Chapter 3 Manufacturing Businesses Across Asia and the Competitiveness of the Small and Medium-sized Manufacturing Industry

3.1 Manufacturing Across Asia and Small and Medium-sized Manufacturers

The Plaza Accord in 1985 triggered moves by major equipment makers as well as large and medium-sized parts suppliers in the Japanese machine industry to start operations in Southeast Asia, a phenomenon referred to as the relocation of production functions to the ASEAN region. Later, in the 1990s, increasing numbers of small and medium-sized manufacturers followed suit at the request of their main customers or because of a limited manufacturing capacity in Japan.

In the mid-1990s, small and medium-sized electric and electronic manufacturers began operations in China, particularly in the South China region (the Zhu Jiang delta zone) as Chinese industrialization rapidly advanced.

This chapter will discuss the future direction Japanese small and medium-sized manufactures should take; how they can win the competition against "Asian SMEs" while efficiently utilizing the technologies and skills they have accumulated so far, and the strategies they should develop to realize their goals.

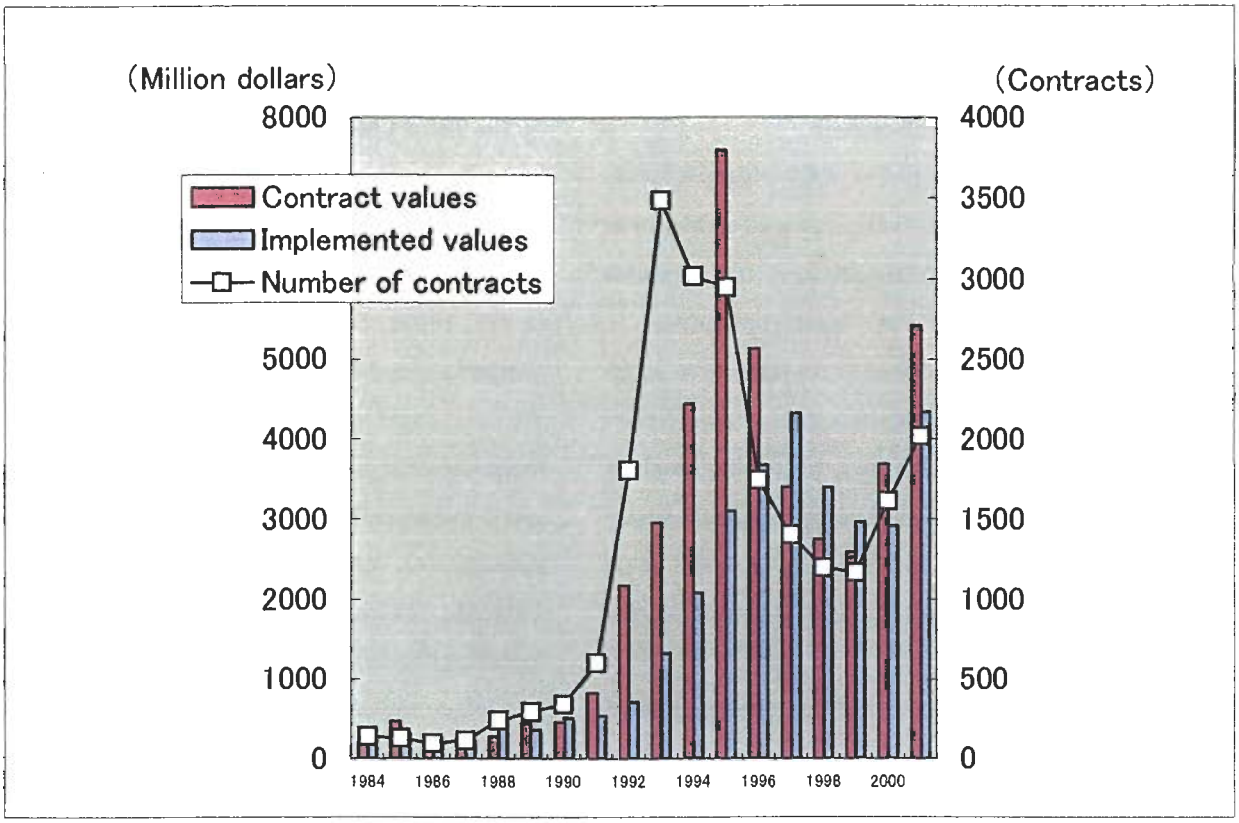
3.2 Japan's Investment in China and Industrial Integration in China

1) The Third China Investment Boom

The environment surrounding small and medium-sized Japanese manufacturers has become increasingly tough since the second half of the 1990s. One contributing factor is the accelerated speed of industrialization in China. With the rapid expansion of the labor-intensive manufacturing industry in the Zhu Jiang delta zone, in particular, Japanese SMEs that have managed to continue order-based production activities within Japan have faced a crisis involving the loss of their markets.

