

HUMAN RESOURCE DEVELOPMENT AND CAPACITY BUILDING IN SOUTHEAST ASIAN COUNTRIES

Sofian Effendi
Rector, Gadjah Mada University
Yogyakarta, Indonesia

e-mail: sofian@ugm.ac.id

I. INTRODUCTION

East and Southeast Asia bring to mind images of development success story, as they grow at high rates for at least three decades. The region is home to Japan, China, and Taiwan, whose foreign exchange reserves rank first, second, and third in the worlds, and it is house of tiger economies whose living standards trails those of developed nations. The 2005 World Development Indicators revealed that over the last decade East Asia and the Pacific were the best performers, with growth rate averaging 6.7 percent a year, and followed by Southeast Asia with an average growth rate of 5.5 percent. Leading this growth was China and India, each accounting for more than 70 percent of its region's output. The two regions continued to do well in 2003, with East Asia registering a high average of 8 percent and South Asia recording 7.5 percent. But the world's fastest-growing regions also home to some of the world's slow growth economies. The gulf between Asia's fast-growing nations and its laggard economies continues by the year and creating a regional landscape that is starting to mirror development gaps between best performers and poor ones.

A sound national system of Human Resource Development and institutional capacities seem to be some of the key drivers of economic success in these regions. While HRD and foreign investment individually affect growth, they also reinforce each other through complementary effects. Appropriate HRD strategy and increased national capacity could attract foreign investment by making the climate attractive. This is done through a direct effect of upgraded skill level of the workforce, as well as via indirect effects such as improved socio-political stability and improved policy and management capability. On the other hand, foreign investor may contribute to HRD since multinational companies provide education and training, bringing new skills, information and technology to host developing countries.

Empirical studies have substantiated strong link between economic success of high performers in Southeast Asia with viable institutional capacity development strategies and sound national policies for human capital formation. Although many of the countries in Southeast Asia continue to maintain vestiges of import substitution industrialization strategies, the core development strategy in the Region is now export-led industrialization, as in the countries of Northeast Asia. But whereas in Japan, Korea and Taiwan the government nurtured local firms into internationally competitive exporters, in Southeast Asia governments have overwhelmingly relied on foreign companies to drive export-led industrialization. Forming knowledge and skills that match the changing technostructure would be a great challenge for the government of these countries. The

extent to which countries can successfully address these issues depends on their national system of human capital development — the policies, institutions, organizations, processes, and actors involved in developing knowledge and skills in the local labor force. Asian economies have leveraged foreign investment for economic growth more effectively than other regions of the world (see, inter alia, Zhang, 2001). Thus, there may be significant policy lessons that can be learned from the “East Asian” developmental experience and applied to other countries. In many respects, however, this “Asian” perspective is overly coarse. In reality, Asia is not a large homogeneous bloc wherein foreign investment has been used equally effectively, or even similarly. Rather, significant political and economic differences exist among the countries and sub-regions of Asia. Therefore, understanding the variation within these sub-regions may do more to clarify the relationship between foreign investment and economic development. And finally, although foreign investment has been important in the development of other regions, it has played a disproportionately important role in the development of Southeast Asia.

II. INCREASING ROLE OF PRIVATE COMPANIES IN SOUTHEAST ASIA’S DEVELOPMENT

To begin with, Southeast Asian countries have generally been more open to foreign investment than the countries of Northeast Asia, although levels of openness have certainly fluctuated over time and across space. Prior to World War II, much of the difference between the two regions could be traced to the influence of Western colonialism. Motivated by a combination of rich natural resource endowments and new markets, colonial governments emphasized resource extraction, local market penetration, and liberalized trade. In this environment it should be no surprise that foreign companies began manufacturing operations in Southeast Asia soon after the turn of the century.

With independence following the end of World War II, most countries adopted a more nationalist stance to foreign companies. In Indonesia, for example, foreign companies was invited in to explore the natural resource sectors, especially oil and natural gas, but constrained in most other sectors, notably agriculture and manufacturing (Saad, 1995). In the Philippines, foreign investment was encouraged in both natural resource and import substitution industries. Nevertheless, political upheaval in the Philippines during the 1970s caused a marked downturn in foreign investment. At the same time foreign investment was growing rapidly in Malaysia and Singapore, which had both precociously begun encouraging export-oriented foreign investment. In comparison, Thailand was somewhat different in that it had never been colonized and so put more emphasis than the other countries on developing local capital. Even so, by the early 1950s Thailand had begun to court earnestly foreign investment to both correct balance of trade problems and kick-start the sagging industrial sector by addressing the investment-savings gap (OECD, 1999a).

