

Small Firm Dynamism in East Asia: An Introductory Overview

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1. Introduction

This Special Issue presents a collection of papers which examine the evolution of small and medium enterprises (hereafter SMEs) in East Asia over the past quarter century or so. East Asia is of interest because this region has experienced, on average, the highest economic growth rates in the world during this period. This has been accompanied by dramatic transformations in sectoral output and employment, in demographic patterns and in the flow and composition of domestic and international trade. It is of interest to see to what extent these transformations have affected, or have been influenced by, industrial structure as reflected in the evolution of small firms. At the same time, not all countries in East Asia have grown at similar rates nor has there been uniformity in public policies across the region. How smaller firms have coped with the different policy environments and patterns of economic transformation that have characterized the region in the recent past could be of potential importance to the formulation of public policy in other developing countries.

The papers illustrate selected aspects of the performance of SMEs in East Asia such as their contribution to employment growth, productivity change and resilience in the face of shocks. They also analyze some factors that have been responsible for the observed patterns of SME performance.¹ These factors include aspects of public

policy and the overall business environment such as subcontracting (in Japan), clustering (in Japan and Indonesia), government-business coordination (in Malaysia), low cost entry and exit into business (in Taiwan), liberalization of domestic production and trade (in China), financial and technical support from public sources (in Korea and Japan) and so on. Each of the papers does not cover each factor in equal detail. Instead, the few determinants that are considered most relevant in a particular case are given most attention. What is thereby lost in terms of uniformity is compensated in part by the depth of analysis that is made possible in some of the case studies.

Two non-Asian studies have also been included in the set of papers presented here. This was done in order to accommodate some aspects of small firm behavior and experience that are not well captured in the data available in East Asia. One discusses the role of small firms in generating innovations and the role of public policy in facilitating this in the case of the U.S. (see paper by Audretsch). Another reports on entrepreneurial and locational factors that determine the survival and expansion of very small firms in Africa (see paper by Liedholm).

The rest of this overview is organized as follows. The next section provides a review of small firm experience in different countries in East Asia during the last quarter century or so with respect to growth and employment, response to economic shocks, productivity change and innovation. This is followed by a section which discusses the main factors that are thought to have determined small firm dynamism in East Asia. *Inter alia*, these two sections provide overviews of each of the papers included in this issue. The final section draws some lessons for public policy.

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2. Aspects of SME dynamism in East Asia

SME experience with growth and employment: 1975–1995

Two trends are common to the experience of most East Asian economies with respect to SMEs in the last quarter century. First, SMEs appear to have either held their own or become more important when their role is measured by their share of employment and value added. Secondly, there is some evidence that, within the class of SMEs, the role of very small firms (those with less than 10 workers) has tended to decline.

Japan's pattern of economic growth since 1975 has featured a slowing phase during the late 1970s and early 1980s due to an increase in the price of oil, a major import for Japan; an expanding phase in the late 1980s, the so-called bubble economy period when oil prices declined and overconfidence set in; and a period of stagnation in the 1990s as the bubble economy collapsed and deep-seated problems in the financial sector became prominent. How did Japanese SMEs fare through all this? It would appear that, as a group, Japanese SMEs fared no better or worse than all firms taken together. For example, their share of overall employment remained fairly stable, fluctuating between 70% and 74% in the manufacturing sector. SME shares in value added and output show similar stability. However, within the SME group, there was a clear shift away from very small enterprises (1–4 employees) to larger enterprises. Between 1969 and 1996, the share of very small enterprises fell from 72% of the total to 62% with the bulk of the decline occurring in the last ten years when the overall economy has stagnated. This suggests a link between the recent liberalization of the retail sector (under pressure from the United States) and the survival rate of such enterprises (see paper by Kawai and Urata).

Unlike the case in Japan, the role of SMEs in *Korea* has undergone a dramatic transformation in the last twenty five years. The share of employment originating in SMEs (in manufacturing) rose from 46% (in 1975) to 69% (in 1997) while that of value added rose from 32% to 47%. This is all the more striking if one considers that SME shares in employment and value added had declined throughout the 1960s. Given that Korea's economy

has expanded tremendously in the past quarter century (with occasional downturns as in 1997–1998), these data suggest that SMEs have been important generators of income and employment in Korea despite the general perception that Korea's economy is heavily dominated by large conglomerates. Indeed, Korean SMEs have also become well established, like Japanese SMEs before them, in two activities often associated with dynamism: exporting and overseas investment. Korean SMEs have accounted for about 35% or so on average of total exports from Korea during the last twenty years and have moved more rapidly into overseas investing than even larger Korean firms (see paper by Nugent and Yhee).

