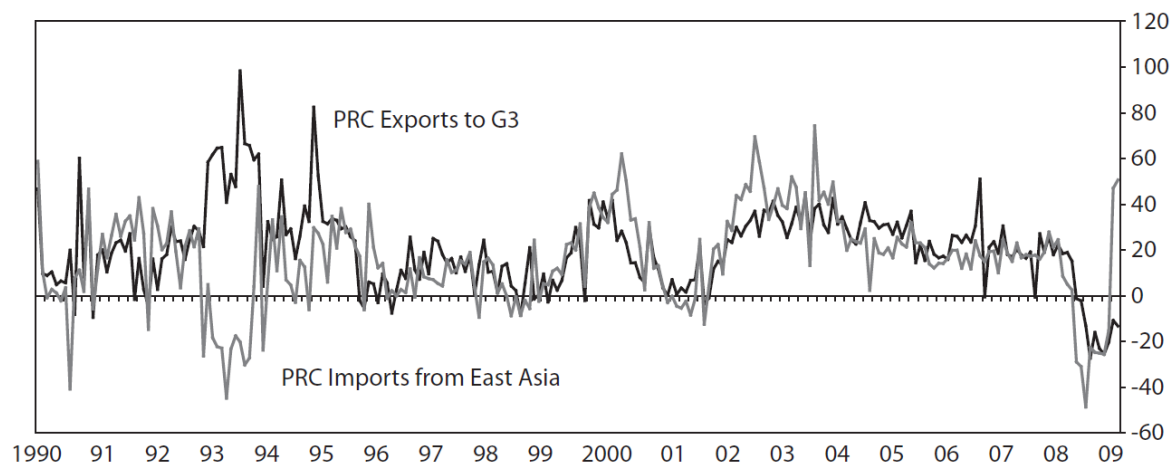
China is now shifting toward a rebalancing strategy involving raising the share of household income in GDP and the transition to sustainable domestic consumption-led growth. This means that over the medium and longer term, China is likely to settle into a lower growth path, far from the double-digit rates of recent years, as there is a gradual rebalancing of external and domestic sources of demand, and of domestic investment and consumption. The transition of China to a lower growth path in coming years implies that its demand for commodities would also grow much more slowly than in recent years.

Beyond the challenge of lagging domestic consumption, the import intensity of domestic demand not only in China but also in most ASEAN and East Asian economies is generally much lower than that of exports. This is the result of the close linkage of manufactured exports to production networks in GVCs, and the related dominance of parts and components in intra-regional trade; as well as of the large share of non-tradable services in private consumption. Similarly, the import intensity of investment is also greater than that of domestic consumption, particularly in economies with underdeveloped capital goods industries. Therefore, expanding domestic consumption of final goods within the region, and particularly their import content, presents challenges beyond increasing aggregate demand, given the region's existing economic and trade structure.

In this context, China is not likely to become a locomotive for the region's exports of manufactures in the foreseeable future, replacing the role of the US and the EU. Its emergence in recent years as the largest single export market for an increasing number of the region's economies reflects primarily China's key role as the destination for intra-regional trade in parts and components for

final assembly of products for external markets, mostly the US and the EU (Figure 2.11). Therefore, while the China's economy plays an important role in importing the region's manufacture of parts and components for exports, it is not a major market for its final products.

**Figure 2.11: Role of China Linking East Asia to Developed Markets**



*Note:* East Asia comprises the People's Republic of China; Hong Kong, China; Indonesia; Republic of Korea; Malaysia; Philippines; Singapore; and Thailand.

*Source:* Kim, S., J.-W Lee and C.-Y. Park (2010), Figure 4, p. 10.

For processing (manufactured) exports, the value share of Asian developing economies in China's exports is in the range of 75 percent to 80 percent, with around 50 percent of parts and components coming in recent years from East Asia.<sup>4</sup> Since, processing exports are a very large share of China's exports to the US (close to 80 percent), and parts and components account for a large share of total manufactured exports of the region's economies to China, a slowdown of China's exports to the US and the EU is likely to strongly impact the region's economies. This is particularly the case as the US and the EU account for a much higher proportion of exports of China (around 25 percent each) than for the exports of ASEAN countries such as Thailand and Malaysia. That is, since an important part of the exports of the region's economies to China are linked via production networks to China's exports of final goods to the US and the EU, the overall exposure of these economies to a sustained slowdown in the US and the EU is much greater than is suggested by their direct exports to these markets.

<sup>4</sup> This section draws on Akyuz (2013, 2012); see also Pettis (2013).

Furthermore, while China is a major importer from East Asian economies through regional production networks within the framework of GVCs, it is not a major market for their final products. A significant share of these Chinese imports is for exports to developed markets rather than used internally. For example, one estimate is that around 60 percent of imports are used, directly and indirectly, for exports, less than 15 percent for consumption, and some 20–25 percent for investment (Akyuz, 2010). *Thus, the Chinese economy plays an important role in importing for exports and for export-oriented investment, but much less for domestic consumption.*

A slowing of Chinese exports to the US and the EU and a more balanced growth between exports and domestic consumption are likely to have a strong impact on the region's economies by slowing imports of parts and components (as well as commodities). *For China to become a regional growth locomotive, it would need to raise not only its domestic consumption as a proportion of GDP but also its import content and, in particular, its imports of final (manufactured) goods from the region.*

#### **4.5. Conclusions and Implications**

Prospects for world economic conditions over the medium and longer term look uncertain, as the global economy adjusts to slower growth and a more volatile economic environment. The extraordinary performance of ASEAN and East Asia, particularly China, before the Global Financial Crisis of 2008, seems to have been driven to a large extent by exceptional global conditions that are unlikely to repeat in coming years. It is not clear to what extent the region's economies can sustain a reasonable pace of growth in the face of protracted instability and weakness in developed economies, particularly the EU, because of a slower trade and investment environment, including as a result of tighter global financial conditions.

In Southeast and East Asia, regional growth prospects have been linked significantly to China. However, its economy will have to go through a major adjustment, or rebalancing. In the process, China is unlikely to maintain its past strong growth; and the related impact on imports from the region (both manufactures and commodities) is at best unclear, but most likely will mean slowing demand. At the same time, the high-performing ASEAN economies, e.g., Thailand and Malaysia, seem to be caught in a middle-income trap, facing competition from below, without as yet being able to upgrade to join East Asian economies (e.g., Korea, Taiwan).<sup>5</sup>

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<sup>5</sup> See Abonyi (2013).

Over the longer term, ASEAN and China (along with India) will indeed provide growing and diversifying markets for the region's firms, including SMEs. Disposable incomes in the region will rise appreciably, though continuing to lag developed economies significantly for the foreseeable future. The focus of global competition will, therefore, shift over time from production to serve consumers in developed economy markets, to supplying consumers in the region's economies.

The *implications* of the above for internationalization of SMEs are as follows:

- (1) Developed economies, in particular, the US and the EU, are likely to remain key markets for ASEAN's and East Asia's manufactured exports in coming years; and although buying behavior is likely to be more cautious and changing, consumers in these markets will continue to have substantially higher disposable incomes than consumers in Asian emerging markets. In this context, the ASEAN and East Asia region is likely to retain its present characteristic of significant intra-regional manufactures trade in parts and components, for final products aimed primarily at (albeit slowing) developed markets, mostly outside the region. *This implies the need for SME internationalization to continue to focus on participating and/or upgrading capabilities within the framework of GVCs and related production networks. This will also remain relevant as the focus of production shifts increasingly to ASEAN and East Asia final markets, within the framework of regional value chains and related production networks.*
- (2) Asian emerging markets (i.e., ASEAN, China, and India) present significant growth opportunities over the longer term. *This will present growing opportunities for existing final products and services by the region's SMEs.* However, consumers in these markets will continue to have significantly lower incomes and face constraints different from those in developed economies (e.g., large rural populations, fragmented markets, significant income inequality). *This implies the need in the internationalization of region's SMEs to think beyond simply exporting, and to strengthen their capacity for innovation of new types of products, services, and business models to serve markets and consumers whose characteristics and buying patterns are likely to be substantially different from the region's traditional final markets and consumers in developed economies.*

## 5. Best Policy Practices for SME Internationalization for ASEAN and East Asia

### 5.1. Framework for Internationalization

As discussed in Section 2.2., SMEs can internationalize for ASEAN and East Asian markets on three tracks: (1) *exporting existing products/services (B-C)*; (2) *suppliers in GVCs and related production networks (B-B)*; and (3) *innovating for Asian emerging markets*. While these are quite distinct in terms of their implications for enterprise strategies and related capabilities, a given firm, in principle, can follow more than one strategy. For example, an enterprise can export existing products to ASEAN markets, while also innovating new products.

In general, SME internationalization on all three tracks faces similar basic barriers (Section 3), though potentially differing in their relative importance. For example, all SMEs need to understand relevant rules and regulations in regional markets, as well as related customer characteristics, needs, and constraints. However, a firm exporting existing products is looking to ensure that its products match existing customer needs, and is likely to focus more on issues such as marketing and distribution channels. A firm innovating a new product, on the other hand, has to invest initially much more in exploring and understanding potential customer needs and related constraints as the basis for new product development.

Policy practices to support internationalization should, in general, respond to the key barriers identified, and be consistent with the emerging characteristics of an evolving ASEAN and East Asia regional market. It is useful to begin with a framework identifying the general stages of SME internationalization (introduced briefly in Section 3), as the basis for organizing policy measures and identifying best practice. The stages of internationalization (Figure 2.12) are as follows: (1) *preparation* involves pre-internationalization, getting ready for entering foreign markets directly or as a supplier; (2) *active engagement* is the start or early implementation of internationalization activities; and (3) *growth and expansion* involves strengthening and enlarging the product market position of the firm.



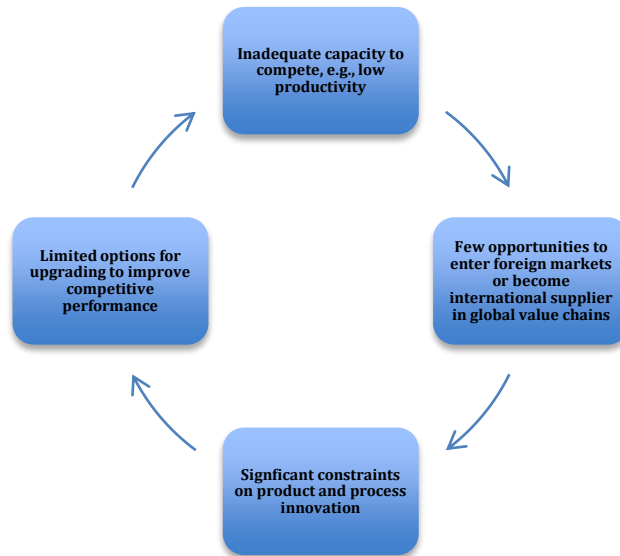
**Figure 2.12: Stages of Internationalization**



*Source:* Adapted and modified from Spring Singapore (2011).

A key basic factor conditioning internationalization relates to the competitiveness of SMEs. This paper is not intended to address this broad issue directly. However, the link between competitiveness and internationalization has to be recognized: SMEs that ‘go international’ are entering into a significantly more competitive product market environment, with corresponding implications for the need to strengthen the capabilities of firms, in part the necessary focus of best policy practices (Figure 2.13).

**Figure 2.13: Constraining Link between Competitiveness and Internationalization**



Source: Adapted and modified from UNECLAC (2013).

It is useful to define what is meant by ‘*best policy practice*’ in this paper in terms of the examples that follow. It should have the following characteristics:

- Recognized as important to SME internationalization capabilities and/or performance, by both firms and government policy makers;
- Feasible to implement in a wide range of settings, e.g., diverse economies, industries, and firms;
- Effective in bringing about expected outcomes; and
- Efficient in terms of institutional capacity, e.g., to administer and monitor, and with respect to resource use.

## 5.2. Examples of Best Policy Practices

It is useful to recognize two different overall (ideal) strategies in approaching policies towards SME internationalization.

- *Bottom-up approach*: This is the German Mittelstand strategy that builds on business associations, craft guilds, and academic institutions working with the German government to facilitate SME internationalization, e.g., related to management skills, technology, and innovation. It is these institutions that take the leading role in working with firms. Government facilitates the process by providing a

supportive environment, e.g., through tax incentives, streamlining rules and procedures, supporting innovation, and seed funding.

- *Top-down approach*: This is the strategy adopted in most ASEAN and East Asian economies, such as Singapore, Malaysia, and Korea. It uses concepts such as an ‘SME Master Plan’, and creation of a central SME agency responsible for planning, coordinating, and approving SME-related efforts. At the same time, the importance of industry/value chain-level associations is recognized to varying extent in most Asian economies.

In terms of best practice at the overall level, an effective SME internationalization strategy ideally combines both approaches. For example, government can support a bottom-up approach that is sector led, and gives a key role to industry and cluster associations (e.g., Thailand’s automotive sector strategy). At the same time, government can provide effective guidance through a top-down, coordinated, and integrated strategy and related programmes for internationalization that have the support and ownership of the business and academic communities (e.g., Malaysia’s rubber manufacturing sector strategy).

A number of recent studies have surveyed existing policy measures supporting SME internationalization in order to identify those that have been most effective (‘best practice’). Of particular relevance here are (1) APEC (2013), which looked at 13 economies<sup>6</sup>; (2) SPRINT Singapore (2011), which involved an assessment of 8 economies, largely overlapping with the APEC study, but from a different perspective<sup>7</sup>; (3) OECD (2013), which covered governments and SMEs in OECD countries, with particular emphasis on SME internationalization related to what are termed as ‘high growth markets’, including in East Asia and ASEAN; and (4) European Commission (2011), a survey of SME internationalization programmes in the EU countries, but focusing on target markets outside the EU. It is useful to summarize the key results of these studies, as together they tend to identify what are presently seen as ‘best policy practices’ for SME internationalization, and there was significant overlap among the results of the surveys in identifying best policy practices.