By the late 1970s and early 1980s, however, at least three changes evolved in the global economy. First, substantial technological progress, especially in transportation and communication technologies, made international economics more cost effective than in the past (UNCTAD, 1997). Changing technology spawns new and more efficient ways of

organizing business processes, makes possible extended production networks, increases outsourcing, and hastens innovation and product cycles.

Second, there have been changes in the availability of different types of development capital. The global debt crisis of the early 1980s greatly reduced the amount of debt capital available to developing countries. Coincident currency devaluations in Southeast Asia made the potential for direct investment even more attractive (United Nations, 1998).

Finally, changes in ideology . not only in response to the exigencies of the capital market but also in longer-term economic thought . reduced the policy leeway of developing countries to implement nationalist development strategies while simultaneously pressuring them to implement liberal trade and investment regimes. From a short-term perspective, the debt crisis forced liberalization through two channels. First, attracting foreign investment, especially Foreign companies, required both investment and trade liberalization.

Although foreign investment already existed in these countries to some extent before the debt crisis, developing countries tended to view foreign investment at least cautiously if not suspiciously; few governments were eager to pay to open access, which they perceived as contradictory to job creation stance of the government and a big sacrifice of local industry. In most cases liberalization was contained within export processing zones (EPZs) and licensed manufacturing warehouses (LMWs). But in addition to these short-term pressures for liberalization, ideological forces for long-term economic liberalization have also increased. Accordingly, most of the capitalist countries of Southeast Asia adopted a developmental strategy wherein they solicit foreign investment to meet technology, capital, and employment needs, usually in the form of foreign companies. Perhaps as significant, as foreign investment expanded, its form also changed fundamentally. Instead of joint ventures and minority partnerships, the bulk of foreign investment took the form of wholly owned subsidiaries of foreign companies.

The convergence towards a “technoglobalist” development strategy, albeit varying by degree across countries, emphasizes free trade and mobile capital, integrating local firms into productive niches within the global production networks of Foreign companies, and leveraging the technology assets of foreign firms¹⁸. Policy and institutional convergence is apparent in a number of areas. Virtually all of the capitalist (and even some of the communist) countries of Southeast Asia actively solicit foreign investment through aggressive tax and other financial incentives. Each has also addressed issues of political and macroeconomic stability, infrastructure, industrial relations, trade and financial liberalization, and bi- and multi-lateral economic relationships with varying degrees of success. In addition, whereas early foreign investment was more likely to be targeted towards natural resource extraction or import substitution manufacturing, the bulk of recent foreign investment is targeted towards industries manufacturing for worldwide export. And lastly, although foreign investment in Southeast Asia is distributed across numerous industries, it is increasingly concentrated in electronics as indicated in Table II.2..

Yet, despite unprecedented policy and institutional convergence, outcomes continue to diverge dramatically. That is, the ability of countries to successfully leverage the technology assets of foreign companies to create local technological capacity varies greatly among countries. Of particular importance, leveraging foreign technology to

create local technological capacity requires, at a minimum, expanding and deepening the knowledge and skills of a nation's work force¹⁹. Significantly, one of the few areas over which governments still retain broad control is their country's human capital development system.

So far, however, the relationship between human capital formation and foreign investment has been opaque and not well understood. Some suggest, for example, that the rapid economic growth in Asia was the result of foreign companies utilizing pre-existing stocks of intellectual capital as the basis for highly efficient manufacturing operations in the host country (Noorbakhsh et al., 2001). There has been much less said, however, about whether Foreign companies facilitate skills and knowledge formation as well as technological spillovers and externalities in the host country, and if so, how governments might facilitate these outcomes. As most "late, late" industrializing countries must implement development strategies while embedded within the global economy as opposed to protected from it, this question seems especially pertinent and will occupy the remainder of the paper.