More recently, moreover, in addition to the economic development of the Zhu Jiang delta zone, the greater Shanghai area (Changchiang delta) encompassing the city of Shanghai, Jiangsu and Zhejiang provinces has also rapidly developed its function as an industrial base. Since 2000, Japan's investment in China has entered a 3rd investment boom. Investment in China appears to be expanding further to the North China region. It is expected this investment in "China, the world's factory will continue to boom for the time being. (See Chart 1 showing transitions in Japan's investment in China.)

Chart 1 Transitions in Japan's Direct Investment in China and the Investment Boom (1984-2001)



Source: Based on Chinese Ministry of Foreign Trade and Economy resources

The following three factors have contributed to the increase in overseas direct investment in China, including that from Japan, since 2000. First, existing multinational companies are carrying out additional large-scale investment in order to boost their local operations. Second, the relocation of assembly functions has spurred the relocation of parts and components suppliers to China. Third, investment in R&D functions and additional investment in production facilities targeting the Chinese domestic market have also increased in response to the improved standards of living in China.

2) Multipolarizing Industrial Integration in China

The Zhu Jiang delta zone is an attractive destination for foreign direct investment, and it is attracting the keenest attention from Japan, in particular. The Zhu Jiang delta zone has the following specific features: it is one of the largest industrial areas dedicated to electric and electronic industries; it is an industrial zone originally transplanted from Hong Kong that has been developed into a major export base by foreign-affiliated enterprises, including those from Japan and Taiwan; and role-sharing between Hong Kong and Guangdong is established depending upon their respective

strengths.

The geographical distribution of major product lines in the electric and electronic businesses can be categorized as follows: copiers produced by Japanese companies (Shenzhen); IT-related products, including PCs, made mainly by Taiwanese companies (Dongguan, Huizhou), optics and precision equipment manufacturered by Japanese and Hong Kong companies (Shenzhen, Dongguan); and consumer electronics produced by Japanese, Hong Kong, and Chinese companies (Guanzhou, Foshan).

At the same time, the Changchiang delta zone has also developed into an industrialized area in recent years. This zone has come to be called "Greater Shanghai," having expanded from Shanghai at the center to outlying areas encompassing Jiangsu and Zhejiang provinces (within a radius of 250 km of Shanghai). Although Greater Shanghai originally had an industrial accumulation (a full-set industrial structure) of the various machine industries comprising mainly Chinese companies, it has grown into one of the largest industrial bases centered on high-tech industries since the 1990s, spurred by increasd foreign direct investment.

Foreign-affiliated companies operating in this zone are categorized as follows: consumer electronics, semiconductors, textiles and apparel produced by Japanese and Korean companies; PCs and peripherals and semiconductors made by Taiwanese companies; and IT, automobiles and semiconductors manufactured by American and European companies. This Greater Shanghai zone differs from the Zhu Jiang delta zone in several respects. Although the Zhu Jiang delta zone is more likely to serve as an export base for overseas markets via Hong Kong, Greater Shanghai serves both domestic sales channels and export markets. (See charts 2 and 3 concerning the investment climate and the status quo of foreign operation in the Zhu Jiang delta zone and Greater Shanghai.) More recent years have, moreover, witnessed increased investment in the North China region, including Dalian, mainly by Japanese automakers.

Chart 2 Investment Climate of the Zhu Jiang Delta and Greater Shanghai

	Zhu Jiang Delta	Greater Shanghai
Labor force (wages)	Cheap	High
Labor force (quality)	Inland migrant workers	Highly educated and skilled workers
Infrastructure	Overheating	Improved recently
Supporting industry	Foreign multinationals: Taiwan and Japan	Chinese companies Gradually accommodating foreign multinationals
Market access	Easy access to foreign markets	Easy access to the domestic market
Financing	Very convenient using Hong Kong	Inadequate
Access to information	World information and demand available	Gradually becoming available

Source: Based on data provided by the JETRO Shanghai Center.

Chart 3 Comparison of Existing Foreign Businesses in the Zhu Jiang Delta and Greater Shanghai

	Zhu Jiang Delta	Greater Shanghai
Market	Export (via Hong Kong)	Domestic sales and export
Forms of business	Contract basis, independent	Joint venture (domestic sales)
		Independent (export)
Industrial segment	Electric and electronics	Broad range of segments
Company size	Mainly small and medium-sized	Large companies and MNEs
Production method	Labor intensive	Capital intensive, technology intensive

Source: Same as Chart 2.