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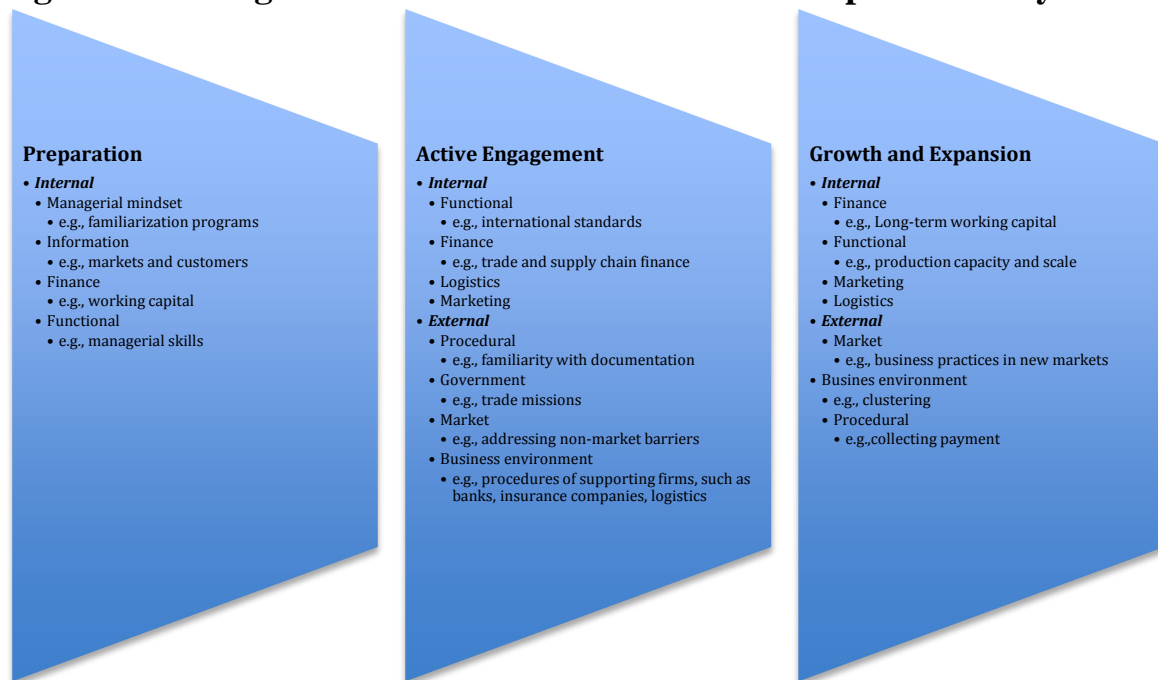
<sup>6</sup> APEC (2013) included Australia (8), Canada (6), Taiwan (4), Hong Kong (5), Indonesia (5), Japan (1), Malaysia (4), New Zealand (8), Philippines (1), Singapore (4), Thailand (1), and Viet Nam (1).

<sup>7</sup> Australia, Hong Kong, Japan, Malaysia, Peru, Singapore, Taiwan, and the US.

In general, the emphasis of policy measures is mostly on the *preparation* stage, helping firms get ready for internationalization, with information, financing, and training. There is generally less focus on the *active engagement* and even less on the *growth and expansion* stages. Also, in many cases governments work with industry associations and private sector experts in the preparation and delivery of key policy initiatives, e.g., trade fairs and missions, and market-related information. In general, the focus of best policy practices includes the following:

- One of the two leading areas of policy focus involves filling gaps in *information* about overseas markets, and related administrative requirements for market entry. This often takes the form of informing or promoting general industry-wide business opportunities, which are generally seen as less effective than more tailored and targeted workshops
- This, in turn, leads to an emphasis on overseas *missions and exhibitions*, to familiarize firms with international market trends, particular foreign markets, and to showcase SME products. Related to this is a relatively widespread assistance for *training* on ‘doing business’ internationally, including support for visits to, and training in, foreign markets.
- The second major area of policy emphasis and practice relates to *finance* (e.g., general credit, export credit, insurance, risk management, and venture capital); and a wide variety of programmes exist involving a range of financing mechanisms and related support.
- Next most common purpose of the initiatives reported is *development of SME owners’ business skills*, including both general business skills with relevance to internationalization (e.g., business plans, financial management) and more specifically relevant skills, such as obtaining/using market intelligence.
- Facilitating SMEs *to form strategic alliances, networks, and clusters at home and/or in export markets*, including in the context of GVCs, also received significant attention, e.g., supporting missions and exhibitions to link SMEs to multinational corporations, some focus on establishing innovation centres and ‘supplier precincts’. However, the programmes involved seem to have had uneven results to date, and therefore the implications for ‘best practice’ are less clear.

**Figure 2.14: Stages of Internationalization and Examples of Policy Areas**



Source: Adapted and modified from Spring Singapore 2011.

A summary of the areas of best policy practices for SME internationalization is presented in the policy matrix in the appendix. A number of specific examples are presented here, reflecting the focus and nature of best practice.<sup>8</sup>

### Preparation Stage

#### *Finance*

##### *Providing adequate working capital*

- Internationalization, whether entering foreign markets or as suppliers in GVCs, requires adequate working capital for short-term obligations that burn quickly through cash resources, such as inventory or promotion (advertising). Generally, small businesses are cash poor, requiring sufficient and ready access to financing, which is generally challenging in the region's collateral-based banking systems. Such access has also become even more difficult following the 2008 Global Financial Crisis, with a significant weakening of capital flows to Asia from the US and especially from the EU (Section 4). Governments generally recognize the financing challenge to SMEs, particularly after

<sup>8</sup> The Spring Singapore (2011) study took a particularly thorough approach to identifying best policy practices for SME internationalization, and its results are also consistent with more general findings of other studies. Therefore, it serves as an especially good reference point for this section.

the crisis, and a wide range of policy measures and programmes are aimed at providing working capital support.

- Examples include (1) Hong Kong's SME Loan Guarantee Scheme , provided by the Trade and Industry Department , aimed at helping individual SMEs secure loans with the government acting as the guarantor. (2) Japan's Overseas Investment Loans, provided by the Japan Finance Corporation and the Japan Bank for International Cooperation, to provide financing for projects undertaken in developing countries in which Japanese firms have equity shares.

#### *Risk sharing to facilitate bank borrowing and financing*

- Financial institutions that are generally careful in lending to SMEs under the best of conditions are particularly sensitive to the risks involved, and reluctant to lend to small businesses in uncertain overseas ventures, especially for start-up ventures. Government measures aimed to share the risk, e.g., of default, provide needed assurance to reduce the perceived risk of lending to SMEs for international operations, especially for early-stage financing. A related mechanism to facilitate such lending involves government assistance to share part of the cost of loan insurance premiums.
- Examples include (1) Singapore's Internationalization Finance Scheme, administered by International Enterprise (IE) Singapore, aimed at assisting Singapore-based companies to enter international markets by providing financing for fixed assets, as well as for the working capital expenses of overseas projects. (2) Taiwan's Globalsure Credit Insurance, provided by the Export-Import Bank, is particularly interesting and important to SMEs, aimed at covering payment risk related to the delivery of goods and services, and insuring a company's accounts receivables from losses due to insolvency. (3) Singapore's SPRING Start-up Enterprise Development Scheme involves government partnership with the private sector to provide equity-based co-financing for Singapore-based start-ups with innovative products or processes with strong potential on international markets.

#### ***Information/Functional***

##### *Internationalization workshops*

- Government and business recognize information gaps and training related to internationalization skills as key constraints on SME internationalization. In general, experience suggests that targeted workshops that provide both information and advice for firms, in particular value chains, are more effective than general seminars on internationalization issues.

- Examples include the following: (1) Malaysia's Development Program for New Exporters, administered by the Malaysia External Trade Development Corporation, is a 3-year programme that provides firms with advice, information, and assistance, and includes visits, for selected markets. (2) Japan's Globalization Workshop, administered by the Organisation for Small & Medium Enterprises and Regional Innovation Japan, provides experts and managers of SMEs with experience in overseas markets in seminars on the globalization of SMEs that give advice on concrete steps on how to develop business in overseas markets. (3) Hong Kong's Pro-Act Training and Development Centre (Global Business) provides general training in areas such as import/export and shipping document, and merchandising training for international markets; and also specific training programmes related to internationalization under the Skills Upgrading Scheme.

## ***Functional***

### *Market familiarization through immersion training*

- Hands-on experience in foreign markets is recognized as particularly useful for effective internationalization. Structured overseas training programmes for employees can provide needed practical understanding of foreign markets; and can have a great impact, particularly when combined with using returning staff in the development of firm-wide training programmes. Although the benefits of such programmes are significant, so is the cost to the firm. Therefore, government assistance in their development and cost (sharing) is seen as particularly useful and important.
- Examples include (1) Singapore's Manpower and International Business Fellowship , by IE Singapore, supports companies in training executives and networking in selected markets through both full-time postgraduate study, and tailored short-term (maximum 10 days) senior executive programmes. (2) Japan's International Federation Training Project, by the National Federation of Small Business Association, arranges overseas study tours for young owners and selected employees of SMEs.

### *Skill development for suppliers in GVCs*

- Effective initial entry and sustained participation in GVCs requires raising and maintaining SME technical and managerial skills. Without the necessary skill levels small firms will not be considered as potential suppliers by large and international firms and buyers. At the same time, participation in GVCs can further accelerate SMEs' upgrading of skills through technology and knowledge transfer, and

learning of new business practices. Therefore, policies and related institutions aimed at raising the technical and managerial skills of SMEs are essential for their participation in GVCs. However, public training institutions are often not sufficiently responsive to skill upgrading requirements of SMEs (UNCTAD, 2010).

- Examples of effective programmes and institutions include (1) Malaysia's Penang Skills Development Centre, an industry-led tripartite skills training and education centre, a partnership of industry, government, and academia, that provides training and education programmes and internships to support operational requirements and to keep up-to-date on technological progress to make SMEs 'partnership ready', with a focus on the electronics/IT sector. (2) South African government's re-launched sectoral training authorities aimed at accrediting training providers and their curricula, to ensure adequate quality; financed in part through employer contributions, in order to create a market-friendly and responsive mechanism.

### **Active Engagement Stage**

#### ***Procedural***

##### *Assistance with Regulatory and Standards Requirements*

- Complex and costly regulatory requirements of international markets, involving, for example, legal and business registration, are significant challenges to small firms. Meeting different standards, testing, and conformity assessment procedures can be especially difficult. These barriers increase the cost, time, and uncertainty of market entry; and inability to meet required standards may prevent entry. Government support related to these functions is particularly important for small firms.
- Examples include (1) Hong Kong's Comply with Global Sourcing Buyers' Requirements on Green and Ethical Procurement, by the Hong Kong Trade Development Centre, is a value-chain and standard-specific programme of assistance to SMEs in the electronics and electrical industry to comply with Global Sourcing Buyers' Requirements on Green and Ethical Procurement. (2) Singapore's REACH Registration Assistance Pilot Scheme, by Spring Singapore, helps firms comply with the EU's REACH regulation (Registration, Evaluation, Authorization, and Restriction of Chemicals) by providing support for consultancy assistance. (3) Singapore's Expert Technical Assistance Center supports understanding and compliance with standards and technical regulations for food and electrical/electronic



exports. (4) Regional (EU) initiative in China:<sup>9</sup> Established in 2010, the EU SME Centre in Beijing, China, supports SMEs that want to export to, or invest in, China. SMEs generally do not have the capability or resources to deal with the complex Chinese administrative, legal, and regulatory environment, particularly at the early market entry stage. The EU Centre offers a wide range of services related to market information, technical standards, procedures, as well as training programmes and other services. Similar centres have been established in India (2008) and for ASEAN (in Thailand, in 2011).

### ***Functional (Internal)/Market (External)***

#### ***Building linkages and alliances***

- Building alliances allows SMEs to leverage their capabilities through partnerships to achieve economies of scale and compete more efficiently (e.g., lower costs) and effectively (e.g., greater access to international buyers). Building relationships with international buyers, directly or through alliances, allows SMEs to link to key GVCs. Initiatives aimed at supporting SMEs in building such linkages and alliances are particularly important in the context of the region's manufacturing experience, given its central role in GVCs and related regional production networks in key industries, e.g., electronics, automotive, garments.
- Examples include (1) Japan's Business Alliance for Promoting SMEs, through the Ministry of Economy, Trade and Industry (METI), promotes and supports business alliances between Japan and Taiwan in the form of joint ventures, technology partnerships, and supplier arrangements. (2) Singapore's International Partners Programme, by IE Singapore, facilitates and supports international alliances for Singapore-based firms, particularly in the 'go-to-market' or the *active engagement* stage, including the preparation of business plans, and resources and management support for implementation. (3) Singapore Business Federation Global Sourcing Hub is an online business portal that provides instant automated access to global sourcing opportunities. (4) Australia's Industry Innovation Precincts are intended to facilitate connection of firms to global supply chains by developing an agglomeration of competitive firms and research institutions in a specific geographic area.

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<sup>9</sup> OECD (2013).