II. HUMAN RESOURCE DEVELOPMENT FOR INDUSTRIAL CAPABILITIES?

Dramatic policy convergence with respect to foreign investment and globalist development strategies has not led to a similar convergence in outcomes. In particular, development success of some of the countries of Southeast Asia could be attributable to their ability to leverage foreign companies for human capital formation much more effectively than others. Clearly there are a number of potential explanations of this variation, e.g. trade orientation, share of foreign investment in overall domestic investment, rates of employment, availability of fiscal incentives, levels of trade unionism and organized labor, connective linkages between public and private actors, among others. One of the key of any globalist development strategy is the capacity of the host country to leverage the technological capabilities of foreign companies to develop local technical knowledge and skills.

Foreign companies are more likely to locate in areas that have pre-existing stocks of highly trained human capital. Levels of human capital, defined as accumulated years of secondary and tertiary education, are a significant determinant of foreign investment inflows (Wang, 1990). The importance of a well-educated and trained labor force as a determinant of foreign investment has been increasing over time. According to Florida (1997), the globalization of innovation is driven by technical factors, especially access to scientific and technical human capital. Firms, then, are looking to utilize latent pools of technological capability wherever they exist in the world.

Higher levels of technology within foreign companies create demand for more highly skilled workers. This is consistent with the empirical evidence from Southeast Asia. First, literate, trainable, and unorganized labor with basic skills appear to have been sufficient to attract foreign investment, at least in low-end manufacturing. Importantly, however, none of the countries of Southeast Asia created institutions for industrial upgrading and skills development before foreign investment came, but rather upgraded

incrementally as domestic capabilities evolved to allow for sequential leveraging of prior and future investments.

Demand by itself, however, is only one component of skills formation. Sources of supply to meet this new demand must be found. Although publicly provided education and training inevitably create the bulk of skills and knowledge in any labor force, the challenge of matching the skill sets in the supply of labor to the demands of industry is always great. Thus, whether foreign companies train is an important determinant of whether appropriate skills and knowledge will be created in the local economy.

The amount of training performed by foreign companies appears to be much greater than training offered by local firms. Abdullah (1994) argues that foreign companies in Malaysia have been much more proactive towards human capital and technological development than local firms. In addition to the importance of foreign ownership for training, several studies show that firms in Southeast Asia are more likely to train if they are large, involved in export manufacturing, utilize higher technology, and receive training remuneration, support, and incentives from the government (Tan, 2001; Tan and Batra, 1995; World Bank, 1997).

Since the economies of the capitalist countries of Southeast Asia are heavily weighted towards large, technology-intensive foreign companies, one might conclude that the overall incidence of training would be quite high. But while foreign companies do train more than local firms, overall training levels, even within the foreign companies, remain sub-optimal throughout the region (Arnold et al., 2000; Ritchie, 2001b).

When coupled with weak public education and training systems, the result is an acute shortage of technically skilled workers. Pangestu (1997) reports that electronics firms in Indonesia feel that unskilled labor is available and highly trainable, but that it is virtually impossible to meet the needs of more high-tech ventures for engineers, scientists, and technicians. Firms report hiring expatriates and then resorting to local training to fill the gap. However, resource constraints and collective dilemmas make it virtually impossible for firms to create all of the skills they need. In the end, a lack of high-level technical skills conspires to keep MNC technology at a middling level at best, which simultaneously prescribes and proscribes the level of training Indonesian employees will receive. Similar conditions exist in the Philippines, Thailand and Malaysia. In the Philippines, Foreign companies conduct in-house training, as well as send higher-end workers overseas to the parent facilities for training and education. At the same time, many firms bring in expatriate technical advisors to assist with operations and management through Filipino middle managers (Aquino and Bolanos, 1995).

In the data storage industry, for example, firms in Malaysia and Thailand provide significant formal technological training for the few high-level technicians and engineers in the company. The rank and file assemblers, on the other hand, receive training only on the processes and equipment necessary to do their jobs, which is often limited to operations, assembly, and testing (Salleh, 1995). While this training is certainly not insignificant and does improve overall skill levels, it does little to provide the skills and knowledge needed to move beyond operation into higher skill activities, such as product development.

That entrepreneurship plays such a pivotal role in technological upgrading underscores the importance of firm involvement in processes of human capital development. But if skills and knowledge do transfer, how are they transferred? Much of

the economic literature bearing on this question adopts an explicit neoclassical position, and can be summed up in the following quote: “it is difficult to prevent knowledge from being transferred to the local employees of the firm who work with and observe the technical and managerial techniques of the firm. After some initial learning period, the workers become capable of opening a rival firm, or of transferring their knowledge to new firms in related industries. Markusen (1991) considers this as a positive externality effect for the local economy arising from the presence of the multinational.