3.3 Reaction of Japanese Companies in ASEAN

1) Withdrawal and Reduction of Production Bases

Although ASEAN has so far been positioned as an important production base for Japanese manufacturing industry, especially for electric and electronics makers, many Japanese companies have recently begun to consider the withdrawal and reduction of their production bases in Southeast Asia, because the gap in production costs between China and the Southeast Asia has widened. According to investigations by JETRO, the average monthly wage of an entry-level worker in Singapore is US$421 (¥49,300) and that in Kuala Lumpur, Malaysia is US$198, both of which far surpass the US$43 to US$106 in Shenzhen. For this reason, many labor-intensive manufacturing companies, which are seriously affected by labor costs, are beginning to shift their operations to China. According to an investigation by the "Nihon Keizai Shimbun," Japanese manufacturers have decided to close or reduce at least 22 production sites in five countries: Thailand, Malaysia, Singapore, Indonesia, and the Philippines. (Refer to the July 25, 2002, issue of "Nihon Keizai Shimbun.")

2) Strategy of Japanese Audio-Visual Equipment Manufacturers with Respect to China

As mentioned above, "China, the world's factory" has gained a great deal of attention from the rest of the world. Japanese manufacturers in Malaysia are focusing increasingly on China, meanwhile, in developing their strategies. Japanese audio-visual equipment makers, in particular, are beginning to position Malaysia as a new production base for digital AV products, such as DVCs, digital cameras, and D-VHS video equipment. Although China has an advantage in terms of labor costs, Japanese companies in Malaysia are engaging in "productive innovation" to counter China by taking advantage of "comprehensive power." Cost reductions and shorter lead times have been enabled through efficient use of the parts supply chain covering Thailand and Indonesia, with Malaysia located at the center. (Refer to the May 8, 2002, issue of "Dempa Shimbun.")

Chart 4 shows the transitions in product lines, production systems, capital investment, R&D, procurement of parts/mechanicals and

employment in a Japanese AV equipment maker operating in Malaysia. As this chart shows, this company shifted its DVD production function to China in May 2001 to enable a division of labor between its Malaysian and Chinese production bases. The company started in-house production of mechanicals in May 2002. It also shifted to the "dual assembly method," in which two configurations, i.e. line and cell, coexist. As these examples suggest, the company is making an effort to enhance competitiveness by optimizing its production system.

The situation concerning R&D is another point worth noting. Although basic design was carried out in Japan in May 1999, the "level of localization" has been enhanced since May 2002 to the extent that the basic design of popular models is conducted in Malaysia. As this example shows, each stage of the business process – from product planning, R&D, design, and manufacturing to distribution – shifted first from Japan to Malaysia and then to China in each product category. Defining the optimum combination of categories to be dealt with in Malaysia and in China is actually directly applicable to role-sharing between these countries and Japan. The principle of international division of labor implemented in Japanese manufacturing businesses operating in Southeast Asia, which has accelerated since the second half of the 1980s, is now facing challenges. These challenges are emerging from the situation in which the manufacturing industries in Japan and China are mutually interlocked., We should not therefore simply be dazzled by China's surprising growth, but, instead, we should recognize the actual situations of Japanese manufacturers who tenaciously maintain viable operations in Malaysia and other Southeast Asian countries. By doing so, we will be able to find important clues to use in predicting the future possibilities and potential for small and medium-sized manufacturers in Japan.

Cart 4 Changes Occurring in a Japanese AV Equipment Maker Operating in Malaysia during the Past 3 Years

	May 1995	May 2001	May 2002
Product Lines	Started producing DVDs and other digital equipment.	DVDs moved to China. Started to produce DTVs, STBs and other new digital equipment.	Expanded to include DVCs, digital cameras, D-VHSs. In-house production of mechanicals increased.
Production Methods	Assembly line.	Dual configuration of line and cell.	Optimum production by choosing cell or line depending on item.
Capital Investment	High-speed parts mounter.	Chip mounter and mid-speed parts mounter.	1005 high-density mounter. Lead-free facility.
R&D	Basic design in Japan.	Basic design in Japan. Model change of mass produced products localized.	Basic design for popular equipment localozed. Local engineers fostered and strengthened.
Parts/ Mechanicals	Utilizing the local infrastructure.	Cost reduction by in-house production.	In-house production increased. Local procurement at China-level prices increased.
Labor Force	Sufficient in Malaysia.	Supplied by East Malaysia and Indonesia. Frequent job change among engineers.	Reduction of labor force in the entire industry. Job stability increased. Higher average worker age.

Source: Based on an article in the May 8, 2002 issue of "Dempa Shimbun."