Like Korea, *Taiwan* has grown rapidly in the last quarter century but unlike Korea, it has always been thought of as a SME-based economy. An overview of the evolution of its industrial structure since the early 1980s (see paper by Aw) shows that the overall size distribution in manufacturing has stayed more or less the same with a heavy preponderance of SMEs. Within this relatively stable structure, some subsectors such as textiles and clothing show growth in the employment and output shares of SMEs while others, such as basic metals and chemicals, show some decline. Among SMEs, the number of firms in the micro category (less than 5 workers) declined while those in the small category (5–99 workers) increased. The overall impression one gains is that, with a few exceptions, SMEs in Taiwan shared substantially in the country's rapid economic growth of the past quarter century.

China presents an interesting case of market reforms and their impact. Since the late 1970s, China has gradually liberalized its economy and has allowed individuals to set up rural and urban enterprises in a wide range of economic activities. What has been the impact on small enterprises? The evidence to date shows that SMEs in China have gained substantially from liberalization.² While employment data show a relatively constant share for SMEs, value added data suggest an increase in share of total output from 57% in 1980 to around 66% in 1996 (see paper by Wang and Yao). Given that overall national output was itself growing at around 11% per annum over this period, this suggests a very dynamic SME sector.

Indonesia experienced strong economic growth in the 1970s with the help of high oil prices, a period of stagnation in the 1980s when oil prices declined and another period of strong economic growth after 1986 when substantial trade and investment liberalization enabled a dramatic surge in labor-intensive manufacturing export production. Recently, the regional financial crisis of 1997–1998 dealt Indonesia a severe shock from which it has not yet fully recovered. How have its SMEs done through the twists and turns of the economy in the past quarter century? Unfortunately, the data needed to track the performance of the SME sector are not as good for Indonesia as for many of the other countries in East Asia. Nevertheless, it is generally believed that SMEs in Indonesia benefited significantly from the turn to labor-intensive exports in the late 1980s and were not any worse affected by the 1997–1998 downturn than larger firms. The paper by Berry, Rodriguez and Sandee notes that even very small enterprises (establishments of 5–19 workers) shared in Indonesia's export success in the last two decades. Total exports from this group rose from a level of \$137 million in 1983 eighteen-fold to a level of \$2.1 billion in 1992, or an almost three-fold increase as a proportion of total manufactured exports (from 4% to 11%). A significant amount of exportable output was also undoubtedly provided by the SME sector to larger firms under sub-contracting arrangements.

Thailand is one of the few countries in East Asia which shares only one of the two trends noted at the beginning of this section. Unlike the other cases, in Thailand, the overall share of small and medium firms in total employment fell from 60% to 52%. At the same time, as in other East Asian countries, one observes a decline in the share of the smallest firms (with less than 10 workers) from 12% to 6% (see paper by Wiboonchutikul).

SMEs and the absorption of shocks

There are several reasons why it is of interest to investigate how smaller firms cope with economic shocks. First, if it is the case that small firms are better able to adjust to business cycle swings or large exogenous shocks, this would clearly be of help to development strategy. Second, if it can be determined which types of shocks put small firms

at greatest risk, that too would be useful for strategy formulation purposes, especially in cases where employment protection is an important objective. Finally, to the extent that policies can alter the probability of success or failure in coping with shocks, it would be useful to know which set of policies is most effective and under what conditions.

The recent crisis in East Asia provides an opportunity to examine the link between industrial structure and economic resilience. The relative impact of the crisis by size of firm can be judged in part by the effects on capacity utilization and employment. The table below summarizes some results from a survey sponsored by the World Bank in five crisis-afflicted East Asian countries towards the end of 1998. It shows that in all the five cases considered large firms tended to have higher rates of capacity utilization after the crisis than smaller firms. If we assume that firms of both size groups had the same rate of capacity utilization before the crisis, this result might suggest either that large firms were not as badly affected by the crisis in 1997–1998 or were recovering faster. However, we do not have data on capacity utilization rates by firm size before the crisis and so cannot be definite in our inference. The table also shows that, for two of the five cases (Korea and Malaysia), a smaller share of small firms reported fewer workers after the crisis thus suggesting that they had engaged in less retrenchment of their workforces, an outcome consistent with the shock absorption view. However, the results are not uniform. Two other cases (Thailand and Indonesia) show the opposite result, that is, a relatively higher share of small firms report fewer workers after the crisis. The fifth case (the Philippines) is evenly split. The inability to clearly discern the role of size in coping with exogenous economic shocks from such aggregate data as shown in the table suggests that more detailed investigation is needed.

Berry, Rodriguez and Sandee investigate the impact of the crisis on small firms in Indonesia at a more disaggregated level. In Indonesia's case, the crisis resulted in a major economic contraction with GDP declining by about 14% in 1998 alone and the Rupiah depreciating by around 60% in real terms during 1997–1999. In the face of such a crisis, it is inevitable that most economic groups

TABLE I
Impact of 1997 crisis on East Asian firms

		Capacity utilization level after crisis	Share of firms with fewer workers after crisis
Korea	Small	71	61
	Large	77	80
Indonesia	Small	51	54
	Large	63	45
Philippines	Small	76	50
	Large	79	50
Malaysia	Small	64	29
	Large	73	40
Thailand	Small	57	56
	Large	67	45

Note: For the purposes of this survey, SMEs were defined as firms with less than 150 workers.