To the extent that the intellectual capital transferred from the MNC becomes part of the host country’s human capital, the MNC has permanently changed the factor endowment in that country. “Black boxing” this spillover process (see Fosfuri et al., 2001), however, ignores many important causal considerations including levels of entrepreneurial talent, market size, market access, general business and management skills, skill specificity, breadth of production processes, levels of tacit knowledge, and effectiveness of government intervention. These factors have an impact not only on the rate at which skills transfer from Foreign companies into the local economy, but, equally important, on the type of skills transferred. For example, to the extent that skills are company or industry-specific, they are less valuable to the economy as a whole. Or when MNC operations in foreign countries are only a cog in a network of production activities, the technologies to reproduce an entire production chain do not exist. Finally, simply transferring codified embodiments of technology is not sufficient to ensure formation of the tacit knowledge necessary to appropriately apply the new technology.

Drawing on empirical evidence from the market economies of Southeast Asia supports a more complex understanding of Foreign companies and human capital formation and transfer. In many cases extensive MNC training has led to an increase in certain kinds of knowledge and skills, but it is often unclear whether these skills are appropriate to develop endogenous technological capacity, and this varies widely, even within countries.

Beginning with Indonesia, Saad (1995) argues that although Foreign companies have effectively transferred technology through imported equipment and machinery and through an inflow of managerial and production expertise, the question remains as to how effectively these skills and knowledge have been transferred to their Indonesian partners and employees. Since most technological transfer takes place through on-the-job training, the rate of transfer is slow. The chief problem has been low absorption capacity due to low education levels and an absence of significant R&D activities, both public and private, within the local economy. Maintaining an import substitution growth strategy that prefers capital- and technology-intensive industries to labor- and knowledge-intensive industries exacerbates the wide gap between foreign technology and local capabilities (ibid.:212).

Thus, for example, the Indonesian electronics and automotive industries continue to import a high proportion of its output, both for finished goods and intermediate inputs. In 1992 foreign consumer electronics firms in Indonesia reported importing 87 per cent of inputs and domestic firms 80 per cent. Higher technology Foreign companies assembling electronic components imported 94 per cent of inputs and the average MNC imported 66 per cent of its inputs from within intra-firm channels (Pangestu, 1997:215). Malaysia, in comparison, has acquired significant operational and process skills and technology. Salleh (1995:151) suggests that this “cumulated capability is evidenced by

the reverse technology transfer of the production process expertise from several American-based firms to their parent or sister companies elsewhere”. In such cases Foreign companies account for needed inputs and final outputs, and indigenous firms do not participate in the production network at all or in very technologically insignificant ways.

Although Thailand has not reached Malaysia’s overall level of technological sophistication, Wisarn and Bunluasak (1995) report that in their Thai study all local supplier firms gained a basic knowledge of product, quality control, and process technology from foreign companies. Even so, they note that these spillovers are most often confined to low-level manufacturing process skills (Wisarn and Bunluasak, 1995)³². Indicative of overall dismal levels of technological skills in Thailand, R&D currently performed by Thai businesses lags 10-15 years behind where Korea was during the 1980s when Korea was at a similar level of manufacturing and industrial development. To “catch up” to where Korea was in 1980, Thailand would have to increase business level R&D by 20 times (Arnold et al., 2000).

By most measures The Philippines occupies a position somewhere between Thailand and Indonesia in terms of technological sophistication This may be partially because the Philippines has a much higher number of Japanese foreign companies, which are often seen as less open to skills or technology transfer, although government policy must shoulder its share of the blame. In contrast, Singapore is the technological leader in the region. Although process and production technology make up a significant portion of the country’s technological foundation, local entrepreneurship within technically sophisticated local firms is growing steadily.

IV. FOSTERING PRIVATE PARTICIPATION IN HUMAN RESOURCE DEVELOPMENT

Foreign companies operating in an increasingly liberal and technically complex global economy have contributed to expanding skills and knowledge formation in developing countries. However, without strategic and targeted government policy intervention, it is unlikely that competitive pressures alone will result in an upgrading trajectory capable of intersecting the technological frontier. To upgrade technologically requires that both skills and the technological sophistication of firms be raised simultaneously. The real challenge is how developing world competitive industrial and technologically skilled human capital provides sufficient incentives for firms, especially foreign companies, to help create them, use them, and upgrade them.