3.4 Japanese Small and Medium-sized Manufacturers' Reaction to Asia and Their Adaptation Strategies

1) Fact-finding Surveys Concerning Manufacturing Across Asia

The Economic Research Institute, Japan Society for the Promotion of the Machine Industry, conducted fact-finding surveys among small and medium-sized manufacturers concerning "Manufacturing Across Asia and the Competitiveness of Small and Medium-sized

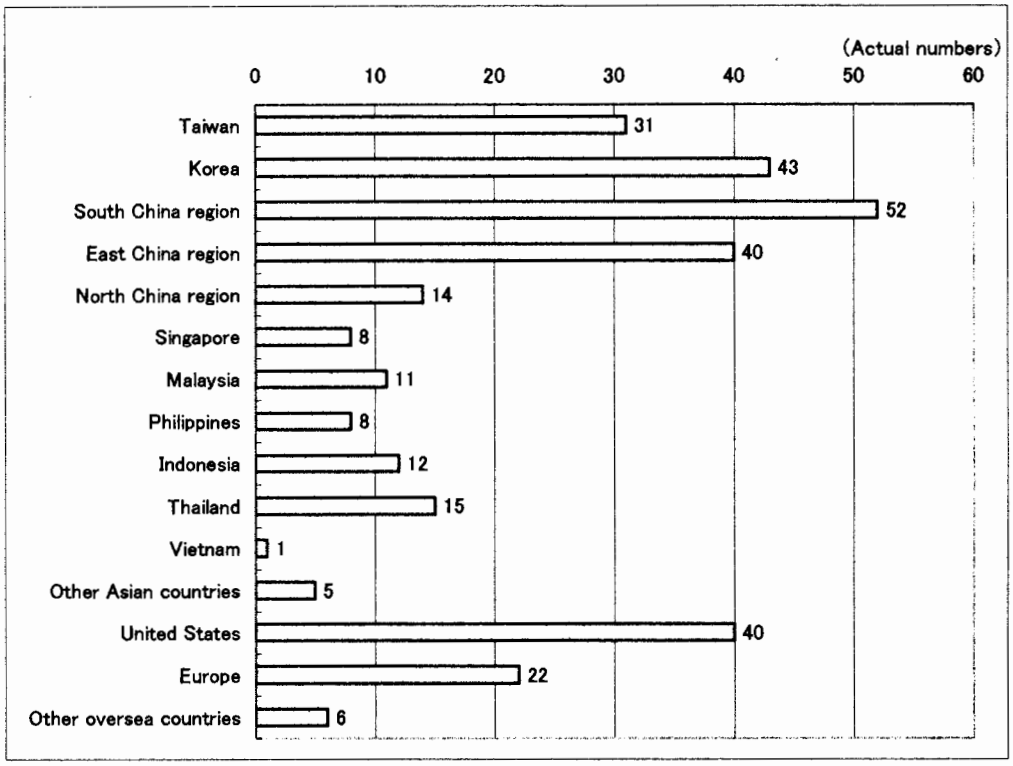
Manufacturers" in September 2002.[2] In the following section, the current overseas operations of small and medium-sized manufacturers, the ideal destinations for their production sites in the near future, the markets they hope to develop in the near future, their assessment of the technological capabilities of Asian SMEs, and their strategies for coping with a manufacturing business extending across Asia – Asian-scale manufacturing – will be discussed.

2) Overseas Operations of Small and Medium-sized Manufacturers

Chart 5 shows the results of an investigation concerning countries and regions in which small and medium-sized firms are operating any of the following business formats: export/import of raw materials; establishment of an office; establishment of a sales subsidiary; establishment of a production site; dispatch of engineers; acceptance of trainees, etc. As shown in this chart, 106 companies, an overwhelmingly large number, replied that they had certain relations with China. Of these, 52 companies replied that they had some kind of business relations with South China (the Zhu Jiang delta zone), followed by 40 companies with East China (Greater Shanghai) and 14 with North China. Forty-three companies replied that they had business relations with Korea and 31 with Taiwan.

[2] This survey was carried out for 500 Japanese SMEs in the machine and metal industry. The number of effective responses was 84, and the collection ratio was 16.8%. For detailed results of the survey, refer to the investigation report, "Manufacturing Across Asia and the Competitiveness of Small and Medium-sized Manufacturers – How Small and Medium-sized Manufacturers Can Demonstrate their Potentials" (H14-2).

Chart 5 Overseas Operations of Small and Medium-sized Manufactures (N= 84, multiple answers allowed)