Source: Dwor-Frecaut et al., *Asian Corporate Recovery*, World Bank, 2000.

will suffer setbacks. Indonesian SMEs were no exception. A survey of 800 small scale enterprises conducted during 1998 revealed that as much as 72% had experienced some economic loss from the crisis. Other sources report that small scale garment producers have been badly affected by the decline in the flow of imported cloth and other raw materials on which their output depends. Other small scale industries dependent on imported inputs or strong domestic demand, such as small clove cigarette producers, have also been hurt by the crisis. Nevertheless, the bulk of the evidence, admittedly impressionistic and qualitative in nature, suggests that smaller firms have been weathering the crisis better than might have been expected and perhaps better than larger companies. In particular, SMEs with a link to export markets have done quite well and have been experiencing a strong surge in demand for their products which have become competitive due to the substantial depreciation of the Indonesian Rupiah. Examples include the SME furniture industry of Jepara and the traditional batik cloth weaving industry of Central Java. Overall, small and medium exporters have laid off fewer workers than non-exporters as a group.

Similar issues can also be explored for the case of business cycles rather than large exogenous shocks. Business cycle swings in fast growing economies could be moderated if the requisite structural adjustments are made swiftly. Given that

SMEs typically have higher labor turnover and corporate failure rates than large enterprises, face lower entry and exit costs, and are less prone to engaging in collective action to forestall labor retrenchment or bankruptcy, an economy that has a higher proportion of SMEs is more likely to be able to adjust smoothly. Taiwan is said to exemplify such a model and is generally thought to adjust quite swiftly to business cycle swings and large external shocks. Evidence of high turnover among Taiwanese firms is provided in the paper by Aw and it might be noted that Taiwan was among the local economies that were not significantly affected by the East Asian crisis.

Wiboonchutikula investigates the shock absorption nature of SMEs by looking at the relative performance of small and large firms over the business cycle in Thailand. He divides the period 1987–1996 into sub-periods of varying industrial growth and finds that employment growth among smaller firms rises at a faster rate when overall industrial growth is slower. In other words, employment in SMEs tends to move counter-cyclically. At the same time, employment growth among large firms is seen to move pro-cyclically, rising more during periods of rapid economic growth. This is consistent with the view that economic conditions are slack larger firms lay off workers who are then absorbed in smaller firms, especially in the service sectors and most likely in the form of self-employment.

Korea presents an interesting case. On the one hand, it is clearly less of a SME-oriented economy than Taiwan. The relatively bigger impact of the East Asian crisis on Korea is consistent with this observation. On the other hand, as Nugent and Yhee show, SMEs have become more prominent in Korea's industrial structure in the last quarter century or so, accounting for progressively higher shares of employment and value added. Accordingly, the Korean economy should have become more resilient over time to business cycle swings and large shocks. While it is hard to compare resilience over time in a statistically rigorous fashion, casual empiricism shows that the Korean economy did recover rather quickly from the financial crisis of 1997–1998, an observation that is consistent with the high proportion of SMEs in its industrial structure.

Total factor productivity performance

Several papers in this Special Issue provide assessments of the technical progress achieved by SMEs as measured by total factor productivity growth.³ Urata and Kawai analyze TFP level and growth by firm size for the manufacturing sector in Japan during 1966–1996. Their results suggest that smaller firms (with less than 100 employees) in Japanese manufacturing do show positive levels of TFP growth throughout the three decade long period considered. Indeed, they managed to make progress even in the stagnant first half of the 1990s. So there is clearly evidence of dynamism in this regard. However, in relative terms, smaller firms do not seem to have done quite as well as larger firms. For most of the period considered, larger firms had higher rates of TFP growth than smaller firms; the only sub-period in which smaller firms had the edge was 1966–1972. Also, in 1996, larger firms clearly had higher levels of TFP than smaller firms on average. However, there is considerable variation in performance across subsectors within manufacturing. Small establishments show higher levels of TFP in the machinery subsectors which do not require large scale facilities and in which many innovative parts and component manufacturers are to be found. By contrast, larger firms have higher TFPs in the metal production industries, such as iron and steel, which are distinguished by high minimum

efficient scales of production. So the computed TFP levels appear to be affected by both technological and scale factors.