The problem is that even when firms train, they lack sufficient resources or incentives to provide for all of the education and training needs within a society. At the same time, even when governments are able to marshal the resources necessary to provide significant education and training, without input from the private sector, it is difficult if not impossible to match the supply of skills and knowledge with industry demand. Creating virtuous circles of human capital development thus requires the resources of the state and the co-operation, direction, and participation of both public and private actors. Since Singapore has been the most successful of the countries of Southeast Asia in creating these co-operative linkages, it has gone the furthest in creating a base of

scientific and technical human capital (see Table IV.1). Even so, there exist pockets of excellence in other countries of the region, in Malaysia's state of Penang.

Without a strong general education and training system, it is virtually impossible to leverage Foreign companies for skills formation beyond the immediate needs of the firm. Not only is there no general or standard level of skills in the work force on which to build, but there is also no system in which to incorporate the participation of private actors to supply public goods. Whether primarily public or private, there must be some overarching co-ordination and management knitting together the greater education and training system. But as much as the structure of the general education and training system influences levels of private actor participation and public-private co-operation, its focus determines, to a large extent, the type and orientation of the skills and knowledge that will be most prevalent in the local labor force.

For example, with Singapore's exit from Malaysia, the government reformed the education and training system to match the needs of industry, especially Foreign companies manufacturing for export. What had previously been a hodgepodge of vernacular and ethnic schools were merged into a single national education system, which the government designed to meet the needs of international business by selecting English as the medium of instruction, requiring 12 years of mandatory education, focusing the curriculum on technology, and explicitly tying vocational education, especially at the tertiary level, to specific industrial sectors and skill needs.

In comparison to Singapore, Malaysia overhauled its education system as a major component of its post-independence, social restructuring process. Instead of English, Malay was chosen as the national language of instruction. While not problematic in a more "techno-nationalist" development environment, language proved to be a significant barrier to coordinating human capital supply and demand for human capital between the largely foreign-owned manufacturing sector and the public education and training system. Second, instead of 12 years of mandatory education, the requirement was initially for only 6 years. Finally, with the exception of Penang, there was little effort to link vocational education to the needs of firms in the export enclaves.

Thailand's education and training policies in many ways resemble those of Malaysia, although often for different reasons. First, even though educational reform in Thailand was not driven by the exigencies of independence, political considerations have always been primary. While this is no longer the case today, in the recent past the country's best and brightest were groomed for the civil service as opposed to private industry. In addition, although Thailand was the first country in Southeast Asia — and the second country in all of Asia behind Japan — to implement compulsory education, it was compulsory for only six years until well into the final decade of the 20th century. Even today the requirement is for only 9 years, although the system will support those who want to remain in school for a full 12 years.

Like Malaysia, the Philippines restructured its education system as part of the transition from colonial subject to independent nation. But unlike Malaysia, the Philippines chose to adopt the US system, virtually part and parcel. At first glance, the evidence suggests that the system performs well, even matching Singapore in terms of enrolment (see Tables IV.2 and IV.3), but the overall numbers of scientists, engineers, and high-level technicians are lower than in Malaysia and Thailand (see Table IV.1). Indonesia is the laggard among its peers. Although the number of technologically

advanced firms has grown substantially since the mid-1980s, until recently little has been done to upgrade the education and training infrastructure. As Tables IV.2 and IV.3 show, Indonesia enrolls only around 50 per cent of its secondary age children and 11 per cent receive a tertiary education. Added to these low enrolments, only a small fraction pursues technical courses of study.

In summary, economic and military vulnerability encouraged Singapore to reform education and training with a bias for technological, scientific, and industrial skills. Malaysia, Thailand, Indonesia, and the Philippines, on the other hand, could rely on rich natural resource endowments to generate foreign exchange, so acquiring technological skills was less pressing. Accordingly, each of these countries focused its education and training system primarily on political, as opposed to economic, objectives, albeit to varying degrees. These political objectives include maintaining national unity, independence, ethnic equality, and political power. As a consequence, there is a dearth of science and engineering skills and knowledge, making it difficult for these countries to fully support or leverage foreign investment for technological progress (Pang and Hill, 1992). Again, however, it is important to point out that there is wide variation both among and within these countries, as we will see in the sections below.