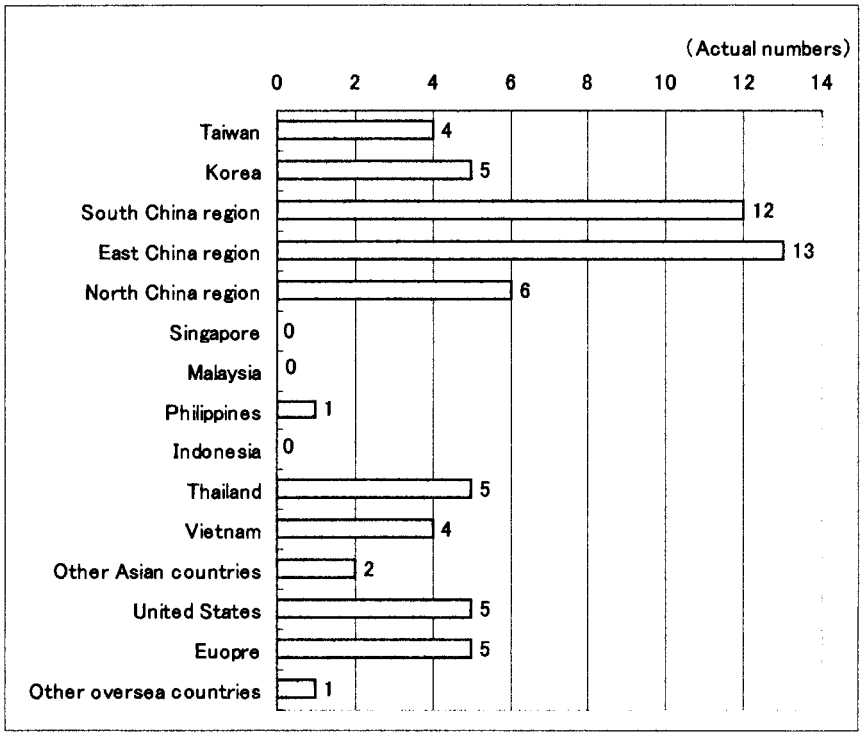


Source: Based on the investigation "Manufacturing Across Asia and the Competitiveness of Small and Medium-sized Manufacturers," conducted in September 2002 by the Economic Research Institute, Japan Society for the Promotion of the Machine Industry.

3) Countries and Regions in Which SMEs Wish to Establish Production Sites

Chart 6 shows the results of an investigation concerning countries and regions in which small and medium-sized manufacturers wish to establish production sites in the future. As shown in this chart, 31 companies responded that China was a preferable site, suggesting that there is a strong preference for China as the most desirable country for future production sites. Among other Asian countries, the respondents answered Korea and Taiwan in East Asia and Thailand and Vietnam in Southeast Asia. Almost no small and medium-sized manufacturers are planning to establish production sites in other Asian areas, however, especially in ASEAN, a result revealing that small and medium-sized manufacturers are clearly shifting their Asian production bases for medium-sized manufacturing industry from ASEAN to China.

Chart 6 Countries and Regions in Which SMEs Wish to Establish Production Sites in the Future (N=84, multiple answers allowed)

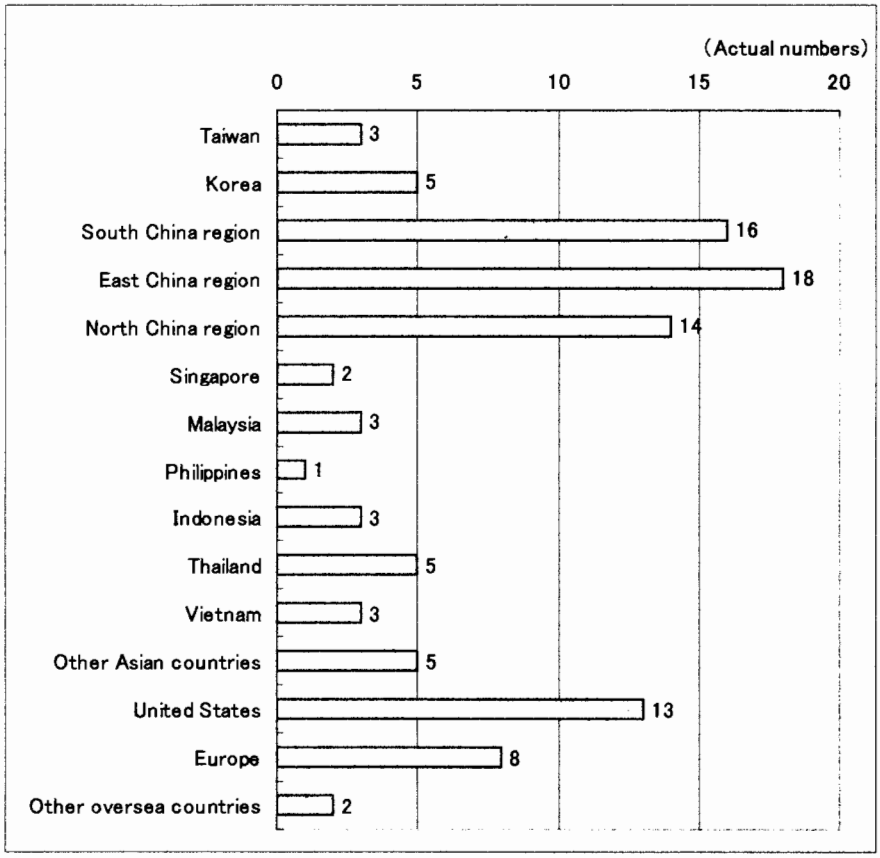


Source: Same as Chart 5.