## **Growth and Expansion Stage**

### ***Functional (Internal)/Market (External)***

#### ***Strengthening capacity for compliance with international standards***

- An essential requirement for participation in GVCs is the ability of firms to meet a variety of stringent product and process standards (e.g., quality). At the same time, strengthening the capacity to meet such standards for SMEs already serving international markets, either directly (exporting) or as suppliers in GVCs, is a key requirement for their growth and expansion (e.g., UNCTAD, 2010). It allows firms to enter new markets; and/or upgrade and therefore expand as suppliers in particular value chains.
- Example: An effective private sector initiative is IBM's PartnerWorld programme in Viet Nam, a comprehensive upgrading and marketing programme for IBM business partners and suppliers, focused on strengthening their capacity to provide required products and services. It involves three different types of support, depending on the level of investment by supplier firms, e.g., 'Member', involving a minimum level of commitment; 'Advanced', for firms that have made significant investments in their business relationship with IBM; and 'Premier', for firms that have made very significant investments in IBM-related products, technologies, and skill development.

### ***Business environment***

#### ***Clustering and related networks***

- As discussed, enterprise clusters and related networks—involving focused cooperation among SMEs, and between SMEs and larger firms (domestic and foreign), and other supporting institutions (e.g., government agencies, research and educational institutions)—can increase productivity and efficiency; help in the commercialization of ideas and in new business formation; and stimulate and enable product market innovation. It also makes participating SMEs more attractive as potential suppliers to larger and international firms and buyers. Clustering has received a great deal of attention given their importance. However, building and sustaining viable enterprise clusters remains a challenge. Two factors have emerged as particularly important: (1) the role of industry/value chain-level institutions; and (2) the essential need for clusters to be anchored in clear and credible business/commercial rationale, i.e., they generally cannot be 'willed' into being by governments alone.

- Example: (1) Penang's (Malaysia) electronics/IT cluster is a particularly successful example of cluster development and maintenance. It also illustrates the central role of cluster-related institutions, including the Penang Development Corporation providing general industry-level support, and the Penang Skills Development Centre's critical role related to skill development and upgrading. (2) Thailand's hard disc drive (HDD) cluster is a useful example of both success and constraints in cluster development. Thailand is the largest exporter of hard disk drives in the world. A key to the clusters growth and expansion was the creation in 2005 of the Hard Disk Drive Institute (HDDI), following a government-financed but industry-driven sector study. HDDI is private sector driven, involving the leading global HDD producers, local research institutes, and government organizations such as the Board of Investment, focusing on helping to strengthen the capabilities of domestic suppliers. However, while the HDD cluster has been very successful in expanding sales, it has been less successful in Thai firms upgrading to higher value activities. (3) South Africa's Durban Auto Cluster has been identified by Toyota and its suppliers as very effective in strengthening supplier capacity and facilitating inter-firm collaboration, linked in part to a parallel initiative, the Benchmarking Club. Some firms noted the key role these initiatives played in their capacity to survive and grow (UNCTAD, 2010). Activities include specialist skills development in engineering and production management, as well as in product development. It should be noted that most firms also belonged to at least another industry association such as the National Association of Automotive Component and Allied Manufacturers and the Steel and Engineering Industry Federation of South Africa.

## 6. Next Steps: Doing Different Things and Doing Things Differently

### 6.1. Gaps in Best Policy Practices

A number of gaps in best policy practices have been identified, e.g., in studies noted, particularly from the perspective of SMEs surveyed. These include (1) user-friendly online channels for market information, including information on the business impact of free trade areas/agreements and regional integration (e.g., AEC); (2) measures to help defray the initial costs at the *active engagement stage*, e.g., cost of setting up and running an overseas

representative office; (3) support for what can be extensive long-term operational costs at the *growth and expansion stage*, particularly important with respect to the long-term success and sustainability of SMEs' international operations facing significant potential risks and market uncertainty; and (4) supply-chain related assistance with respect to logistics (and transportation) for new markets, oriented to specific businesses, including for suppliers of such services.

Beyond the above, three gaps in best practice are particularly important in the context of a changing regional economy. These are (1) trade and supply chain finance, (2) integrating SMEs more effectively into GVCs, and (3) moving from exporting to innovating for ASEAN and (emerging) East Asian markets.

#### *6.1.1. Trade and supply chain finance<sup>10</sup>*

Financing needs of SMEs are identified as one of the two key areas for policy attention for internationalization. However, access to adequate trade and supply chain finance, which relate specifically to international operations, get relatively less attention. *Trade finance* includes loans and guarantees for imports and exports; with guarantees often in the form of letters of credit, which shift an exporter's payment risk to the bank; and various other forms of risk coverage such as currency and interest rate risk. *Supply chain finance* is a form of receivables finance or factoring. For example, the SME supplier sends an invoice to a (larger) buyer, who approves it in a supply chain finance platform, on an irrevocable basis, allowing the supplier to sell the invoice (i.e., asset-based finance) to a financial institution.

The Global Economic Crisis (2008) greatly worsened the problem of trade and supply chain finance by reducing the general availability of credit, including for traditional working capital, and therefore spurring greater interest in risk-mitigating financial instruments such as trade finance. Banks in ASEAN (e.g., Malaysia and Thailand) and East Asia (e.g., Korea) were also affected, including by a shortage of the dollars needed for trade. In Asian emerging economies, weak banking systems, lack of transparency, and more stringent Basel money-laundering regulations and 'know your client requirements' further constrain the general availability of trade finance. SMEs have had particular difficulty securing guarantees for payment obligations from banks (e.g., letters of credit).

As an example, in 2011, banks in Asian developing countries received requests for trade finance totalling \$2.1 trillion, of which \$425 billion were

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<sup>10</sup> ADB–OECD (2014).

rejected (ADB–OECD, 2014). An ADB survey of 500 firms makes clear the implications of the trade finance gap: a 10 percent increase in trade finance would lead to a 5 percent increase in production and staffing by firms. A survey of SMEs in the EU showed that half of the firms considered trade finance essential to enter new international markets.<sup>11</sup> Risk coverage, such as currency risk (forward exchange, currency options, etc.) and rate risk (swaps), is used by 75 percent of international (EU) SMEs for international cash management (e-banking, cash pooling).

The problem is particularly acute for SMEs supplying larger firms within the framework of GVCs. Therefore, greater attention to supply chain finance can play an important role in facilitating the internationalization of SMEs; with significant potential benefits for buyers, suppliers, and lenders:

- For (larger) buyers, it reduces working capital requirements by stretching out payment terms to suppliers, strengthens the relationship with suppliers by allowing for timely payments, and helps secure delivery of supplies.
- For (SME) suppliers, it allows for early payment of invoices; reduces working capital requirements by reducing outstanding payables; leads to more predictable payment flows and, therefore, easier cash management; strengthens relationship with buyers; and reduces the cost of financing.
- For lenders, it leads to increased buyer financing with greater returns, efficient transparency and visibility of underlying payables, and builds stronger relationships with buyers and their suppliers.

Supply chain finance provides an opportunity for supporting firms not traditionally considered as bankable, by addressing two key constraints on SME financing: poor financial position and lack of collateral. Unlike traditional financing, such as for working capital, that focuses on SMEs' financial position and available collateral, supply chain finance focuses on the strength and longevity of a supply chain, and the longer-term mutual dependence of buyer and supplier. However, whereas trade finance places the risk on the bank, in supply chain finance it is corporate risk.

Effective policy measures to support trade and supply chain finance would greatly facilitate SME internationalization. It would expand opportunities for small firms to enter international markets, and would support SME participation as suppliers in GVCs.

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<sup>11</sup> Roland Berger Strategy Consultant (2013)

### 6.1.2. Integrating SMEs into Global Value Chains<sup>12</sup>

Participation in GVCs is a key means for SMEs to internationalize as suppliers providing intermediate inputs, usually as subcontractors several levels down from the ultimate buyer or lead firm, e.g., global brands such as Apple or Levi. Around 80 percent of world trade is now through GVCs (UNCTAD, 2013). The benefits of SMEs integrating into GVCs include strengthening the technical and managerial capabilities of firms, increasing capacity utilization and production efficiency, strengthening the reputation and credibility of the firm, and providing a manageable way for SMEs to reach and compete in global markets. Participation in GVCs also places great demands on small firms that may be briefly summarized as the requirement to deliver the right product (product standards), in the right quantity (production capacity), with the right quality (quality standards), at the right time (efficient logistics), and produced in the right way (process standards). These are significant challenges for SMEs.

There are clear indications that governments' support for SME participation in GVCs has been limited in their effectiveness (e.g., APEC, 2014; OECD, 2008). This also reflects the inadequate understanding by SMEs of the global economic environment, including the nature of GVCs and related production networks, and their implications for needed policy initiatives to support SME participation. For example, in a comprehensive OECD study (OECD, 2008) SMEs interviewed did not mention skill development programmes, a critical requirement for successful participation in GVCs. Furthermore, since the Global Economic Crisis of 2008, GVCs have undergone structural changes, with important implications for SME suppliers and needed policy support:

- *Consolidation*: Lead firms have generally reduced the number of their first-tier suppliers. This makes it more difficult for new suppliers to participate within the framework of GVCs and related networks.
- *Convergence*: As synergies develop among different value chains, lead firms in different sectors are increasingly sourcing from the same suppliers, e.g., Foxconn (HonHai) supplies firms in the mobile phone (e.g., Apple), computer (e.g., Acer), and information (e.g., Cisco) sectors.
- *Re-shoring*: There seems to have been some movement by lead firms to some extent to reshore some of their operations partly because of cost, and also risk; contributing to many Asian SMEs reporting significant declines in order (e.g., Rosey, *et al.*, 2009). However, the extent is not clear.

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<sup>12</sup> Key reference: APEC (2014).

- *Developing economies becoming major consumer markets:* As discussed in Section 4, Asian emerging markets' relative share of global consumption is growing, with implications for the future focus of GVCs.
- *Trade in services is becoming more important:* Tradable services are moving well beyond business process outsourcing to more advanced and higher value-added knowledge-based services such as research and development (R&D) and design, which in turn are closely linked to the production process.
- *Rise of e-commerce and Information and Communications Technology (ICT) technologies:* The development of internet-based business-related activities has moved into areas such as e-procurement and e-logistics, allowing closer integration of geographically dispersed activities, and expanding access to markets and buyers. This makes it easier for dispersed and relatively isolated SMEs to participate in GVCs, including through improved access to information on markets and potential partners/suppliers/customers, and greater marketing and distribution skills. At the same time, it requires for SMEs to invest in IT-related capabilities.

In considering SMEs as suppliers, large firms (e.g., multinational enterprises) assess them on a variety of criteria, including hard and soft strengths. Hard strengths involve attributes such as product quality, product price, and timely delivery. Soft strengths cover issues such as financial soundness of the firm, production capacity, flexibility, geographic location, capacity to meet standards and certification, ICT level of business operations, and capacity for product and process innovation.

Globalization affects different sectors in different ways, and therefore the role of SMEs and their challenges vary across sectors/GVCs (APEC, 2014). For example:

- In the *food processing GVC*, the key issue for SMEs is to meet a wide variety of international, industrial, region-specific, and firm-specific product and process standards.
- In the *automotive value GVC*, it is not clear to what extent the shift of car production and sales in emerging markets is translating into supplier opportunities for regional SMEs because of geographic expansion, consolidation, and cost reduction measures of the first tier mega-suppliers, particularly following the Global Economic Crisis of 2008; and because of the constraints faced by small auto-parts suppliers, particularly access to capital.

- In the *electronics GVC*, white-label products (e.g., refrigerators, washers, and dryers) provide opportunities for SME new entrants, particularly from less developed economies, as they compete on the basis of price, and require lower-level skills. The longer-term challenge is to strengthen technical skills of enterprises to move up the value chain to more value-added activities in order to protect (ideally to expand) their competitive supplier position, and to add value. At the same time, opportunities are also growing for SMEs to provide related services, e.g., applications (apps) for smartphones.
- The *handicraft GVC* is expanding strongly both in terms of product mix and geographic coverage, partly as a result of growing e-commerce, with SMEs in Asian emerging economies as major producers. This is in part because of low entry requirements in this value chain, such as low start-up capital and flexible working time and location.

Given the evolving nature of GVCs, and their great diversity, it is difficult to have a set of general policy measures to support SME supplier participation. It requires working at two levels: (1) general or horizontal level and (2) industry or GVC level.

- At the *general level*, SMEs often have limited understanding of the structure and dynamics of GVCs and their role in the global economy, though differing in specifics among sectors/GVCs. This suggests the need for programmes to promote awareness and understanding of the general benefits and opportunities of linking SMEs to GVCs, and to work with large or lead enterprises (e.g., multinational corporations) to develop specific capacity building programmes for local SMEs. An example of such a general initiative at the regional level is the APEC SME Innovation Center established in Korea in 2006, which has provided advice to 96 firms in 7 economies. Strengthening support for supply chain financing is another example of addressing the general and severe financing constraint on SMEs, specifically in the context of GVC participation. Similarly, policy measures to strengthen the capacity of SMEs related to ICT are increasingly vital for participation in various GVCs. A general commitment to supporting SMEs to meet international standards and certification (e.g., ISOs) is also essential.
- At the *industry level*, the basic requirement is for policymakers to understand the structure and dynamics of particular GVCs, and how they may be linked to the domestic economy and integrate local firms. Similarly, most SMEs across different industries are not able to identify their competitive strengths and constraints within their own



value chain (e.g., APEC, 2014; OECD, 2008). Policy initiatives, therefore, have to be developed to support the particular requirements of SME participation in specific GVCs, as discussed (as in the case of the Penang electronics/IT cluster). This can include providing access to market-related information for specific GVCs through value chain specific trade fairs, online platforms, and advisory centres. Facilitating the formation and operation of enterprise clusters in specific GVCs can expand production capacity and accelerate innovation. Beyond a general focus on strengthening SME capacity for meeting standards and certification, policy measures can focus on training related to standards and certification in particular GVCs, in partnership with industry associations (as in the example of the effective Penang Skills Development Centre).