It is possible that many of these trends will reverse in the near future. The Asian financial crisis of the late 1990s, coupled with the current global economic slowdown, has increased the urgency of economic reform, and with it educational reform, in the countries of Southeast Asia. Slowing levels of foreign investment growth together with increased competition, especially from China, for that foreign investment, has put pressure on these countries to move up the ladder of technological sophistication. And yet, unfortunately, efforts for reform are often resisted or dismantled by powerful vested interests for the status quo. Even where reform succeeds, it often only addresses quantitative issues of supply while ignoring qualitative issues of the appropriateness of that supply.

As I have just argued, a strong general education and training system focused on technological objectives is the first step to incorporating Foreign companies into the greater national human capital development system. Even so, to ensure that the supply of skills matches industry demand, the most important step governments can take is to incorporate the private sector into the education and training system as an active participant.

Although governments can foster private-sector participation in several ways, in this section I focus on “pay for play” strategies, in which governments reimburse firms for the training they do. In particular, I concentrate on levy-grant training schemes. As with policies to attract foreign investment in general, there is strong convergence across the region in the policies to leverage foreign investment for human capital formation. Each country has implemented tax subsidies for training and research and development (R&D) expenses. Likewise, various programs exist to subsidize firms for sending their local employees to the firm’s home operations for training; programs also exist to bring experts from abroad into the country to provide on-site training. Finally, in some cases, countries have implemented a skills development levy-grant fund where firms are required to contribute to a training fund. From these funds participating firms can draw money to be used for training. Despite the similarities among these policies, however, the implementation and outcomes vary widely.

By the mid-1970s Singapore had addressed its unemployment problems by attracting Foreign companies involved in low-skill, low-wage, and labor-intensive manufacturing. By 1979 the economy was experiencing labor shortages associated with full employment. In response, the government reoriented its focus for attracting foreign investment from low-skill and labor-intensive industries to high-skill, capital- and knowledge-intensive industries (Singapore Skills Development Fund, 1999a). Both to ensure that its labor force could support this transition and encourage firms to participate in the process, the government implemented the Skills Development Fund (SDF) in 1979.

Like Singapore, Malaysia has implemented a levy-grant training scheme which, according to Tan (2001), promotes increased firm-level training, even after controlling for technological change. In addition, he finds that the program has strongly impacted productivity growth.

Created in 1993, the Human Resource Development Fund (HRDF) began collecting a 1 per cent levy on total wages from firms with more than RM 50 million in revenues. The funds are deposited into an account specifically for the contributing firm.

Unlike Singapore and Malaysia, the other countries of the region have yet to implement a true skills development fund. Thailand implemented what it calls a Skills Development Fund, but without mandatory involvement of private firms the fund soon devolved into a rotating student loan programme⁴⁴. Although recent initiatives have aimed to upgrade the program into a true levy-grant system, they have foundered on the vested interests of a relatively strong private sector⁴⁵ opposed to forced levy-grant training schemes (Ritchie, 2001b). The result has been a disconnect between Foreign companies and the country's education and training system. In one glaring example, Thailand's largest technology company reported that not one of its employees had received technical training at the Ministry of Labor and Social Welfare's training institutes in the two years after these had been upgraded at a cost of \$153 million.

Like Thailand, the Philippines and Indonesia have not implemented a levy-grant training system, nor have they developed the public-private linkages capable of supporting a PSDC. In the Philippines, the result has been a dearth of technical education and training in skills such as electronics and precision engineering, despite the existence of a relatively large and technically sophisticated electronics sector. Since in Indonesia the electronics firms conduct even less sophisticated operations, it lags even further behind.

Technological upgrading in Local and Foreign-Owned Foreign companies The combination of a strong general education and training system and extensive participatory involvement of private actors within that system ensures an appropriate supply of and demand for skills and knowledge that match current levels of technological capability in the local economy. But how do countries upgrade their human capital over time and what is the role of foreign companies in this perpetual process? Assuming that new technical knowledge and skills originate in foreign companies, it is critical to first upgrade the level of technology within Foreign companies and then facilitate transfer of new technology to local firms. As levels of technological sophistication rise within firms, demand for more sophisticated knowledge and skills, as well as the incentive to help create the needed knowledge and skills, also rises (Tan and Batra, 1995), setting in motion a virtuous cycle of technological progress. The key question, then, is how do states encourage firms, especially Foreign companies, to upgrade technologically? There

are at least three areas where government intervention has influenced firm-level technological upgrading in Southeast Asia. These are financial incentives, public research institutes, and supplier upgrading programs.