4) Countries and Regions in Which SMEs Wish to Develop Markets

Chart 7 shows the results of an investigation concerning countries and regions in which small and medium-sized manufacturers wish to develop markets (markets for SMEs refer to intermediary markets to which they supply parts) in the future. As shown in this chart, 48 companies responded that China was the most desirable market, suggesting that there are strong expectations for China, including North China, as a future potential market. Among other Asian countries, Korea and Thailand accounted for a certain percentage. It is suggested, however, that SMEs are more likely to show a keen attention to the Chinese market.

Chart 7 Countries and Regions in Which SMEs Wish to Develop Markets in the Future (N=84, multiple answers allowed)



Source: Same as Chart 5.

5) Meaning of the Assessments of the Technological Capabilities of Small and Medium-sized Asian Manufacturers

Chart 8 shows the results of assessments of the technological capabilities of small and medium-sized Asian manufacturers today and three years from now, as viewed by their Japanese counterparts. There are five rankings for evaluation: +2: Technological level far superior to that of Japan; +1: Technological level superior to that of Japan; 0: Technological level equal to that of Japan; -1: Technological level lower than that of Japan; -2: Technological level far lower than that of Japan. As the chart shows, no country is predicted to be in the plus zone within three years, which is to say, there is no country which will be superior to the current technological level of Japan in the coming three years.

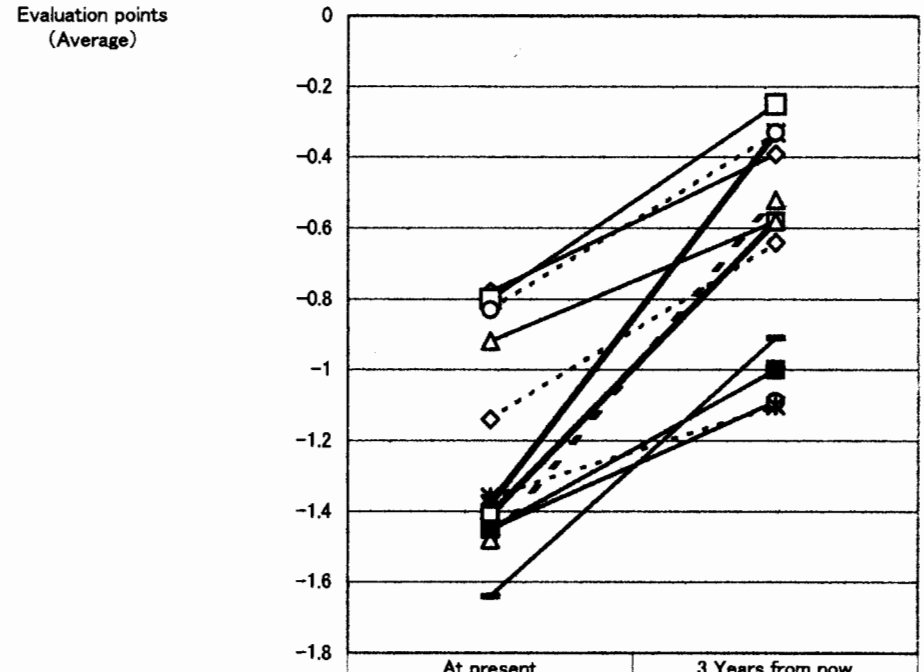
On the other hand, the gap in evaluations between the current time and three years from the current time, i.e. the ascending width, shows some striking differences among Asian countries. Three regions in China, presented in bold lines in the Chart, showed a relatively sharp ascending ratio. This tendency is particularly marked in the South China region. The region received a –0.33 point evaluation for its technological level three years from now, reaching a level equal to that of Singapore. This

is a particularly high point, exceeding not only each of the ASEAN countries but also Taiwan, which received –0.39 points.

As shown in Chart 8, it is certainly true that the South China region, known as the Zhu Jiang delta, has grown rapidly as a major manufacturing base. Because of their geographical advantage, Taiwanese companies have already established a significant presence there, and many Japanese SMEs tend to start their operations first in this Zhu Jiang delta zone. As mentioned above (see chart 3), one noticeable feature of this zone is its extremely labor-intensive manufacturing industry, which takes full advantage of the low labor costs and abundant labor force.

Given that 88.1% of the respondents were SMEs capitalized at less than 100 million yen and that 89.4% were companies with fewer than 100 employees, we should interpret these assessments as having been made by small firms. In other words, the prediction that the technological capabilities of the small and medium-sized manufacturers in the South China region will rise sharply could be interpreted as recognition by the top management of Japanese SMEs, especially small firms, that the region will become a formidable threat in coming years. Put in another way, unless Japanese SMEs, especially small small-scale firms depending on labor-intensive manufacturing, seek a manufacturing style different from that of the South China region of China, they will find themselves in a difficult situation three years from now.