### *6.1.3. From Exporting to Innovating for Asian Emerging Markets<sup>13</sup>*

As the global economy adjusts and developed economies continue with slow growth, Asian emerging markets present increasing opportunities for the region's SMEs. A key challenge is to move beyond exporting to innovating for these markets. Internationalizing SMEs must become more skilled at introducing—innovating—new and improved products and services, production processes, and business models suited to changing regional and international markets. Therefore, strengthening the innovation-related capabilities of the region's SMEs will be important for success in ASEAN and (emerging) East Asia markets.

Consumers in Asian emerging markets have high aspirations, but relatively low incomes, and a variety of constraints not usually found in developed economies, such as fragmented markets and high rural populations (Section 4). This provides the basis for a broad concept of innovation more appropriate to these markets, involving a wider range of innovation-related capabilities more accessible to SMEs, beyond high levels of scientific and technological knowledge, and related R&D. Innovation includes creating new products and production processes; adapting existing technologies to local user needs and constraints; and developing new types of marketing and distribution channels, services, and business models appropriate to consumers and conditions in the Asian emerging markets. In these markets, interaction with potential users/consumers at the early stages of product development is particularly important in providing insights on the potential use of a product or service, and required adaptations for successful commercialization to specific consumer needs and constraints. Investing in sales, marketing, and support

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<sup>13</sup> Based on Abonyi (2013), which develops this issue in the context of Thailand.

activities are also essential in realizing the value of innovations in reaching consumers in the fragmented and rural markets of the region. This can lead not only to innovations for emerging markets, termed ‘frugal innovation’, but also to the potential for scaling up to global niche markets, or ‘reverse innovation’. Examples include the following:

- ***Product innovation (frugal innovation).*** *Rapoo (China) computer mouse* is an illustration of the concept of frugal innovation: it taught Logitech an important lesson about exporting to Asian emerging markets. Logitech is a leading global supplier of personal computer (PC) accessories, headquartered in Switzerland. Looking to leverage its global brand and competitive advantage, it introduced a PC mouse in China priced at US\$50. This product, following traditional strategy, was a stripped down version of a mouse originally designed for developed markets, and met very limited success in China. In addition to its high price, the Logitech mouse was not responsive to Chinese consumers’ particular needs and constraints. These did not lag needs in developed economies, but were quite distinct and required a different approach. For example, the Rapoo mouse had a much greater range than Logitech’s product in order to be used as remote control for TVs. These serve as the central entertainment device in a Chinese household, but with content downloaded from the Internet given constraints on TV coverage and cost. Given the distance involved, the Rapoo mouse was also designed to shield from frequent interference from other electronic devices (e.g., household appliances, phones), an issue in small Chinese homes. And priced at \$15, it was far more affordable.
- ***Product and business model innovation (frugal innovation).*** India’s Pune-based *First Energy’s Oorja stove*, selected by the World Economic Forum as ‘Technology Pioneer 2012’, is a low-smoke, low-cost, efficient stove, powered by rechargeable batteries, that works on pellets—an organic biofuel made of processed agricultural waste, such as peanut shells and bagasse. It was developed initially for rural Indian women. First Energy is innovating more than a product; in partnering with two non-governmental organizations (NGOs) to reach rural customers and involving local women entrepreneurs to demonstrate and sell the product, it has developed an effective and wide rural distribution network, building essential consumer confidence through association with locally trusted people and organizations. First Energy then introduced larger stoves aimed at the urban commercial market such as hotels, restaurants, and caterers; it is now looking to expand to other Asian emerging markets, including Bangladesh, Indonesia, Sri Lanka, and Viet Nam.

- **Reverse innovation:** GE's electrocardiogram (ECG) machines sold in Asia (e.g., China and India) were large and expensive. GE's health care research and development centre and laboratory in Bangalore, India, developed a simplified, inexpensive, small, handheld ECG machine called the Mac 400, oriented to the Indian (and, more generally, emerging) market. It can fit into a small backpack and run on batteries as well as main power source, the multiple buttons on a conventional ECG machine were reduced to just four, and the bulky printer replaced by a small one used in portable ticket machines. The price of the Mac 400 is \$800 instead of \$2,000 for conventional machines, and the cost of an ECG test is reduced to \$1 per patient. Further innovations led to a higher-level product for the Chinese market (Mac 800) priced at \$2,000. A modified version of these products then also found a niche market in the US and Europe, as the Mac 600 (at \$1,200), for example, in primary care doctors' offices, visiting nurses, rural clinics, and paramedics. Based on the more general relevance of its emerging market innovations, GE launched a global strategic initiative called GE Healthymagination, focusing on 'underserved' or marginal communities.

**Figure 2.15: Innovation Strategy for Regional and Global Opportunities**



Source: Adapted and modified from Accenture (2012).

The concept of frugal (and reverse) innovation in the context of a changing ASEAN and East Asia region has important implications for best policy practice to support SME innovation. The usual approach to innovation tends to focus on supply-side issues, e.g., scientific and technology education and

skills, ICT infrastructure, high-level R&D. There is generally far less emphasis on demand- and user-driven approaches to innovation and related requirements. This is especially important in the context of changing Asian emerging markets, which provide significant, but different opportunities of export-through-innovation, including for SMEs. Strengthening the capacity of SMEs to understand the characteristics of these markets and consumers is especially important. This requires early-stage product-related interactions with potential consumers in key markets and, therefore, investment in a wider base of knowledge and skills related to understanding markets and consumers, particularly in emerging economies. Insights gained through such interactions with potential consumers on their needs and constraints related to the use of a product or service can then shape the design, development or adaptation for successful commercialization. Beyond product development, investment in innovation in marketing and distribution systems is also important to ensure that Asian emerging market consumers are effectively served.

## **6.2. Implications of Levels of Development**

The ASEAN and East Asia region contains economies at very different levels of development. For example, Thailand is a middle-income country, extensively integrated into global and regional markets, including through participation in GVCs. By contrast, Myanmar is one of the least-developed economies. It has been relatively isolated for decades, and is now going through an extensive reform process, including a focus on product market integration with the international economy. In both countries, SMEs make up the vast majority of the enterprises and play a key role as sources of jobs and incomes. Although at very different levels of sophistication and competitiveness, SME internationalization is a policy priority for both, with particular focus on the ASEAN and East Asia region.

In reviewing the challenges and needs of SME internationalization for a country such as Myanmar (similarly, for example, for Cambodia and Lao PDR, and to a lesser extent Viet Nam) and comparing it with Thailand (and similarly, for example, with Malaysia), a number of issues emerge:<sup>14</sup>

- In general, the nature of the challenges of SME internationalization is similar for countries at different levels of development, both for moving into new markets and for integrating as suppliers into GVCs.

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<sup>14</sup> Particularly useful references for this section include Abe and Dutta (2014) and Abonyi (2013).

For example, SMEs in Myanmar and Thailand face key barriers such as information, finance, internationalization-related skills, and logistics.

- For economies at a lower level of development such as Myanmar, the requirements for policy measures to respond to these shared challenges are much more demanding, both in terms of the generally much poorer general capabilities of the firms and the more severe resource and capacity constraints of government agencies.
- Furthermore, in a more advanced economy such as Thailand, there is generally more experience among SMEs with internationalization, as the potential basis for learning and experience sharing; and it is relatively easier to access key inputs such as information and financing. It is also easier to link with international buyers, given their wider presence in the economy.
- More fundamentally, the business environment supporting SMEs in a more developed economy such as Thailand is far stronger, both in the ‘harder’ form of infrastructure and logistics systems, and in the ‘softer’ form of business-related rules, regulations, agency capabilities, and customs procedures, which are much more aligned with international best practice.
- This is particularly relevant, given the link between competitiveness and internationalization, as SMEs in a less developed economy such as Myanmar generally lag significantly in competitive capabilities and performance, compared with firms in an economy such as Thailand.
- The implication of the above is that a less developed economy such as Myanmar has to invest much more in building the general capabilities of SMEs, and in strengthening the supporting business environment (e.g., infrastructure, logistics, general managerial skills), as a prerequisite for considering internationalization in any form. This paper is focused specifically on internationalization-related issues and, therefore, does not consider issues related to the more general strengthening of SMEs.
  - It may be useful to note, however, that one means for creating the necessary business environment historically in less-developed economies in Asia has been the effective use of special economic zones (SEZs). These provide a special protected environment for investors in the form of infrastructure, and rules and procedures that are intended to compensate for the weaknesses of the more general business environment. Ideally, SEZs allow domestic SMEs to develop relationships with international enterprises, strengthening their competitiveness and linkages to international product markets. There are various examples in less developed economies of ASEAN, e.g., Phnom Penh Special Economic Zone in Cambodia, Savannakhet SEZ in

Lao PDR, and the Thilawa SEZ now in preparation in Myanmar. It is important to note that such SEZs are likely to be successful to the extent they are anchored in clear economic and business rationale, and even more so if they focus on addressing specific constraints of firms in particular value chains, e.g., electronics and agro-industry.<sup>15</sup>

The ‘stages of internationalization’” framework provides a potentially useful guide to reflect on the implications of the differences for SME internationalization between less developed economies such as Myanmar and more developed economies such as Thailand. As suggested here, in general, the differences are less in the kind of barriers and types of required policy responses, and more in the formulation of the known policies to make sure they respond to actual needs, and that they are feasible in terms of constraints on implementation e.g., by the relevant agencies and capacities of firms. In the context of the ‘stages’ framework, it may be possible to go further in considering likely differences and their implications.

Given the relative lagging state of domestic enterprises in less developed economies such as Myanmar, it is likely that far less firms will be involved in, and have knowledge of, international activities of any kind. Therefore, the policy emphasis will need to be on the *preparation stage*. A key challenge and priority is helping SMEs get ready for internationalization, using the various policy measures already noted, e.g., information, financing, and developing enterprise linkages. The needs and measures will be similar, but detailed design and implementation requirements will have to differ to ensure their relevance and effectiveness for domestic SMEs. For example, in the case of information on potential markets and buyers, the use of IT is likely to be less effective in an economy such as Myanmar and Cambodia, in terms of SME capabilities and access, and state of infrastructure development (e.g., power, communications). Therefore, more emphasis is likely to be needed on face-to-face activities, such as workshops, along with printed materials. Support for later stages of internationalization, *active engagement* and *growth and expansion* will become relevant and necessary, as domestic SMEs internationalize more and more.

### **6.3. Potential for Regional Cooperation**

Regional cooperation initiatives can complement and enhance country-specific efforts at internationalization. These can be particularly important to

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<sup>15</sup> See, for example, Abonyi and Zola (2014).

less developed economies, given their constraints of resources, experience, and knowledge. The rationale for a regional approach includes the following:

- Economies of scale for resources and activities, e.g., training;
- Leveraging through the sharing of information, knowledge, and experience, e.g., on markets, regulations, business opportunities;
- Strengthening a region-wide culture of partnership and collaboration between government and business;
- Updating and adjusting best policy practices based on region-wide learning;
- Build on the key role and potential of cross-border value chain linkages.

Based on an assessment of the barriers to internationalization and examples of best policy practice, the following measures may be considered for regional cooperation to support SME internationalization.<sup>16</sup>

- *Expand cross-border SME financing mechanisms:* As noted, financing, particularly trade and supply chain finance, is a key constraint on SME internationalization, especially in the wake of the Global Economic Crisis of 2008. Therefore, facilitating the cross-border flows of financing and financial instruments—e.g., credit, credit guarantees, and particularly trade and supply chain finance—is especially important to expand SME internationalization. This could include a focus on regional cooperation related to trade and supply chain finance in the broader context of regional financial sector liberalization and cooperation. An important potential regional initiative is an agency/mechanism for providing SME credit information to reduce credit risks and lower the barriers for SME access to financing, given the information gap between lenders and SMEs. Japan’s effective SME rating system, the Credit Risk Database Association that uses both quantitative and qualitative information, is a suggestive example.
- *Expand cross-border and regional workshops and training:* Internationalization workshops, particularly targeted at particular value chains of regional importance, and market immersion programmes could play an important role in providing practical information and knowledge to regional SMEs, given multi-country participation. For example, this could focus on delivering accredited management and technological training leading to regional certification, e.g., along the lines of some training programmes offered by the Asian Productivity Organization. This can also help support the building of cross-border alliances and partnerships among the participants.

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<sup>16</sup> Parts of this section draw on APEC (2014), though in modified form.