The generally inverse relation between measured TFP levels and firm size noted above for Japan is also found for Taiwan. In regressing firm level TFP with firm size and age, Aw finds that the larger the firm size the greater the average productivity. However, the relationship is non-linear in that the gain in productivity is much higher in going from micro-size firms (with less than 5 workers) to small size firms (with between 5 and 99) workers than in going beyond to medium (100–299 workers) and large (300 plus workers) firms. On the basis of the estimated coefficients, Aw concludes that the productivity advantage of increasing firm size is significant only among the size group featuring less than 100 workers, that small firms are only marginally less productive than medium-sized firms and, finally, that the productivity levels of large firms are not significantly different from those of medium-size firms.

Nugent and Yhee report on evidence from Korea. They note that wide variations exist in the estimates of TFP growth reported by different researchers using different assumptions and time periods. With this qualification, they make two points. First, that TFP growth in Korea has tended to be highest in the metal products and machinery subsector which has very few SMEs. Second, in general, sectors in which SMEs are over-represented tend to have lower TFP growth rates than sectors in which SMEs are under-represented. Finally, on the basis of their own analysis, they conclude that TFP tends to rise with firm size through the 101–200 class but then declines.

Wang and Yao analyze TFP growth in the case of China. They find that small firms in China have had a higher growth rate of TFP during the period 1981–1995 than larger firms but that, despite this dynamism, the average TFP level of small firms remains lower. They also report that, in general, both TFP levels and growth among collective and private firms are higher than those of state-owned firms, a finding which suggests that type of ownership is also an important consideration.

The above review of TFP performance in selected countries of East Asia shows that SMEs have been dynamic in that their TFP indices have

risen over time; they clearly appear to have contributed to the region-wide experience of rising productivity in the last quarter century. However, they have not demonstrated a clear advantage over large firms in this regard. The evidence is mixed. Whereas in China, smaller firms have tended to do better than larger firms, the cases of Japan and Korea show the opposite relationship to hold and the Taiwan analysis supports a non-linear relationship between size and TFP growth.

SMEs and innovation

The rate of innovation is another measure of the dynamism of firms. Until very recently the conventional wisdom was that large corporations were better placed to engage in innovation because their scale made it possible for them to invest in R&D.⁴ Indeed, if R&D expenditures are used as a proxy for innovation, it would appear that larger firms undertake more innovative activity. However, R&D expenditures are only a measure of inputs into the process of technological advance and not a measure of the outputs. A better measure of innovation output is the rate of patenting. Measures of patenting rates by firm size are now available for some developed economies. In the case of the U.S., Audretsch shows that the rate of innovation across firm size varies considerably from industry to industry. While large firms generate most of the innovations in such industries as pharmaceutical products and aircraft, small firms have a higher rate of innovation in such industries as computers, process control instruments, and plastics products. Indeed, the relative innovation performance of small firms in the U.S. is even more impressive when we consider that their R&D expenditures are far lower than those of large firms. Similarly, when adjustments are made for size, small firms appear to be more dynamic than large firms on average. For example, Audretsch reports that when adjusted for employment the small firm innovation rate in the U.S. is around 0.31 on average while that for large firms is around 0.20.

Urata and Kawai also provide some data on innovation inputs and outputs by firm size in the case of Japan. First, looking at innovation inputs, they show that larger firms are more likely to engage in R&D activities. Thus, while 44% of

firms having more than 300 workers report in-house R&D with full-time research staff, less than 10% of smaller firms (say with less than 50 workers) report doing in-house R&D. However, smaller firms appear to be as active as larger ones in obtaining R&D from other sources such as universities and research institutes, both public and private. Second, looking at gross innovation outputs, they show that large firms have a higher rate of patenting than smaller firms. For example, while firms with more than 300 workers were patenting at the rate of 174 patents per establishment in 1987, the rate for smaller firms ranged from as low as 3.9 to only as high as 13.7 per establishment. This pattern persists across all manufacturing sectors and for both 1971 and 1987, the two years for which such data are reported by Urata and Kawai. However, unlike Audretsch, they do not report data for patenting rates adjusted by employment, and so it is not possible to compare the per person patenting productivity of smaller and larger firms.

3. The determinants of SME dynamism

Clusters and agglomeration

Clustering refers to the geographic concentration or agglomeration of inter-connected companies in particular business fields. In recent years, there have been several conceptual analyses and empirical reviews of the role of clusters in the competitiveness of industries, regions and countries. It is generally thought that clustering is especially important for smaller firms because they stand to benefit relatively more from the economies of scale, reduction of transport costs, pooling of labor, and technology spillovers that are enabled or promoted by clusters.