Chart 8 Assessments of the Technological Capabilities of Small and Medium-sized Asian Manufacturers (at Present and 3 Years from Now)



	At present	3 Years from now
Taiwan	-0.78	-0.39
Korea	-0.8	-0.25
South China region	-1.38	-0.33
East China region	-1.41	-0.58
North China region	-1.48	-0.52
Singapore	-0.83	-0.33
Malaysia	-0.92	-0.58
Philippines	-1.45	-1.09
Indonesia	-1.64	-0.91
Thailand	-1.14	-0.64
Vietnam	-1.45	-1
Other Asian countries	-1.36	-1.1

Note: Companies were asked in this investigation to give "Assessments of Technological Capabilities" only for the technological fields in which they consider themselves have particular strength and in which they are thus able to assess others. The number of effective responses was relatively small, ranging from 10 to 30. The averages should be treated as references only.

Source: Same as Chart 5.

6) Strategies for Adapting to the Asian-scale Manufacturing Adopted by Small and Medium-sized Manufacturers

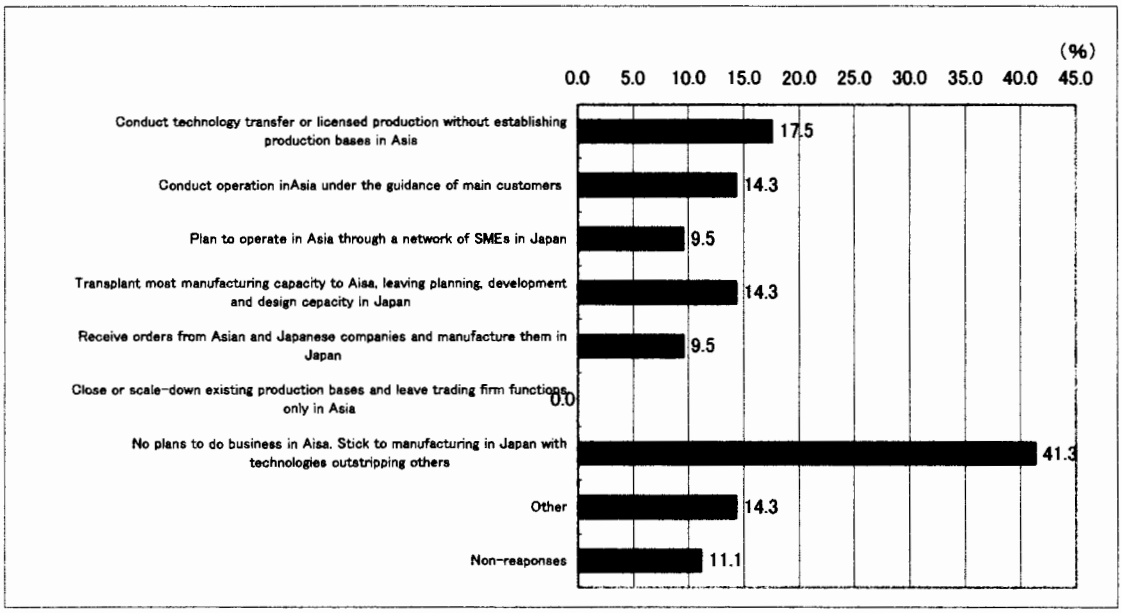
Chart 9 shows the results of an investigation concerning the strategies of small and medium-sized manufacturers for adapting to Asian-scale manufacturing (with the choices limited to two or less). It should be noted in

chart 9 that there was no company considering "closure or scaling-down of the existing production base." In other words, regardless of whether they choose to stay in Japan or to go overseas, they are strongly aware of the need for strategic management that takes Asian-scale manufacturing into consideration one way or another. The responses have been sorted into two categories: companies operating in Asia and companies operating in Japan. Such responses as "technology transfer and licensed production," "operation in Asia under the guidance of main customers," "operation in Asia through a network of SMEs" and "transplanting manufacturing capacity, except for planning, development and design, to Asia" belong to the category of "companies operating in Asia," which accounts for 54.8%. "Orders received from Asian and Japanese companies at home" and "manufacturing at home with technologies outstripping others," on the other hand, belong to the category of "companies operating in Japan," which accounts for 48.8%. In other words, the results of this investigation reveal that strategies for adapting to Asian-scale manufacturing are clearly divided into two categories in terms of type of operation: companies operating in Asia and companies operating in Japan.

While most companies operating in Asia maintain "collaboration with main customers" as a specific strategy, some companies aim at "technology transfer and licensed production." Many small and medium-sized manufacturers that have operated according to a traditional "ASEAN operation strategy" used to choose the former. In China, however, most companies are expected to choose the latter, "technology transfer and licensed production strategy."

"Companies operating in Japan" are more likely to choose a strategy of adopting "technologies outstripping others," i.e. dealing with the situation by using their "core competence" to differentiate themselves from others. In order to achieve this, they must continuously raise the level of the technologies and skills that support the core of their management resources. We should also note the international order strategy for domestic operation-oriented companies. This is a strategy of receiving orders from Asian and Japanese companies in Asia. It has already been put into practice by small and medium-sized manufacturers in Ota, Tokyo, suggesting that it could be another viable solution for companies operating domestically.