- *Establish comprehensive, SME user-friendly online information portal:* To respond to the information barrier and allow greater sharing of market and business-related information, a region-wide online SME-oriented portal could play an important role. It could include information on market and industry trends and key issues; business opportunities and related leads; business matching on a region-wide basis; comprehensive listing of the region's enterprises in key value chains to facilitate identification of potential partners/suppliers/buyers; comprehensive information on rules, regulations, and procedures in the region's markets; list of internationalization-related advisory services and associated organizations and individuals in the region. The EU's SME Internationalization Portal provides a useful example. It is a database that lists (semi-) public providers of specialized services (e.g., local chambers of commerce) for companies planning to enter international markets; and links to other EU-backed sources of support and advice, such as the European Commission's Market Access Database that provides market access information for individual non-EU growth markets.
- *Establish AEC SME business centres to support SMEs exporting (directly and indirectly) and investing in the region:* These centres, established in selected locations in the AEC, would provide support and assistance to SMEs for doing business in AEC and East Asian markets. This can include (1) business development services (e.g., focused market information, business and marketing advice, matchmaking support, physical facilities such as desk/secretarial support and meeting rooms); (2) legal services support (e.g., access to practical legal information, referral to service providers such as lawyers and tax advisors); (3) standards and technical issues (e.g., information on required certification, quality, and labeling); and (4) human resources-related support (e.g., access to specialized skills including languages, and referral to training sessions and expertise). The EU business centres, particularly the EU SME Centre in China, could provide useful experience and guidance.
- *Establish a regional 'SME Internationalization Best Practices Centre':* There have been many SME internationalization best practices studies, and even more on general SME best practices. An AEC/East Asia best practices centre with easy access and use by firms could serve an important role in supporting SME internationalization. It could provide extensive and practical information to the region's SMEs on best (and worst) practices, including case studies focusing on specific firms in particular value chains and markets; a practical and supported framework for self-assessment of existing operations; and strategies for



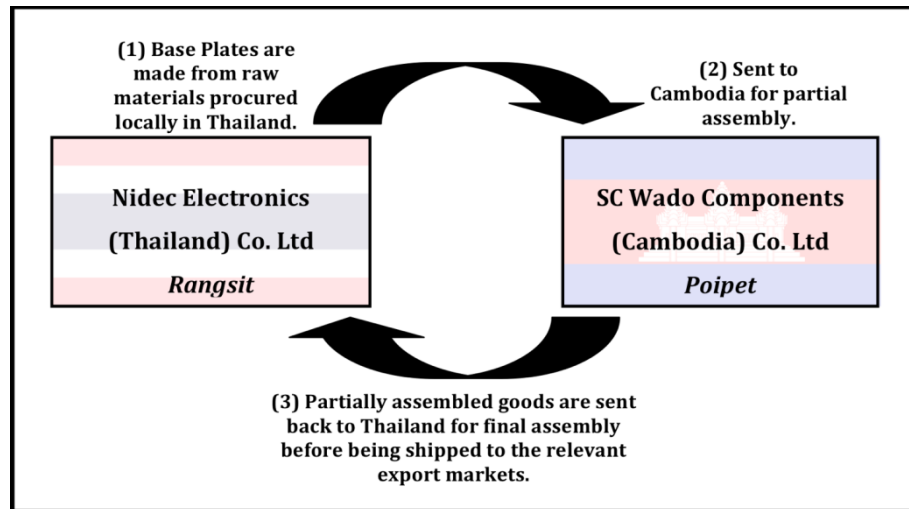
firms on adapting and implementing best practices. Ideally, or over time, this could be linked to regional advisory services, such as the suggested AEC SME business centres.

- *SME internationalization through cross-border value chain linkages:* Many of the region's economies are greatly interested in strengthening cross-border economic linkages, particularly involving border areas. Such cross-border linkages in key value chains can contribute to the development of local communities and to product market diversification and upgrading of participating economies and firms, including SMEs. This could be especially effective in linkages between less developed economies, such as Myanmar, and more developed economies, such as Thailand. The garment and textile value chain provides an example, building on the agglomeration of garment and textile SMEs in Mae Sot (Thailand), and a planned industrial zone in Myawaddy (Myanmar) to take advantage of proximity to Thailand.<sup>17</sup> Firms in Myawaddy (e.g., Thai and other Asian investors) can provide low-cost labour for lower value and lower skill activities such as cut/make/trim (CMT), while SMEs in Mae Sot can provide materials and parts for CMT activities and focus on higher value and higher skill activities, such as quality assurance, packaging, and shipping (logistics services). Such cross-border cooperation can provide opportunities for SMEs both in Myanmar and Thailand to 'internationalize', starting in a more limited and manageable way, with neighbouring countries, and expand over time within the framework of GVCs. Recent investment from Thailand to Cambodia provides a general illustration (Figure 2.16), and a mapping of the garment and textile cross-border value chain linkages in the Greater Mekong Subregion (Figure 2.17) provides the context for the Myawaddy–Mae Sot example.

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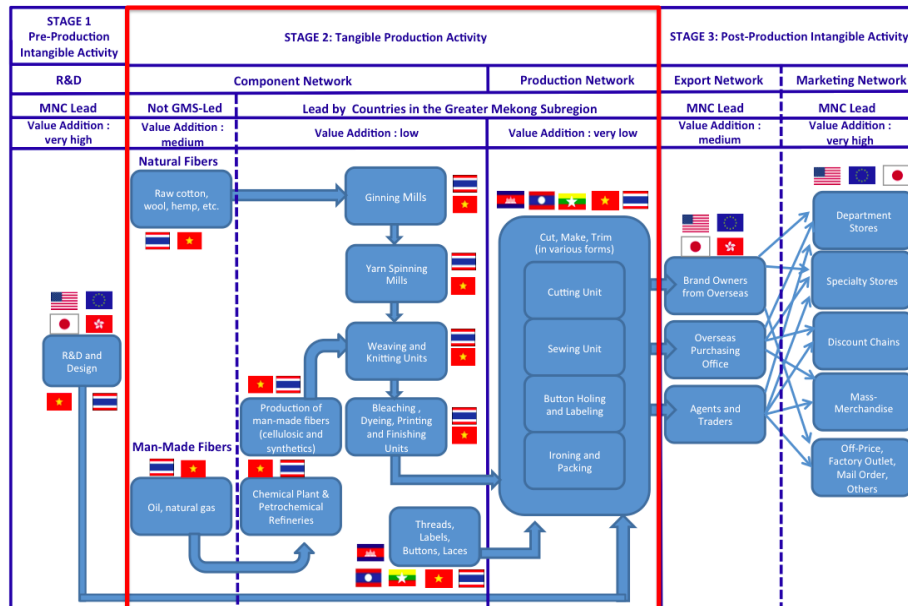
<sup>17</sup> See Abonyi, and Zola (2014) for more detailed discussion of this and other cases, and the general issue.

**Figure 2.16: Thailand – Cambodia Cross-border Linkage in the Hard Disk Drive (HDD) Global Value Chain**



Source: UNESCAP (2012).

**Figure 2.17: GMS Cross-border Value Chain in Garments and Textiles: Potential for new linkages?**



Note: This methodology of value chain mapping is useful ,for example, identifying the potential for establishing a cross-border special economic zone at Myawaddy (Myanmar) and Mae Sot (Thailand). See Abonyi and Zola (2014) .

Source: UNESCAP (2012); Abonyi and Zola (2014).

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# CHAPTER 3

## Innovation and University Entrepreneurship: Challenges Facing Japan Today

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*This paper examines the challenges facing Japan in recovering from two decades of economic depression, and the recent role of national universities in addressing the entrepreneurial gap and in fostering technology commercialization for innovation through university start-ups. In the early 2000s, government policymakers acknowledged the importance of innovation in restarting the economy and identified national universities as drivers of innovation through increasing academic entrepreneurship. In 2004, universities were made independent from the national government and given the mandate to disseminate and utilize their research for the benefit of society. The University of Tokyo provides an example of how these goals have been implemented over the last 10 years since 2004 through technology transfer, university–industry collaborations, entrepreneurship education, and start-up support including incubation and venture capital funding. This paper begins with the specific measures for university entrepreneurship innovation to be implemented under the latest policies of the Government of Japan through the Industrial Competitiveness Enhancement Act. The paper then briefly goes through the history of Japan’s economic growth and the depression during the past two decades, the key initiatives under the university reform for innovation after the incorporation of national universities in 2004, and some of the important innovation challenges facing Japanese research universities including The University of Tokyo.*

**Keywords:** University Reform, Technology Commercialization, Technology Transfer, University-Industry Relationship, University Entrepreneurship, Incubation, Venture Capital, Entrepreneurship Education, and Innovation Ecosystem



## **1. Introduction**

This paper examines the challenges facing Japan in recovering from two decades of economic depression, the recent role of national universities in addressing the entrepreneurial gap and in fostering technology commercialization for innovation through university start-ups.

In the early 2000s, government policymakers acknowledged the importance of innovation in restarting the economy and identified the national universities as driver of innovation through increasing academic entrepreneurship. In 2004, the universities— leaders in Nobel Prize–winning researches such as Light-Emitting Diode (LED) and Induced Pluripotent Stem Cells (iPS Cells)—were made independent from the national government and given the mandate to disseminate and utilize their research for the benefit of society. The University of Tokyo provides an example of how these goals have been implemented over the last 10 years since 2004 through technology transfer, university–industry collaborations, entrepreneurship education, and start-up support including incubation and venture capital (VC) funding.

This paper starts with a discussion of the specific measures for university entrepreneurship innovation to be implemented under the latest policy of the Government of Japan, the Industrial Competitiveness Enhancement Act. The paper then briefly goes through the history of Japan’s economic growth and the depression during the past two decades, the key initiatives under the university reform for innovation after the incorporation of national universities in 2004, and some of the important innovation challenges facing Japanese research universities including The University of Tokyo.

## **2. The Industrial Competitive Enhancement Act**

On 4 December 2013, the Industrial Competitiveness Enhancement Act came into effect with the Japan Revitalization Strategy, the third ‘arrow’ of Abenomics, as its background. The Act is the basis for securely implementing this strategy, which aims to ‘create new frontiers through participation by all

and bringing forth the strength of the private sector to the fullest extent.’

The Act enables a wide variety of measures according to different business development stages. It contains measures to support businesses in their stages: initiation, growth, maturation, and stagnation in a balanced manner. The targets of these measures are not only the large companies but also the small- and medium-sized enterprises (SMEs), including start-ups.

The Act also enables the Government of Japan to enhance Japan’s industrial competitiveness by allowing preferential regulatory flexibility to individual enterprises, facilitating approaches to the renovation of industries, and promoting venture businesses.

The key measures under this program include the following:

- Enhanced support for regional SMEs to start and rehabilitate businesses;
- Special provisions of Patent Act to reduce or exempt patent fees for SMEs when filing domestic and international applications
- Measures to encourage the Innovation Network Corporation of Japan to accelerate in venture businesses;
- Measures to promote early business rehabilitation (facilitating voluntary liquidation); and
- Special provisions allowing national universities to invest in venture funds and other entities.

Before the enactment of the Industrial Competitiveness Enhancement Act in December 2013, due to the National University Corporation Law enacted in 2003, Japanese national universities were not legally allowed to own any particular enterprise, including their university start-ups and its dedicated VC arm, except for their technology transfer offices (the technology licensing organizations [TLOs]).

The Ministry of Education, Culture, Sports, Science and Technology of Japan (MEXT) and the Ministry of Economy, Trade and Industry of Japan (METI) have created a scheme that allows the four leading national universities to invest in companies (such as an Special Vehicle Company [SVC] dedicated to each university) supporting university-launched venture businesses. For this

purpose, the government and the two Ministries have decided to create the Public Innovation Fund Program, which provides a fairly large amount of money to the four universities to let them fund their own VC management organizations.

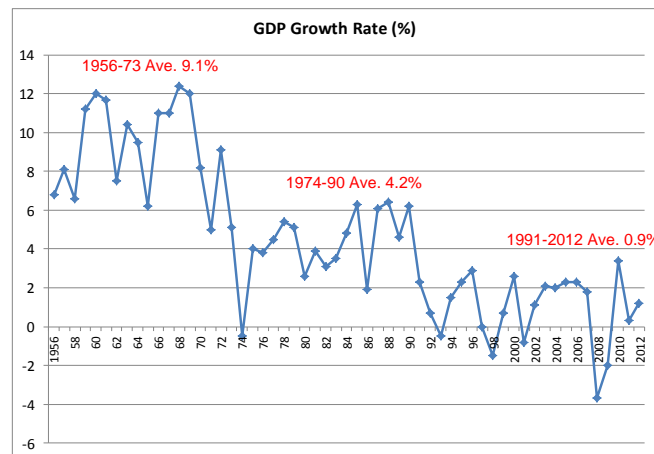
The money to be provided by the government to fund the four universities amount to (1) US\$500 million for The University of Tokyo (US\$83 million as special operational grant, US\$417 million for the source for investment, where US\$1 = JPY 100); (2) US\$350 million and US\$58 million for Kyoto University; (3) US\$200 million and US\$ 34 million for Osaka University; and (4) US\$150 million and US\$25 million for Tohoku University, respectively.

As of September 2014, the four universities have been preparing the necessary documents and taking the required steps for the final government approval. The government has requested the universities to earn a high return on this investment project, and for university start-ups to report a positive return on investment based upon university technologies to satisfy the Japanese taxpayers.

### **3. Economic Depression in Japan: The Lost Decades**

Since the 1990s, Japan has been in economic depression. Average growth rates relative to the previous years' gross domestic product (GDP) were 9.1 percent for 1956-1973, 4.2 percent for 1974-1990, and only 0.9 percent for 1991-2012 (Figure 3.1). What happened to Japan during the last two decades?

**Figure 3.1: Japan's Economic Growth, 1956–2009**



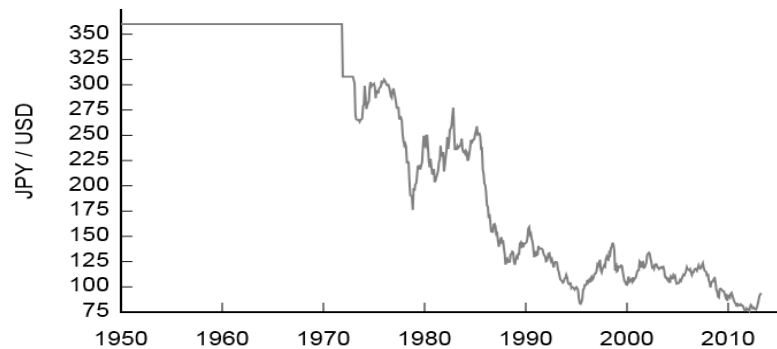
*Source:* Cabinet Office, Government of Japan.

GDP growth derives from three factors: an increase in the workforce, invested capital, and the productivity of labor and capital. Given Japan's shrinking population and overstretched national treasury, economic expansion must arise from productivity gains. Generally speaking, new companies have propelled most of the productivity growth and job creation. Professor Kyoji Fukao of Hitotsubashi University noted that Japanese companies founded after 1996 contributed a net positive of 1.2 million new jobs, whereas older companies shed a net of 3.1 million jobs (Fukao and Kwon, 2011). In 1989, Japan's then Ministry of International Trade and Industry (now called Ministry of Economy, Trade and Industry of Japan or METI) cautioned that a reduction in entrepreneurship would result in economic slowdown.