For example, the Singapore government implemented the Local Industry Upgrading Program (LIUP) in 1986 under which the EDB enters into remunerative contractual relationships with Foreign companies to transfer experienced technical and managerial employees from the Foreign companies to local firms. With the help of these “mentors”, local firms gain the expertise and capacity to supply the mentoring MNC. Partly as a result of this initiative, local Singaporean firms have been able to transition out of low-wage, labor-intensive industry into more capital- and knowledge-intensive industries, including high technology electronics manufacturing, petrochemicals, and a nascent bioscience industry.

In 1986 Malaysia implemented the “vendor development” program, which functions very much like the LIUP in Singapore. However, rather than provide firm-specific incentives, the Ministry of International Trade and Industry (MITI) provides general tax breaks for foreign companies willing to participate in its subcontracting exchange program. In the aggregate, Malaysia has been less successful than Singapore in upgrading the technological content of firms over time; while leading industrial sectors have changed from primary commodities and textiles to high-end electronics⁵³, the technological level of firms remains relatively low and jobs remain lower skilled and labor-intensive. This said, outside of Singapore, Malaysia has been more successful than any of the other countries in Southeast Asia at fostering technological upgrading, with results in Penang approaching those of Singapore.

Unlike Malaysia and Singapore, the tremendous inflows of foreign investment into Thailand during the 1980s and 1990s have done correspondingly little to promote linkages between foreign companies and local firms. Although the Board of Investment (BOI) created the BOI Unit for Industrial Linkages and Development (BUILD), the program never became more than a matchmaking service. As late as 2000, the BUILD was focused on introducing local firms to Foreign companies rather than systematically encouraging Foreign companies to mentor and contribute to the development of local firms⁵⁶.

Indonesia and the Philippines have yet to create formal programs to link foreign companies with local supplier firms. Since only 32 per cent of foreign investment in Indonesia has historically been targeted to manufacturing, and the bulk to low-skill, labor-intensive assembly of mostly consumer electronic products, the need to link foreign companies with local suppliers was initially very small. When US and Japanese consumer and computer electronics firms did arrive in Indonesia, their low-end assembly operations — which supported higher-end design, assembly, and testing operations in Singapore — continued to require minimal linkages with local suppliers. Furthermore, the government did not actively provide incentives for foreign companies to upgrade their operations or help develop a base of local suppliers.

Weak demand in the small MNC-led manufacturing sector for skilled labor coupled with oil-based economic security lessened priorities for technological upgrading. Without strong linkages between the foreign and domestic sectors of the economy, pressures for maintaining “export-oriented protectionism” have remained.

V. CONCLUSION

From the experience of best performers in Southeast Asia in human capital formation and their economic success, we can draw some conclusions which might be useful for other country especially the low performers. First, to spearhead economic development with inducement of foreign investment, host developing countries need an adult population with at least basic schooling. The type of human capital necessary to attract foreign investment obviously depends on the type of foreign investment host countries seek. To attract foreign investment in low-value added industries, abundant availability of elementary educated manpower would be necessary. To attract foreign investment in resource based industries and electronics, it is necessary to develop secondary technical and vocational education. If the aim is to bring in high value-added foreign own companies in the service industries it is necessary to develop tertiary education sector to produce high-level general and technical manpower with close collaboration with the industry so as to formulate demand driven programs.

Like the experience of Malaysia and Thailand, MNEs can contribute to the HRD of the host developing country by providing training and supporting formal education. Small and medium domestic firms tend to underinvest in training as compared to MNEs and large domestic firms, even though the former group usually enjoys higher productivity gains from training. The underinvestment appears to be due to market failures including lack of information, financial constraints and training spillovers. To boost private investment in training the governments of Southeast Asian countries should follow the lead of Singaporean and Malaysian Government in the form of skills development schemes.

Government policies have been important to facilitate training, to minimize financial constraints and market failures, and to promote foreign companies to invest in HRD of the host economy. Most of the successful training policies have been demand-driven, involving industries and foreign academic institutions that have close ties with the advanced developments in technology, business administration and management.

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