Chart 9 Strategies for Adapting Asian-scale Manufacturing Adopted by Small and Medium-sized Manufacturers (N= 84 and replies are number two or less)



Source: Same as Chart 5.

3.5 Proposals for Strengthening the Competitiveness of Small and Medium-sized Manufacturers

Against the background of accelerating Asian-scale manufacturing with China taking the lead, proposals to strengthen the competitiveness of Japanese SMEs will be presented below based on the results of the above investigations.

1) Competition and Collaboration with Chinese Companies

It is evident that Chinese companies will be important partners for Japanese companies. Small and medium-sized manufacturers in Japan must, therefore, conduct their own investigations or analyses concerning the possibilities of doing business with China, taking into consideration two possible scenarios: "China as a rival" and "China as a partner." Their strategy toward China business with China will depend on whether they regard China as an "export base" or as a "market base." They should therefore, fully examine their management strategy before making any decision concerning Chinese operations.

2) Proposals for Risk Aversion

Unlike the situation concerning Japanese operations in the ASEAN region, incidences of illegal pirating of technologies, products, know-how and other intellectual properties are rampant in China. there are Not a few Japanese companies have failed in their China business, moreover, due to differences in the labor market, business practices and the taxation system and other reasons. Small and medium-sized manufacturers that plan to enter China, therefore, will be required to make use of every possible means pf support and resource to

prepare themselves for the risks associated with doing business in China [2]. Learning lessons from successful cases is also an effective way to avert risks. Opting for a joint venture with a Taiwanese company, a method actually employed by a leading Japanese company, could be another safe way of doing business in China. At any rate, the first and foremost prerequisite is to find a "reliable partner."

3) Support and Information

Public organizations, including national and prefectural SME support centers, should provide more detailed, accurate and diverse information on business in China. It is highly recommended that a system to support and facilitate business with China be established. The merits and demerits, local business climate, local technological level, partners' situations and other relevant information concerning China should be investigated, analyzed and passed on immediately to SMEs, rather than simply leaving them to ride on the China boom. Furthermore, practical use of private sector initiatives is also important; e.g. utilizing Japanese consulting companies operating in China and obtaining accurate information concerning the specific localities in China.

4) Support for Domestic Operation-oriented Companies

It is necessary to establish a support system, including an industry-university-government collaboration scheme, for small and medium-sized manufacturers that wish to continue manufacturing in Japan so that they can compete effectively against overseas companies in countries, such as China. Support provided to domestic operation-oriented companies should be appropriate for the Japanese market, in particular, and should have a clear focus, such as support for exploration of new markets and a sophisticated level of manufacturing, such as "low environmental-load manufacturing" and "manufacturing responding to an aging and welfare society." For this purpose, various local resources accumulated in industrial areas all over Japan should be reviewed and reconsidered, so that each locality can foster and enhance the power of its distinctive brands.[3]

5) Conversion to a Management Style Corresponding to International Business

Full-scale integration of the Chinese economy into the international market through WTO membership represents a threat to small and medium-sized manufacturers in Japan. China's entry into the international market, however, means that two giant players, Southeast Asia and East Asia centering on China, have appeared in Asia and, at the same

[2] The Japan External Trade Organization (JETRO) has announced the establishment of a "Business Support Center" to provide support in the areas of legal affairs, accounting, and protection of intellectual property rights for Japanese companies doing business in China. The first support center will be opened in the JETRO Shanghai office on March 7, 2003. Beijing and Hong Kong will follow suit. According to JETRO Tokyo, nearly 57% of companies receiving counseling on investment from April to December 2002 had relations with China. While Japanese companies have a strong desire to do business in China, many SMEs lack sufficient in-company systems for dealing with legal matters. This is why JETRO has decided to provide support for the companies. (Refer to the February 27, 2003, issue of "Yomiuri Shimbun" for details.)

[3] For details concerning the revitalization of the machine industry in Japan with the power of local brands, refer to "Reconstruction of Industrial Integration and the Present Situation of Network Building – Manufacturing Taking Advantage of Local Resources" (H 14-4).

time, signifies that the Chinese economy has completely "locked into" the international economy. Regardless of whether they are domestic operation-oriented or overseas operation-oriented, small and medium-sized manufacturers in Japan, as a whole, should therefore regard this new enlarged market positively as a "golden opportunity" and shift from their hitherto insular management mindsets to an international viewpoint. In order for small and medium-sized manufacturers with limited management resources, to face these challenges, they should urgently develop human resources, organizations and markets by utilizing various networks, such as intra-industrial groups, cross-industrial groups, industry-university-government collaboration, and the latest information technologies.