Yamawaki reviews the evolution and structure of clusters in the case of Japan. He focuses on two aspects, namely, what gives rise to clusters and what benefits are acquired by small firms from being in clusters. He confirms that clusters are indeed a small firm phenomenon in Japan in that the average size by employment of firms that exist within clusters is around 10, ranging from as low as 6 (for textile firms) to 24 (for garment firms). In order to determine what gives rise to clusters he reviews the history of 14 industrial clusters

covering a wide range of industries and locations within Japan. He notes that it is difficult to generalize about the main determinants of the tendency to cluster since there appears to be a lot of variation in this across different clusters. Thus, in some cases, the existence of a leading large firm was the dominant determinant. Examples are the general machinery cluster that came up around the construction machinery giant, Komatsu Corporation in Komatsu and the automotive parts cluster that grew up around Fuji Heavy Industries in Ota. In other cases, a pooled labor market was an important consideration. A relevant example is the apparel cluster in Gifu which developed around the availability of part-time female labor in the local area. The presence of public research and standards-testing facilities was another important determinant for some clusters. Examples include the textile cluster in Hyogo where a public technology center was first established over a hundred years ago in 1894.

What benefits do small firms derive from being part of clusters? Yamawaki presents results from a survey of such firms carried out in 1996. According to the responses received, it would appear that the four most important benefits of clustering perceived by small firms are specialization, ease of procurement, diffusion of technology and public policy support. Clustering supports suppliers with specialized skills and this allows for a division of labor that results in lower costs. The fact that many firms cited technological diffusion and cooperation as an important factor suggests that there is considerable knowledge spillover within clusters. Finally, policy support provided by regional local government authorities, typically in the form of public testing, research and technology development centers, appears to make a difference. Indeed, the last two factors are connected in that public technology development centers facilitate the transfer of knowledge across firms within the same region. It is also interesting to note that access to labor markets and skilled workers is not cited by the surveyed firms as being very important. There might appear to be a contradiction in the finding that the existence of specialized firms is important to cluster-based firms but the availability of specialized skills is not. This could be explained by the fact that the dominant source of skills acqui-

sition in Japan is on-the-job training and the skills thereby acquired may be too firm-specific to be useful to others. Seniority-based patterns of compensation may also discourage labor spillovers across firms. Finally, labor raiding or recruiting skilled workers from other firms within the cluster may not be considered an ethical business practice in Japan and may, therefore, be avoided.

Berry, Rodriguez and Sandee provide some evidence of the importance of clusters to small firms in Indonesia. They note that a number of SMEs have become successful exporters of rattan furniture, wood furniture, and garments. In each of these cases, subcontracting with foreign firms and clustering have played an important role. Indeed, differences can be noted between the performance of clustered and dispersed enterprises. Clustered enterprises are more likely to be in the exports business and to adopt process and product innovations. Examples include the Jepara furniture cluster of about 2000 small enterprises (and 100 large and medium ones) which has become active in exports. Close contact with foreign buyers has resulted in rapid upgrading and diversification of furniture product lines. This is in contrast to other sources of furniture supply in Indonesia which are characterized by more dispersed production and which have tended to grow less rapidly, be focused more on the domestic market, and stay with a narrower product line.

Clusters may also be relevant to the extent that they stimulate innovation through knowledge spillovers. Small firm innovation depends on knowledge inputs. Given that small firms tend not to spend large amounts on R&D expenditures, it is fair to assume that such inputs are not generated primarily by the own efforts and resources of the firms. It is more likely that such inputs are obtained from knowledge spillovers generated in part by proximity to universities, research and training institutes and in part by proximity to other firms.⁵ Of course, such spillovers are available to all firms, small or large, but they are likely to be relatively more important for smaller firms than for larger ones. Evidence of the importance of knowledge spillovers is provided by Audretsch who shows that innovation is clearly a large city phenomenon in the U.S. in that the rate of innovation per capita is highest in densely-populated metropolitan areas and considerably lower in non-

urban areas. Clearly, the concentration of universities, research institutes, skilled workers, and other firms that is to be found in large cities makes a difference. Reviewing the growing literature on the subject, Audretsch makes the following general observations about the processes and patterns involved. First, knowledge spillovers tend to be geographically bounded in the sense that they tend to have a larger impact on firms which are geographically proximate to the areas where the knowledge is created than on firms which are more distant. Second, this boundedness is more pronounced for “tacit knowledge” spillovers than for other types of knowledge where by tacit knowledge is meant the type that is spread by informal, direct and repeated contacts and social networking. A popular example of this is the networking to be found in California’s Silicon Valley. Third, the impact of tacit knowledge spillover varies by industry life cycle, being greatest during early stages prior to the establishment of dominant designs and product standards. Fourth, sharing a common base of generalized knowledge (as is made possible by links to a common dominant university, for example) is more conducive to innovation than is specialization.⁶

Subcontracting

Subcontracting has often been pointed to as a distinctive aspect of industrial structure in Japan and, to a lesser extent, in Korea and Taiwan. The relative economic success of these countries suggests that it would be useful to ask whether subcontracting leads to higher static and dynamic efficiency. Are the profits or productivity, for example, of the firms that engage in subcontracting as purchasers higher than of those who do not? Does subcontracting free-up such firms to engage in more managerially and technologically sophisticated activities? One can ask similar questions regarding the impact on firms that engage in subcontracting as suppliers. Does this increase their profits? Does it enable them to get linked to technologically more sophisticated supply chains with attendant long-run benefits? The latter set of questions is more relevant for our present purposes since those who engage in subcontracting as suppliers are usually small or medium in size.