Dramatic appreciation of the Japanese yen against major currencies (Figure 3.2), a rapidly ageing population combined with decreasing population, the emergence of new economies in Asia, and the increasing prices of energy resources are all possible reasons for Japan's depressed economy. Natural disasters, including the Great Hanshin earthquake (Kobe earthquake) in 1995 and the Great East Japan Earthquake in 2011 could also be factors contributing to the weakening of Japan's economic fundamentals. More importantly, however, the lack of innovation is a key to explaining why Japan has experienced minimal growth in the last 20 years. Japan used to be an innovative nation after World War II – otherwise, Japan's economic miracle could not be explained. In fact, many innovative companies emerged after the war, including Sony, Honda, Yamaha, and other world-class companies (Table 3.1).

Why has there been a recent lack of innovation in Japan, particularly during the lost decades?

**Figure 3.2: Depreciation of the US Dollar against the Japanese Yen**



Source: Bank of Japan, Time-Series Data Search (2013).

**Table 3.1: Year of Foundation of the Leading Japanese Companies**

| Company      | Year of Foundation |  | Company      | Year of Foundation  |
|--------------|--------------------|--|--------------|---------------------|
| Nippon Yusen | 1885               |  | Toyota Motor | 1937                |
| Nisshinbo    | 1907               |  | Isuzu Motor  | 1937                |
| Hitachi      | 1910               |  | Sony         | 1946                |
| Toray        | 1926               |  | Nintendo     | 1947 (Incorporated) |
| Nissan       | 1933               |  | Honda        | 1948                |
| Panasonic    | 1935               |  | Yamaha Motor | 1955                |
| Ricoh        | 1936               |  | Kyocera      | 1959                |
| Canon        | 1937               |  |              |                     |

Source: Nikkei Kaisha Joho (2013).

## **4. Incorporation of National Universities as Drivers of Innovation**

The national universities, such as The University of Tokyo and Kyoto University, have been leading scientific researches in Japan and contributing to new knowledge creation in the international academic communities. In fact, Japan has been one of the greatest producers of Nobel Prizes in the world in the last couple of decades.

### ***Contribution to Innovation***

National universities were formerly part of the government, with university staff recognized as civil servants. This made the universities bureaucratic, unresponsive to changing demands, and unable to effectively engage with other actors in society, including the private industry sector. However, the institutional diversification of the universities and the enhancement of performance in education, research, and innovation based upon their research results would be increasingly important to compete in the global arena for the 21st century. Soon after the new century started, Japan's policymakers began to develop ideas for granting the national universities greater independence from government. A government announcement in June 2001 suggested that the universities be granted independence. Following the passage of the National University Incorporation Law in the summer of 2003, national universities were granted independence from government on 1 April 2004.

In terms of being drivers of innovation, 'independence' basically means three things:

- 1) That national universities should disseminate and utilize their research results to society and contribute to its development, including innovation. This is clearly stipulated in the National University Corporation Law.
- 2) That national universities must gain more external funding to maintain the level of quality and quantity of their research and education. Soon after the incorporation of national universities, the government began

to decrease its budget allocation to each national university by one percent per annum. This meant, for example, a deduction of US\$10 million a year from the annual revenue of The University of Tokyo. In 2004, the university depended on tax money or ‘operational grants’ from MEXT for approximately 60 percent of its budget. In 2012, these funds comprised only 36 percent of the university’s budget.

- 3) That Japanese universities need to be creative and motivated to contribute to the commercialization of their technologies for innovation, with the goal of making the world better. After the incorporation of national universities in 2004, intellectual properties such as patents derived from research activities of university professors have become a university asset. Before April 2004, though researchers needed to report their inventions to their universities, intellectual property rights and ownership belonged to the individual researchers.

The rules of intellectual property management have changed accordingly. The royalties for technology licensing by national universities are distributed among the inventors (researchers), the departments the inventors belong to, and the university headquarters with a ratio of 40 percent, 30 percent, and 30 percent respectively. This new intellectual property rights rule is almost equivalent to that of the leading universities in the United States (US) including Stanford University and Massachusetts Institute of Technology (MIT). The researchers no longer have to pay patent fees, and intellectual property rights including patents are now owned by an institution rather than an individual, which is usually much more effective and efficient in terms of licensing practices.

## **5. The University of Tokyo as a Model for University Entrepreneurship and Innovation in Japan**

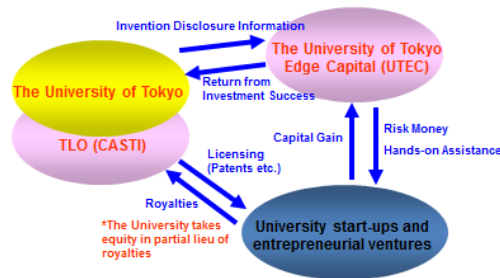
The University of Tokyo's Innovation and Entrepreneurship Office, formerly the Office of Science Entrepreneurship and Enterprise Development (SEED), is part of the Division of University Corporate Relations. It was founded in 2004 at the time of incorporation of the national universities, with a mission to promote university entrepreneurship at the university. The office has been evolving its functions during the past 10 years. The author of this paper has been involved with all the activities of SEED since 2004.

Probably, SEED's most important contribution was the establishment of a tripartite system for effective support of university entrepreneurship. This includes (1) SEED, a central office for entrepreneurship education, consulting and mentoring, and venture incubation; (2) TODAI TLO Ltd. (CASTI), a technology licensing organization (TLO) dedicated to The University of Tokyo; and (3) The University of Tokyo Edge Capital Co. Ltd. (UTECH), a venture capital arm dedicated to the university (Figure 3.3).

TODAI TLO (TODAI means The University of Tokyo in Japanese) is the only wholly owned technology transfer subsidiary of the university. It acts as a bridge to pass technologies developed at the university to industry, offering a one-stop service providing access to intellectual property belonging to the university. Founded in August 1998 (six years before the incorporation of national universities) by several faculty members of the university, TODAI TLO became the university's wholly-owned company in 2009 and now employs more than 20 professional staff.



**Figure 3.3: University Entrepreneurship Ecosystem in The University of Tokyo**



Source: Author.

UTEC is an early stage technology-focused VC firm associated with The University of Tokyo. UTEC was founded in 2004 when the Japanese national university reform took place. UTEC currently manages first fund of JPY8.3 billion (approximately US\$80 million), second fund of JPY7.15 billion (approximately US\$70 million), and third fund of JPY13.5 billion (approximately US\$130 million), and invests these in seed and early stage start-ups based on technologies and talents from the university. Having exclusive access to the university’s inventions, UTEC works closely with its researchers to ‘co-found’ start-up companies for innovation. As of September 2014, UTEC has invested in more than 50 companies, with nine initial public offerings (IPOs) and five mergers and acquisitions (M&As) to date. PeptiDream Inc., a profitable biotechnology venture founded in June 2006 and based upon the research of The University of Tokyo, went public on the Mothers Market of the Tokyo Stock Exchange on June 2013. This is an example of a university start-up co-founded by a scientist, an entrepreneur, TODAI TLO, and UTEC. The details of this company will be discussed later in this chapter.

Another important task that this author was involved with during SEED’s early period was the establishment of the university’s policy to promote university entrepreneurship. Under the National University Corporation Law (Article 22, Clause 5), returning the fruit of a national university’s research to society became one of the important missions of the university. One way to accomplish this mission is to ensure that its intellectual property, including patents, is put to practical use. Accordingly, The University of Tokyo officially drew up its Intellectual Properties Policy. The policy clearly asserts the importance of

promoting the practical application of inventions and other intellectual property through university start-ups. The policy states: ‘As one measure to return the fruit of intellectual creativity to society, the University should proactively be involved in using start-up businesses to commercialize inventions.’ Thus, maintaining an environment favourable for supporting start-ups became one of the strategic tasks assigned to SEED.

**Table 3.2: The University of Tokyo’s Entrepreneur Dojo’s Students’ enrolment (2005–2014)**

|                             | Freshman & Sophomore | Junior & Senior | Graduate School | Total             |
|-----------------------------|----------------------|-----------------|-----------------|-------------------|
| Science & Engineering       | 56                   | 328             | <b>913</b>      | 1,297<br>(71.14%) |
| Humanities & Social Science | 67                   | 288             | 171             | 526<br>(18.86%)   |
| Total                       | 123                  | 616             | 1,084           | <b>1,823</b>      |
| %                           | (6.7%)               | (33.8%)         | (59.5%)         | (100.0%)          |

*Source:* Office of Innovation and Entrepreneurship, DUCR, the University of Tokyo.

As the head of SEED, this author assumed other responsibilities. The most critical element would probably be entrepreneurship education. SEED started its entrepreneurship education program called The University of Tokyo Entrepreneur Dojo (training school) in FY 2005. This program is designed for undergraduate and graduate students. They can learn how to commercialize their ideas and inventions. The program provides 150-250 students with entrepreneurship education and a business plan competition every year (Table 3.2). During the past 10 years, more than 1,800 students completed the program. About 70~80 ‘graduates’ are involved with newly created entrepreneurial ventures.

Another critical component for cultivating university entrepreneurship is building an incubation facility. The University of Tokyo Entrepreneur Plaza opened in 2007 to provide facility support for university technology start-ups. The facility is equipped with wet laboratories to meet the increasing demands

of life science–related technology venture businesses originating from the university. The construction of this entrepreneur plaza was made possible by a charitable contributor, a founder of the Japanese public company. More than 40 university start-ups have been incubated by the university so far. As of September 2014, more than 30 companies were being incubated through the Office of Innovation and Entrepreneurship. Several companies, including PeptiDream, have gone public or have been acquired by big corporations as successful exits.

The other component of promoting university entrepreneurship is creating a professional mentoring network known as The University of Tokyo Mentors. SEED’s Office of Innovation and Entrepreneurship has been working very closely with the Alumni Office of the university in developing this network. The mentors include venture capitalists, consultants, accountants, attorneys, bankers, analysts, and entrepreneurs who are mostly graduates of the university. The network offers voluntary mentoring or consulting to young entrepreneurs, including students, who have just started their own businesses. These mentors sometimes help the young entrepreneurs fund seed money as angel investors.

## **6. Kashiwa-No-Ha Campus Area and Asian Entrepreneurship Award as Core Components for a New Innovation Cluster**

Kashiwa-no-ha Campus, the northern campus of The University of Tokyo, is located 30 minutes from downtown Tokyo, midway between Akihabara (central Tokyo) and the city of Tsukuba. The Tsukuba rail line connecting the campus to downtown Tokyo passes through the four prefectures of Tokyo, Saitama, Chiba, and Ibaraki. Kashiwa-no-ha Campus has an unusually high potential for innovation due to its proximity to the Chiba University Campus, the National Cancer Center Hospital East, and incubation facilities. There are innovative urban development projects already implemented in the area that are collaborating closely with the public, private, and academic sectors. Kashiwa-no-ha Campus was formally selected as one of five cities to be supported by the Government of Japan’s ‘Future City Initiative’ in December 2011, after Kashiwa City, Chiba Prefecture recommended Kashiwa-no-ha Campus as an ‘Innovative City for New Industries’. The University of Tokyo

is trying to lead and develop the Kashiwa-no-ha Campus area as one of the most prestigious Japan-based innovation clusters primarily addressing the emerging Asian economies with their high economic growth.

The university of is taking leadership in the new initiative called the Asian Entrepreneurship Award (AEA), a global entrepreneurship and business competition that started in 2012 in Kashiwa-no-ha Campus. In July 2014, 18 teams of young technology entrepreneurs from 12 Asian economies participated in the third annual AEA conference for three days at the Kashiwa-no-ha Campus. When young entrepreneurs have exciting and valuable experiences of mutual learning and inspiration from peers from all over the world, they gain huge confidence to overcome numerous difficulties and move forward with their own businesses. Co-hosted by The University of Tokyo and other Japanese sponsors, in collaboration with other Asian countries, AEA aims to create a network for entrepreneurship development attracting mentors and venture capitalists not only from Japan but also from Asia and the world.

## **7. Case Study: Peptidream Inc.**

PeptiDream is a Tokyo-based biopharmaceutical company founded on 3 July 2006 based on novel peptide expression and platform selection technologies developed by the company co-founder Dr. Hiroaki Suga, Professor at the Graduate School of Science of The University of Tokyo and previously at the State University of New York at Buffalo. PeptiDream has about 40 employees and has laboratories in a state-of-the-art commercial research centre at The University of Tokyo's Komaba Research Campus and the university's entrepreneur plaza. Proprietary Peptide Discovery Platform System (PDPS) is a highly versatile peptide generation and selection platform consisting of three core technologies: flexizyme technology; translation, cyclization, and peptide modifying technologies; and phage display technology. The combination of these technologies allows PeptiDream to engineer peptide libraries consisting of trillions of unique macrocyclic and helical non-standard peptides that exhibit improved physical, chemical, and pharmacological properties compared to conventional peptides. With this system, hundreds of highly potent non-standard peptides can be identified against any target in weeks, covering a wide variety of peptide classes and structures without the bottleneck of expensive

and time-consuming chemical synthesis, significantly increasing the speed of lead identification. Leads can then be chemically synthesized and purified for downstream validation and further development.