Some of these questions are tackled empirically

in the paper by Kimura. He uses firm level data from a 1994 survey of Japanese corporations in the machinery sector, a sector in which subcontracting arrangements are particularly prominent. He is able to distinguish four types of firms in his sample: (1) those who do not engage in subcontracting either as purchasers or as suppliers; (2) those who engage in subcontracting as suppliers but not as purchasers; (3) those who are involved as both suppliers and purchasers; and (4) those who are involved as purchasers but not as suppliers. Two interesting results emerge from the statistical analysis of the links between firm status vis-à-vis subcontracting and other firm characteristics. First, there is little evidence that subcontracting leads to higher profits. The probability of using a subcontractor is not significantly related to the proxy for profits (ratio of operating surplus to total sales). Nor is the probability of being a subcontractor significantly related to this proxy. Indeed, summary sample statistics suggest that completely independent firms, that is, those who do not work with, or as, subcontractors, have a higher profit level on average than the other three categories noted above. Of course, these findings need to be qualified since they pertain to only one sector and one year and the data sample itself is limited to firms above a certain size (with more than 50 workers and capital of more than 30 million yen). Nevertheless, the argument that subcontracting might be a source of efficiency or profit advantage for either purchasers or suppliers is not supported by Kimura’s empirical analysis. The popularity of this arrangement in Japan must, therefore, rest on its other perceived advantages.

Second, the link between subcontracting and technological sophistication is complex. Kimura finds that the probability of using a subcontractor is higher for firms with higher R&D expenditures. What is cause and what effect is not clear from this link. It may arise because technologically more sophisticated firms find it convenient and cheaper to subcontract aspects of their work that are simpler. It may also reflect the fact that those who subcontract find it easier to turn their management energies to technologically more advanced pursuits.

While Kimura provides data on the link between subcontracting and profits, Urata and

Kawai and Aw analyze the link between subcontracting and productivity for the cases of Japan and Taiwan respectively. Urata and Kawai find a statistically significant and positive relationship between TFP (measured as both growth and level) and subcontractor status (as a supplier). However, Aw does not find a similar result for Taiwan. Using the proportion of firm revenues derived from subcontracting activities as a measure of subcontracting and holding constant firm size and age, she finds no statistically significant relationship between subcontracting and TFP growth in any but one (textiles) of the nine sectors she analyzes. On the whole, therefore, the papers in this Special Issue do not make a convincing empirical case that subcontracting is an important determinant of firm profits and dynamism.

Market friendly policies

Something that all developed countries and many developing countries take for granted is the prevalence of market friendly policies allowing for substantial freedom to private entrepreneurs to choose occupations and businesses and, in their businesses, what to produce and how to produce it. In China, however, this has only been possible since the late 1970s (in agriculture) and the 1980s (in various manufacturing industries). Nevertheless, within the last two decades, as gradual liberalization occurred, the SME sector in China has displayed great dynamism. As already noted, by 1995, it had come to account for roughly 63% of industrial output and 74% of industrial employment. Just fifteen years earlier, its share of industrial output stood at 57%. The enormity of this achievement can be gauged in part by the fact that the overall economy grew at a rate of roughly 11% per annum over this period and in part by the fact that SMEs grew despite continuing biases in the allocation of official credit towards larger and state-owned firms.

According to Wang and Yao, China's SME sector grew dramatically because it benefited from the withdrawal of state control in several ways. First, decontrol of agriculture allowed for the proliferation of small family farms. Second, the government's earlier policies of favoring heavy industry development had left a huge vacuum in the consumer goods market which small firms

began to fill in the 1980s. Third, opening up to foreign trade allowed small scale producers to move into labor-intensive exports. Indeed, so attractive were the opportunities offered by the move to market economics that even many local governments and community groups set up new enterprises, adding to the growth of collectively-owned TVE's or town and village enterprises. The lesson to be drawn from this is that SMEs in developing countries stand to benefit tremendously from market-friendly policies which encourage the growth of domestic and international trade in labor-intensive products.

Government-business coordination

Local government-business coordination is identified as a key factor in the performance of small and medium industries in Malaysia in the paper by Rasiah. He shows this by contrasting the performance of small and medium size subcontractors producing machine tools for microelectronic multinationals at two different locations in Malaysia. While demand for machine tools grew strongly in Malaysia during the 1980s and 1990s as a result of the expansion of the foreign-investment led production of microelectronics, the development of the local machine tool industry differed widely among regions. Comparing the cases of Penang and Kelang Valley, which had similar starting conditions, Rasiah finds that the local machine tool industry developed far more successfully in the former location. On the basis of data collected through firm level interviews, Rasiah concludes that this was due to differences in the nature of government-business links in the two locations. The local government in Penang provided various types of support to local SMEs as well as to multinationals. In particular, it got involved in ensuring that multinationals seeking subcontractors and subcontractors looking for work could be matched and were given maximum information about each other. The relatively autonomous state government of Penang was also able to bypass the national government's indigenous entrepreneur preference policies and divert business to capable local Chinese-owned SMEs. By contrast, links between microelectronics multinationals and local machine tool firms did not develop to the same extent in Kelang Valley,

mainly because of a lack of effective government-business coordination.

Public technical and financial support

Many East Asian countries have provided technical and financial support to SMEs over the past quarter century or so. Technical support has been provided in the form of research institutes, testing and standards laboratories, science parks, productivity advisory services, and trade promotion centers. These have not necessarily been for the exclusive use of SMEs but they have tended to be more heavily used by SMEs than by larger firms. Financial support has been provided in the form of directed and sometimes subsidized credit through public and private banks, credit guarantees, and selected tax benefits. While noting that the lack of rigorous data on program benefit and costs makes it difficult to evaluate many of these programs, Nugent and Yhee provide a useful account of the effectiveness of public technical and financial support programs for SMEs in the case of Korea. They note that financial support in particular tends to be widely used and highly rated by Korean SMEs. Broadly speaking, the technical assistance on offer is also generally viewed as useful but not as highly rated as financial support. A similar pattern is reported for Thailand by Wiboonchutikula on the basis of a survey of SME needs. Most firms gave higher priority to reduced interest rates and better access to loans than to marketing and training programs. On the other hand, Kawai and Urata find that small firm start-up in Japan is deterred by the availability of special credit programs. They interpret this finding to mean that subsidized loans protect incumbent SMEs and so constitute a barrier to the entry of new smaller companies. They also note that the Japanese SMEs make heavy use of public technical and research centers and that the acquisition of patents and technical knowledge from outside the firm is a significant determinant of SME total factor productivity levels and growth. Finally, Audretsch notes the success of a program in the U.S. that combines financial and technical support by providing funds for innovation by small businesses. This program, known as the Small Business Innovation Research Program (SBIR), requires each participating government agency to

reserve a portion of its research budget for small firms and provides for support not only at the research stage but also at the commercialization stage. Audretsch reports that SMEs receiving SBIR support show faster rates of growth than those that do not and that a significant number of beneficiary firms would not have been started in the absence of such support.

Owner/firm characteristics and SME dynamism

The set of characteristics discussed so far are in one sense external to the firm. They pertain to the environment within which firms operate. However, other characteristics which relate more directly to firms might also be considered. Such characteristics would include the human capital of the owner, with better educated and more experienced entrepreneurs likely to do better than those with less education and experience. Gender might be an important factor also to the extent that women, for example, might be less risk averse and, therefore, female-owned firms might be more likely to survive but less likely to grow. The location of the firm in an urban or rural area, more or less distant from markets, might also be an important consideration. Unfortunately, direct information on the role of such factors is not available in the papers pertaining to East Asia that are included here. This gap is filled instead by the paper by Liedholm based on data from a Latin American and 5 African countries.

Liedholm discusses the determinants of both firm survival and firm growth. Citing other studies using African data, he notes that the probability that a firm will close or "die" during a given year is clearly related to locational factors. Urban firms, regardless of size, are more likely to survive than rural-based firms and firms located in commercial districts more likely to survive than those operated out of the home, for example. Thus, proximity to markets appears to be an important determinant of firm survival in Africa. Gender does not seem to matter in that firms that close on account of business setbacks and failures are just as likely to be headed by females as by males. Turning next to the determinants of firm growth (measured by number of employees) Liedholm reports results from his own statistical analysis. Locational variables are once again found to be important.

Enterprises operating in the urban areas and in commercial districts grow faster than rural and home based enterprises. The gender of the owner is also a statistically significant determinant of enterprise growth with male owners doing better than female ones. Finally, while relevant measures are not available in Liedholm's data, he reports from other studies that human capital does matter. Prior vocational training of owners is found to lead to faster firm growth. So also is previous experience in other businesses. However, the results are somewhat mixed for measures of formal schooling with some studies reporting a statistically significant positive relationship and others not.