PeptiDream has a very strong company foundation. It is built on a strong intellectual property portfolio around core technologies, an experienced management team, and a number of strong partnerships with the world's top pharmaceutical companies including AstraZeneca, Novartis, Bristol-Myers Squibb, Amgen, GlaxoSmithKline, and Daiichi-Sankyo. The company's intellectual property management has been strongly supported by TODAI TLO, and the company has been financially supported by UTEC as a lead investor. Both TODAI TLO and UTEC have been fully involved with the company's business growth even before the company was incorporated. SEED, currently the Office of Innovation and Entrepreneurship, has also been helping the company as an incubator by offering laboratory and office spaces, and other professional services.

PeptiDream is one of the role models of a typical and ideal university technology start-up. The tripartite system of SEED, TODAI TLO, and UTEC worked together very effectively to foster the growth of the company. The market capitalization of PeptiDream once reached over US\$2 billion. The company went public in June 2013.

## **8. Lack of Entrepreneurship for Innovation**

Researchers argue that the lack of entrepreneurship during the past decades in Japan could be an answer to the question on the major reasons for Japan's economic depression. Since entrepreneurship is the wellspring of growth in the modern market economy, the relative dearth of entrepreneurship in Japan has contributed to the nation's economic malaise over the past two decades. Although there are some encouraging signs, such as the sophistication of Japan's technological base and the rise of 'intra-preneurship' in established big companies, entrepreneurship levels today are markedly low relative to pre-1991 Japan and the current levels in other developed countries. To revitalize its sluggish economy, Japan must create incentives to promote start-ups and

rapidly commercialize patented, cutting-edge technologies.

The World Bank (2008) has shown that among Organisation for Economic Co-operation and Development (OECD) countries, Japan ranks last in the average annual entry rate of new enterprises. This rate recently slumped to less than a third of that in the US. The Kauffman Foundation (2012) found that nearly one out of every eight American adults (11.9 percent) is currently engaged in ‘entrepreneurial activity’. This is among the highest rates for a large developed economy. The Global Entrepreneurship Monitor (GEM, 2010) found that 4.8 percent of US adults between the ages of 18 and 64 are working actively to establish new businesses, compared to only 1.5 percent in Japan. Recent surveys by GEM (2010) also measured perceptions about entrepreneurship in 20 innovation-based advanced economies. Japan demonstrated the highest level of fear of failure. Moreover, Japan, followed by Korea, had the fewest citizens who saw opportunities in entrepreneurship.

We could attribute Japan’s entrepreneurship gap to several factors including cultural, societal, educational, legal, and financial factors.

### **8.1. Culture**

The impact of culture should not be underestimated. Japanese culture is not one that encourages risk-taking behaviours. Unlike the American culture that embraces individualistic behaviour, fosters debate, forgives failure, and cultivates open-mindedness, Japanese culture emphasizes conventionality and consistency, and is, therefore, relatively risk averse. The fear of failure and resulting social alienation of the Japanese pose a huge psychological barrier for entrepreneurship.

### **8.2. Social Status**

The social status of entrepreneurs in Japan is not as high as it should be. Typical Japanese parents do not support their children’s aspirations for becoming entrepreneurs. These parents tend to want their children to go to an elite national university and join a government bureaucracy or a major corporation. The majority of parents still encourage their children to pursue the most stable

careers, the highest cumulative pay, and the most prestigious companies, although, these traditional values have been slowly eroding.

### **8.3. Educational System**

Another factor is the educational system introduced after World War II. From the earliest age, Japanese children are being indoctrinated in government-run schools to work within a group. Individuality is sacrificed for the achievement of this goal; the most important objective is consensus. This ‘group thinking’ method is continued throughout the education of children until they graduate from high school. ‘The nail that sticks out gets hammered down’ is a common saying that describes the typical behaviour of the Japanese, where anything not part of the status quo is discouraged, and no one offers new ideas for fear of becoming the nail.

### **8.4. Legal Framework**

The Japanese legal frameworks must also be adjusted. Many argue that the first thing that needs to be addressed to promote domestic entrepreneurship is the bankruptcy law. In Japan, if a start-up fails, the founder’s guarantor or family assumes responsibility for the unpaid debt. Even if the founder dies, the family is still liable for the debt. In other words, the law of limited liability is not nearly as clearly delineated as in the US. This is one of the primary factors blocking would-be entrepreneurs in Japan.

### **8.5. Capital**

One of the most challenging tasks for start-ups is raising capital. Capitalization of start-ups in Japan is not as easy as it should be. Risk money (VC and angel investment) available for entrepreneurs in Japan is quite limited. Since most Japanese local venture capitalists are spin-offs from Japanese banks or securities firms, they are generally conservative, domestic-oriented, and unprofessional. They are often not administered by professionals who have operational experience running start-ups, and they tend to make decisions that

are as risk-averse as possible. Banks are unwilling to lend to entrepreneurs. Even if they did, their troublesome lending practices would sometimes impose harsh conditions on start-ups, such as demands to collateralize all of the assets. US-based venture capitalists are generally disengaged from Japan and see the Japanese market as too small. They are willing to interact only with Japanese start-ups whose founders speak English proficiently or who are interested in establishing a head office in the US or expanding their services outside Japan.

## **9. Challenges Facing University Entrepreneurship for Innovation in Japan**

### **9.1. Supply of Risk Money**

Obtaining the needed financing to grow a new business is a crucial test for an entrepreneur. Supply of VC or risk money available for university start-ups is still very limited in Japan. Of course, as indicated in the beginning of this paper, the Industrial Competitiveness Enhancement Act and the Public Innovation Fund Program may make the lives of the four national universities easier for university entrepreneurship. However, the amount of risk money available every year in Japan is approximately only one-fifteenth of the amount available in the US in 2013.

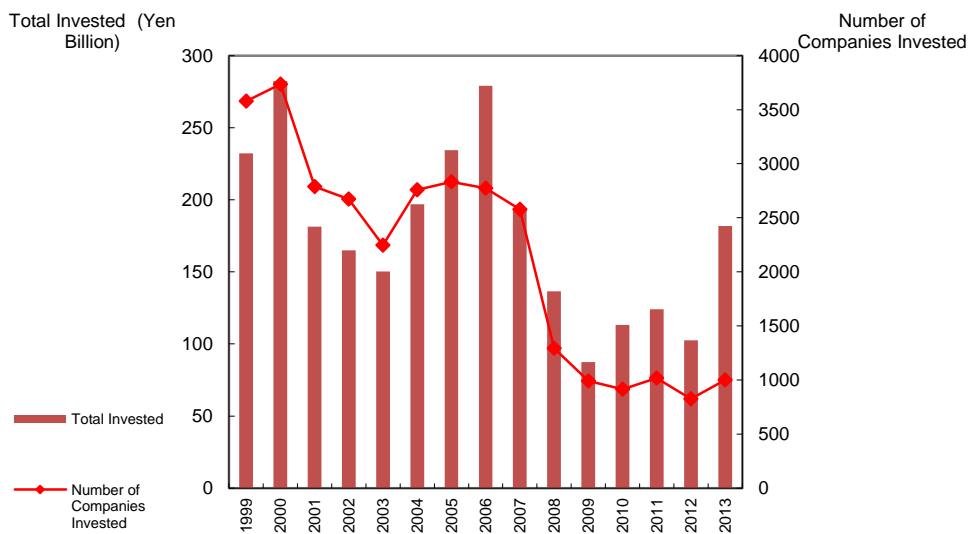
In 2013, the amount of VC investments made during the year by Japanese and US VC firms were approximately US\$1.8 billion and US\$29.6 billion, respectively (Figures 4 and 5).

The total amount of VC investments in FY 2013 (April 2013 to March 2014) was JPY181.8 billion, with a total of 1,000 start-up companies invested (Figure 3.4). Compared to FY 2012, the investment amount rose 77.2 percent, with a 21.4 percent increase in the number of start-up companies invested. With regard to new VC funds, 35 funds were launched in 2013, the second largest number after 39 funds of FY 2007. However, only JPY92.1 billion was raised in 2013 (Figure 3.6). This is less than the JPY119.7 billion raised in FY 2011 or the JPY103.6 billion raised in FY 2012, the fourth-largest commitments



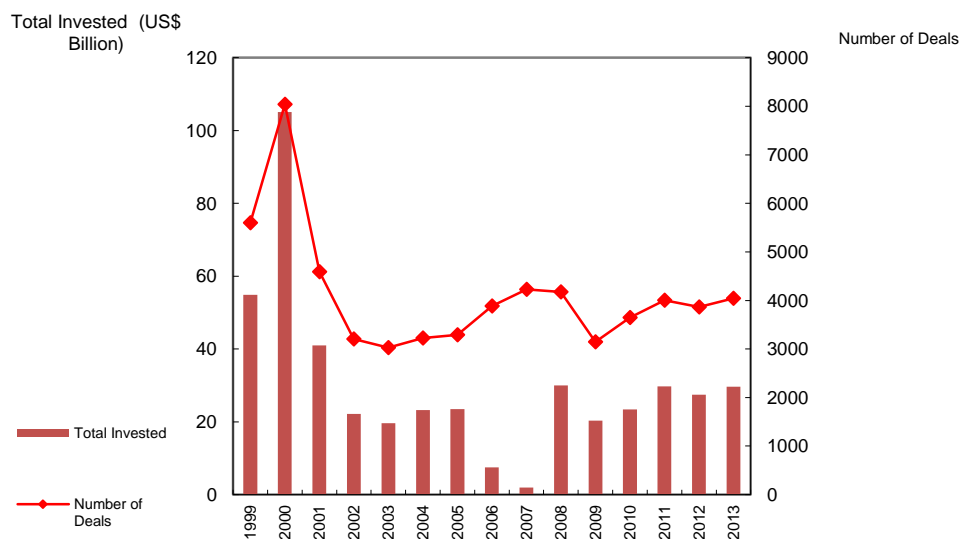
during the past seven years.

**Figure 3.4: Trend of Venture Capital Investments in Japan**



Source: Annual Report on Japanese Startup Businesses, Venture Enterprise Center, Japan (VEC) 2014.

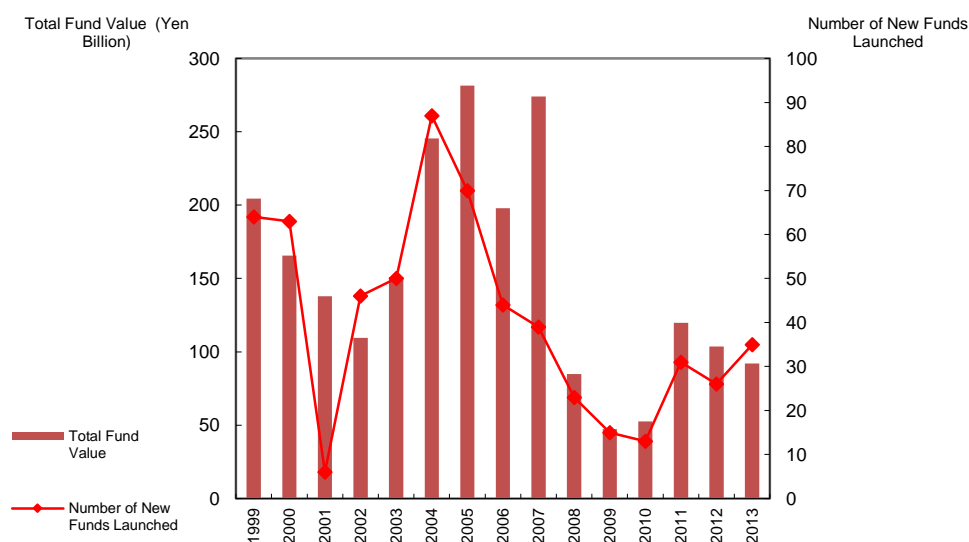
**Figure 3.5: Trend of Venture Capital Investments in US**



Source: NVCA Yearbook, Venture Enterprise Center, Japan (VEC) 2014.

Despite this challenge, the present entrepreneurial environment offers more potential sources of venture financing than ever before in Japan. Traditional venture capitalists have been joined by many new players after 2000, including individual angel investors, ‘accelerator’ funding, and corporate venture funds. Despite the proliferation of funding sources, however, the government can still play a useful policy role in encouraging venture financing through several means: (1) setting up tax incentives, particularly for angel investors; (2) loosening regulations that may discourage university endowments or large pension funds from venture investments; (3) establishing funding mechanisms at Japanese research universities to bridge the gap between research and commercial application (gap funding); (4) creating research programs aimed at the development and commercialization of new technology in which small businesses are encouraged to participate; and (5) establishing government-backed venture funds.

**Figure 3.6: Total Value of Funds Raised and Number of New Funds Launched in Japan**



*Source:* Annual Report on Japanese Start-up Businesses, Venture Enterprise Center, Japan (VEC) 2014.

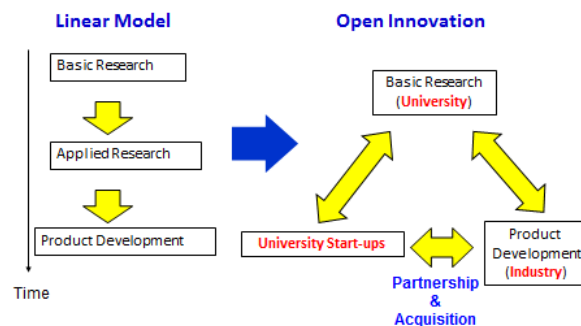
## 9.2. M&A Exit Strategies for Entrepreneurial Ventures

In general, start-up companies can exit the venture stage by merger, acquisition by another business, or by listing on a stock exchange with an IPO. In the US, exit via IPO has declined while exit via M&A has gained in importance. In Japan, IPOs still predominate while M&As remain relatively rare.

Government policy may facilitate all three options, with perhaps greatest attention to encouraging an active and efficient M&A environment, including wider use of preferred stock. Making creative use of tax incentives can encourage acquisitions of entrepreneurial ventures by large corporations, thereby expanding the number of exit opportunities for entrepreneurs.