Firm size and growth

Initial firm size is also commonly thought to affect dynamic performance. The assumption is that firms which are below a certain size are unlikely to survive and grow because they face a tough business and policy environment. Certainly, the higher rate of enterprise closures that is typically found for smaller firms in comparison to large ones suggests that this might be a plausible assumption. However, two of the papers in this Special Issue suggest that this may not be the case. First, Liedholm reports results from Africa showing that initial size is inversely related to enterprise expansion. Firms which are smaller at start-up appear to add more jobs per firm than larger enterprises within the sample. Second, Aw shows in the Taiwan case that the causality may run from performance to size rather than from size to performance. In other words, more productive firms grow larger while less productive firms grow smaller or exit. Thus, Aw shows that employment growth among Taiwanese firms is positively related to initial levels of productivity (measured by TFP) in all but two of the nine sectors in her sample. At the same time, employment growth is negatively related to initial firm size. In other words, controlling for initial productivity, the larger the firm the slower it expands. This suggests quite strongly that firm size, by itself, is not a source of advantage but productivity is. There may still be other reasons why smaller firms may face higher risks of closure and bankruptcy but size by itself need not be the deciding determinant of success or failure.

4. Concluding observations

The papers included here do not all explicitly set out to analyze implications for public policy. Nevertheless, it may be useful to see what conclusions might be implied in the data and results that are presented. First, we should note that the results do not make a strong case for the proposition that firm size should be an important focus of public policy. For example, the results do not show unambiguously that small firms are inherently more productive or dynamic than large firms. In some cases they are, but in others, not. There appears to be a lot of variation within the SME category itself, with productivity differences being larger in some cases among SMEs than between SMEs and large firms. Moreover, productivity seems to be influenced by several factors other than size, such as sector of operations. Finally, it would appear that the causal relation may run from productivity to size rather than the other way around.

Second, while some papers show that certain factors are likely to have contributed to small firm dynamism, clear implications for public policy do not necessarily flow from these observations. For example, it might well be the case that clustering promotes small firm development. However, clustering seems to happen on a largely voluntary basis, driven by historical and geographical considerations, and does not seem to be linked to any specific government intervention (other than the provision of general infrastructure such as roads and ports). Similarly with subcontracting. The presence of subcontracting appears to be largely related to endogenous decisions made by firms and not to any particular aspect of the public policy environment. And the decisions thus made apparently involve complexities which are not reducible to simple outcomes for profitability or productivity.

There is one area, however, where public policy intervention seems to make a noticeable difference. This is the technical assistance provided in the form of public testing, research and technology dissemination centers (as in Japan, Korea and Taiwan), skill development centers (as in Malaysia), and universities (as in Japan and the U.S.). These forms of assistance are functional and not necessarily size-specific. They consist of the

production and dissemination of knowledge and skills which, while available to all firms, could have a proportionately bigger role in the economics of smaller firms that do not have the capital or economies of scale to invest in in-house R&D activities.⁷

This suggests that the focus of public policy should shift away from size to the enabling environment within which all firms can contribute to innovation and job growth. When viewed through the lens of size alone, small firms are likely to appear to need protection largely on income distribution grounds since a strong case cannot be made for them on efficiency and static productivity grounds. On the other hand, if the dynamic evolution of firms is given more weight, innovation-oriented public policies can be followed which, while size-neutral in design, could have disproportionately larger positive externalities for small firms.

Acknowledgements

The papers published in this Special Issue were originally commissioned for a project on The Role of Small and Medium Enterprises in Development, organized by the World Bank Institute with funding support from the Policy and Human Resources Development Trust Fund of the Government of Japan.

Notes

¹ Unless otherwise noted, the policy and empirical focus of the papers included here is on small and medium enterprises in the manufacturing sector only.

² Note that China's definition of SME's differs from that generally encountered in the literature. Production capacity is used to define firms by size for industries with a limited

number of products (such as iron and steel) while the original value of fixed capital is used for firms with a diverse range of products.

³ The reader should keep in mind the pitfalls and controversies surrounding the measurement and interpretation of total factor productivity. These are briefly noted in the paper by Urata and Kawai.

⁴ The study of the link between size and innovation was transformed by the publication of *Innovation and Small Firms* by Zoltan Acs and David Audretsch in 1990. They found that small firms in the U.S. enjoyed an innovative advantage on a per employee basis. Similar findings are reported for other countries as well including the Netherlands, the United Kingdom and Italy (see references in Thurik, 1996).

⁵ One might conceive of other forms of knowledge spillover as well, some that may be more relevant in a developing country context. For example, it is often claimed that significant knowledge spillovers occur via international trade through interaction with foreign buyers and equipment suppliers. It is also possible that direct foreign investment projects could lead to knowledge spillovers for host countries.

⁶ While much has been written about technology, geography and regional economic development in developed country contexts (see, for example, the Special Issue of *Small Business Economics*, 1996, Vol. 8, No. 2) little is available on the developing country experience in this regard.

⁷ Evidence of a disproportionately larger effect on small-firm innovation arising from the spillovers from university research is reported for the case of Italy in Audretsch and Vivarelli, 1996.

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