In cultivation innovation ecosystem, the relationship between universities, corporations, and university start-ups should be evolving from what is called lineal model to open innovation model (Figure 3.7).

**Figure 3.7: 'Paradigm Shift' in Innovation Ecosystem**



Source: Author.

### **9.3. Entrepreneurship Education as a Critical Part of the Innovation Ecosystem**

The business environment conducive to the emergence and growth of entrepreneurial ventures is often compared to an ecosystem because its many elements work in combination with each other. Entrepreneurship education is an essential component of innovation ecosystem.

What should be taught in entrepreneurship education? As a process, entrepreneurship can be analysed, understood, and taught. It is possible to increase the likelihood of success of those who embark on entrepreneurial careers by effectively teaching the process part of entrepreneurship. There are three key components in entrepreneurship education, namely: (1) creativity, (2) project management and team building, and (3) business basics.

#### *9.3.1. Creativity*

Creativity education is a fundamental element of entrepreneurship education—teaching students to identify social or commercial problems and to recognize the business opportunities of solving those problems. This part of entrepreneurship education may need to effectively apply to younger pupils and students.

#### *9.3.2. Project Management and Team Building*

Entrepreneurs also need to be fully aware that the success of their entrepreneurial ventures comes from the management of a series of pivotal events as their organizations evolve, and the management of these events must be done by their leadership team.

#### *9.3.3. Business Basics*

The knowledge of key business basics is also critical. These include accounting and financial analyses; marketing and sales strategies; competitive analyses; dynamism of angels and VC communities; and writing an effective business plan that communicates with possible partners, employees, angels, venture capitalists, and customers. Business plan competitions can be an effective tool for enhancing entrepreneurship education for both students and educators.

In universities in Japan, researchers and students whose majors are science or

basic research arenas may never learn about business or innovation. However, the academic entrepreneurship is characterized as an effort to create a bridge between basic science and business. Therefore, it is extremely important for scientists and engineers to have basic knowledge on how to showcase their research to the business community, what the essential mechanisms and processes for innovation are, and how university scientific outcomes are translated into business.

The Office of Innovation and Entrepreneurship, DURC at The University of Tokyo received a 2.5-year grant from MEXT in September 2014. The name of the program is Enhancing Development of Global Entrepreneur (EDGE) Program. Thirteen research institutions out of 55 proposals have been selected for the EDGE program, and each of these selected institutions, including The University of Tokyo, will be given about US\$0.5–1 million per year.

The program offers an entrepreneurship education for university researchers to provide them with knowledge and skills in writing a business plan using the researchers’ own research, namely, their technologies or intellectual properties; and to mentor them on how to write realistic business proposals (Figure 3.8).

**Figure 3.8: Enhancing Development of Global Entrepreneur Program (EDGE Program)**



Source: Author.

#### **9.4. Celebrating Entrepreneurs and Creating Young Entrepreneur Role Models**

The government has a crucial role to play in celebrating entrepreneurs publicly and in promoting a positive public image of innovation and entrepreneurship in general. Media should contribute to this process by cultivating journalists' knowledge about university start-up businesses based upon science and technology, and other issues related to innovation and entrepreneurship.

### **Conclusion**

Approximately a decade has passed since the incorporation of national universities in 2004. During the past 10 years, different kinds of initiatives for academic entrepreneurship have been taking place, although most of them have not seemed to have produced good role models for university entrepreneurship. Japanese universities have learned a lot from universities outside of Japan, particularly the leading universities in the world including the University of California at Berkeley; Stanford University, MIT, University of Cambridge, University of Oxford, Imperial College London, and others.

With some solid and successful examples of academic entrepreneurship, including PeptiDream and others, the innovation ecosystem practices at The University of Tokyo could be an effective model in Japan for university-based entrepreneurship and innovation. Its tripartite structure, consisting of the university itself (the SEED program, currently the Office of Innovation and Entrepreneurship), TODAI TLO Ltd, and UTEC (a VC arm dedicated to the university), plays a collective role to encourage university entrepreneurship. The university's initiatives in entrepreneurship education, incubation, mentoring and consulting, and graduate entrepreneurs' networking, as a joint effort with the Alumni Office, help cultivate university entrepreneurship. The AEA program and the extension of the innovation model to Kashiwa-no-ha Campus, are models for partnership involving local governments, corporate sponsors, great research universities in Asia, and entrepreneurs from Asian countries and economies. The University of Tokyo, through the evolution of the innovation ecosystem, is moving toward its goal of contributing more to

the world through innovation based on university entrepreneurship.

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## Appendix. Policy Matrix: General Best Practices for SME Internationalization for ASEAN and East Asia

| <b>Preparation</b>   |   |
|--|---|
| <b>Policy Area</b>   | <b>Measures</b>   |
| <b>Information</b>   |   |
| Initial orientation and familiarization; and general information on internationalization | <ul style="list-style-type: none"> <li>• Services provided by general business support organizations;</li> <li>• Capability set up to provide initial response to enquiries and requests for further assistance; and</li> <li>• Examples/cases of SME internationalization identified</li> </ul>                    |
| Information on market opportunities (potential buyers); and online channels              | <ul style="list-style-type: none"> <li>• Websites on markets and economies, including basic market and buyer information, developed (B – C, and B – B)</li> </ul>   |
| Information on market and industry; and economy information sharing events               | <ul style="list-style-type: none"> <li>• General seminars, networking events, and targeted workshops held (e.g., value chain-specific)</li> </ul>   |
| Publications, business leads and advisory services                                       | <ul style="list-style-type: none"> <li>• Research papers and market feasibility studies published, one-on-one consulting on partner selection conducted by professionals or government officials</li> </ul>   |
| Information on rules, regulations, and procedures  | <ul style="list-style-type: none"> <li>• Services to understand the local business environment, legal framework and market regulations provided (e.g., employment laws, taxation regimes, investment laws, etc.)</li> </ul>   |
| Information on market standards and certification  | <ul style="list-style-type: none"> <li>• Provide organizations with basic information on standards and their application, and certification requirements</li> </ul>   |
| <b>Finance</b>   |   |
| Exporters/business working capital   | <ul style="list-style-type: none"> <li>• Programs to make it easier for a firm to maintain its overseas operations, especially at the start of the business due to maturing short-term debt and upcoming operational expenses provided (includes loans to purchase fixed assets/equipment and machinery)</li> </ul> |
| Discounted loans and risk sharing  | <ul style="list-style-type: none"> <li>• Programs to ease access to export-related loans provided (e.g., insurance</li> </ul>   |

|   |  |
|---|--|
|   | coverage such as export credit insurance and guarantees)   |
| <b>Training</b>   |  |
| Firm-specific training programs for internationalization                                | <ul style="list-style-type: none"> <li>• Formal and informal training provided to help enterprises develop their capacity to train their staff and internationally</li> </ul>  |
| Internationalization and related workshops  | <ul style="list-style-type: none"> <li>• Training sessions on specific issues conducted (e.g., exporting, using free trade agreements, setting up foreign office, etc.)</li> </ul>   |
| Firm-specific market entry advice and assistance  | <ul style="list-style-type: none"> <li>• Advice on internationalization provided at business advisory centres or through professionals via mentorship programs on issues such as market conditions, legal regulations, and general taxation,</li> <li>• Can lead to more in-depth studies</li> </ul> |
| Incentives for internationalization capabilities  | <ul style="list-style-type: none"> <li>• Support to build capabilities required in areas such as branding, certification, e-commerce, and intellectual property rights provided</li> </ul>   |
| <b>Active Engagement</b>  |  |
| <b>Policy Area</b>  | <b>Measures</b>  |
| <b>Procedural</b>   |  |
| Access to overseas trade and related offices  | <ul style="list-style-type: none"> <li>• Overseas offices established that provide market updates and local business or government contacts</li> </ul>   |
| Identification of potential business partners   | <ul style="list-style-type: none"> <li>• Services provided to help identify partners (for B – C, and B – B);</li> <li>• Assistance provided in establishing initial contact; and</li> <li>• Advice provided on building sustainable partnerships</li> </ul>  |
| Assistance in dealing with regulatory procedures and requirements in particular markets | <ul style="list-style-type: none"> <li>• Programs provided to help companies meet regulatory requirements in particular markets in AEC and East Asia</li> </ul>  |
| Assistance in cross-border business disputes  | <ul style="list-style-type: none"> <li>• Support (e.g., subsidies, advice, etc.) provided for investigations or businesses facing problems with local companies (e.g., intellectual property rights issues)</li> </ul>   |
| Addressing foreign bureaucracy and red tape   | <ul style="list-style-type: none"> <li>• Government representation provided and/or access to services in the overseas market facilitated to resolve or expedite any issues related to red tape</li> </ul>  |
| <b>Functional</b>   |  |
| Holding trade fairs and missions  | <ul style="list-style-type: none"> <li>• Local or overseas missions and trade fairs for business leads and potential</li> </ul>  |

|  |  |
|--|--|
|  | projects held, with emphasis on particular value chains  |
| Addressing staffing for foreign markets  | <ul style="list-style-type: none"> <li>• Grants or advice provided on how to attract or retain manpower for overseas business</li> </ul>   |
| Strengthening competitiveness in foreign markets (for foreign buyers in global value chains) | <ul style="list-style-type: none"> <li>• Programs provided to help companies develop a sustainable competitive edge through: <ul style="list-style-type: none"> <li>○ formation of strategic alliances</li> <li>○ showcasing of products overseas</li> <li>○ allowing companies to conduct studies or training to resolve short-term, time-sensitive market access issues</li> <li>○ promoting industries overseas</li> <li>○ providing resources for companies to enforce their trademarks, patents, and copyrights</li> <li>○ adapting technology for foreign markets</li> </ul> </li> </ul> |
| Resolving logistics and transportation issues  | <ul style="list-style-type: none"> <li>• Grants or advice provided to resolve overseas logistical delivery and shipping issues</li> </ul>  |
| Dealing with intellectual property rights  | <ul style="list-style-type: none"> <li>• Support provided to help protect or exploit firm's intellectual property rights when doing business in/for foreign markets</li> </ul>   |
| <b>Growth and Expansion</b>  |  |
| <b>Finance</b>   |  |
| Cost of business operations support  | <ul style="list-style-type: none"> <li>• Support provided for operating and running costs (e.g., reimbursement grants) to sustain the venture in its initial years</li> </ul>  |
| Working capital support  | <ul style="list-style-type: none"> <li>• Long-term working capital support provided</li> </ul>   |
| Tax deductions on overseas expenses  | <ul style="list-style-type: none"> <li>• Tax deductions provided for marketing or investment expenses for overseas operations</li> </ul>   |
| <b>Functional</b>  |  |
| Assistance for growth and expansion in different stages of market development                | <ul style="list-style-type: none"> <li>• Support provided for different stages of market development (e.g., partnerships for capacity expansion, standards, certification, etc.)</li> </ul>  |
| Long-term strategic growth studies   | <ul style="list-style-type: none"> <li>• Support provided to develop long-term strategies and business plans</li> </ul>  |

AEC – ASEAN Economic Community

B – C : business-to-consumer

B – B : business-to-business

*Note:* See Section 5 of paper for specific examples.

## Regional Cooperation Initiatives to Support SME Internationalization

| Regional Initiative  | Explanation  |
|--|--|
| Expand cross-border financing mechanisms   | <ul style="list-style-type: none"> <li>● Facilitate the cross-border flows of financing and financial instruments (e.g., credit; credit guarantees; and trade and supply chain finance)</li> </ul>   |
| Expand cross-border and regional workshops and training                                      | <ul style="list-style-type: none"> <li>● Conduct internationalization workshops targeted at particular value chains and market immersion programs with participation from multi countries, for sharing of experiences and networking</li> </ul>  |
| Establish comprehensive SME user-friendly online information portal                          | <ul style="list-style-type: none"> <li>● Online portal will include:               <ul style="list-style-type: none"> <li>○ information on market and industry trends, and key issues;</li> <li>○ business opportunities and related leads;</li> <li>○ business matching on a region-wide basis;</li> <li>○ comprehensive listing of the region's enterprises in key value chains to facilitate identification of potential partners/ suppliers/buyers;</li> <li>○ information on rules, regulations and procedures in the region's markets; and</li> <li>○ list of internationalization-related advisory services, associated organizations, and individuals in the region</li> </ul> </li> </ul> |
| Establish AEC SME Business Centres in selected locations to support SMEs exporting (directly | <ul style="list-style-type: none"> <li>● Centres would support SMEs on doing business in AEC and East Asian markets (e.g., business</li> </ul>   |

|  |  |
|--|--|
| and indirectly) and investing in the region                              | development services, legal services support, standards, technical issues, human resources-related support, etc.)  |
| Establish “SME Internationalization Best Practices Centre” in the region | <ul style="list-style-type: none"> <li>• Centre will provide practical information to the region’s SMEs on best practices (e.g. case studies focusing on particular value chains and markets, practical and supported frameworks for self-assessment of existing operations, strategies for firms on adapting and implementing best practices etc.), which could be linked to regional advisory services</li> </ul>  |
| SME internationalization through cross-border value chain linkages       | <ul style="list-style-type: none"> <li>• Cross-border linkages in key value chains, can contribute to the development of local communities, product market diversification and the upgrading of participating economies and firms, including SMEs. This could be especially effective in linkages between less-developed economies like Myanmar, and more-developed economies like Thailand (e.g., garment and textile value chain linkages between special economic zones in Myawaddy, Myanmar and Mae Sot, Thailand).</li> <li>• Provide opportunities for SMEs to “internationalize”, starting in a more limited and manageable way, with neighbouring countries. Within the framework of global value chains, this could provide significant opportunities for expansion.</li> </ul> |

AEC – ASEAN Economic Community  
SME – Small and Medium Enterprises