

5 PLAYING THE CHINA CARD: THE CHINA STRATEGY OF THE TAIWANESE ELECTRONICS INDUSTRY AND THE JAPANESE RESPONSE UP TO 2000

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INTRODUCTION

This chapter examines the emerging strategies for China of the two largest segments of Taiwan's electronics industry, PCs (personal computers) and ICs (integrated circuits), and the challenges and opportunities that these emerging strategies represent for Japan's own electronics industry. The Taiwanese strategies for the Chinese market in these two segments are a study in contrasts. China is emerging as the critical manufacturing base for the Taiwanese PC industry, while for the Taiwanese IC industry, China is still undeveloped in terms of manufacturing despite the recent moves in Shanghai, emulating the Taiwanese pureplay foundry model. The Taiwanese IC industry is mostly concentrated in Taiwan with some expansion of activity into advanced countries. The Taiwanese PC strategy places cost pressures on the Japanese competition while the Taiwanese IC strategy for China does not present much of a threat. The Japanese PC firms are tentatively beginning to follow the American path of outsourcing production while concentrating on design at the front end and marketing and distribution at the back end. The Japanese and Taiwanese IC industries are at least as much complements as competitors to each other. Japanese IC firms are positioned in different segments in China than their Taiwanese counterparts, and are enhancing their cooperation with Taiwanese ICs firms on a global scale.

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TAIWAN'S CHANGING PC STRATEGY

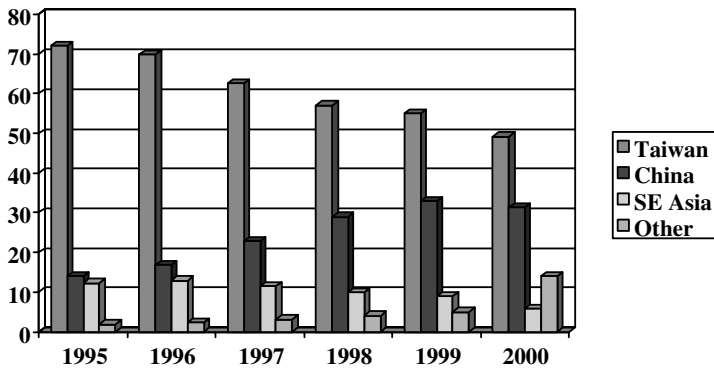
THE OLD PC STRATEGY

The Taiwanese PC strategy for China has up until recently consisted of using China as an export platform while focusing advanced production, global logistics and R&D in Taiwan. The PC industry has gradually moved production to China over the past decade. First, the lower value-added peripherals and components, such as computer pointing devices, keyboards and cases, were relocated to China. Then, in the mid-1990s the production of power supplies and scanners began to relocate to China. Finally, in the late 1990s over half the motherboard and monitor production by Taiwanese firms was done in China, and Taiwanese desktops began to be produced there in large numbers. In 2000, for the first time, significant numbers of notebooks were produced in China. While the role of China as an export platform has been increasing over time, Taiwan has still retained much of the brain functions of the Taiwanese PC firms. Even as Taiwanese firms began to do more research and design and take up the responsibility of global logistics for delivery to end users, these activities were developed and maintained in Taiwan. The pilot plants to perfect the production of new products were also retained in Taiwan. Advanced manufacturing in terms of notebook production and high-end desktops also remained in Taiwan.

As shown in the figure below, overall IT (information technology) hardware production has rapidly left Taiwan. Taiwan's share of output value went from 72 per cent to 49 per cent from 1995 to 2000. China's share of output went from 14 per cent in 1995 to 31 per cent in 2000. While IT hardware covers more than simply PCs, in the case of Taiwan, PC-related production dominates Taiwanese IT hardware production. The top four items in production value of IT hardware in Taiwan in 1998 were all PC products: notebook computers, monitors, desktop computers and motherboards. These top items accounted for 79 per cent of Taiwan's total IT hardware production value, including production done abroad.

The trend shift in the data for China in 2000 in the above figure requires some explanation. In November 1999, the Market Intelligence Center, a quasi-governmental agency, announced that it projected China's share of Taiwanese IT hardware production would go up to 38.6 per cent (*CENS* 6 November 2000, internet), but the final figures actually showed a decline of about two per cent of total output value, and the share of the category 'other' skyrocketed from five per cent to 13 per cent. The South-east Asia category as compiled by the Taiwan Market Intelligence Center only includes Malaysia and Thailand, so the Philippines is included in the

Figure 5.1: Locational distribution of Taiwanese IT hardware production (percentage of output value)



Source: Market Intelligence Center (MIC), Institute for Information Industry (III).

'other' category. Even with investment in the Philippines, the skyrocketing investment in countries in this category is suspect. While a large portion of Taiwanese investment in China is investment registered in third countries to get around the restrictions on investment in China, it is probable that the documented decline in investment in China was engineered by counting China-bound investment made via third countries in 2000 as investment to those third countries. In the past years, much of this investment in China via third countries was simply counted as investment in China. Given the November announcement of a large increase in China-bound investment, this author suspects that political considerations played a part in re-assigning much of the investment to the more politically safe 'other' category.

FEATURES OF TAIWAN'S PC PRODUCTION IN CHINA

There are three distinct features of Taiwanese PC production in China. 1) Taiwanese firms are WFOEs (wholly foreign-owned enterprises). 2) Taiwanese firms are clustered in Guangdong and Greater Shanghai, which covers the area from Shanghai to Suzhou. 3) Up until the past year, Taiwanese PC production in China has been almost completely focused on exports.

Virtually all Taiwanese PC firms in China avoid JVs (joint ventures) with Chinese partners. The core group of desktop, notebook, monitor and motherboard makers that have set up shop in China over the last five years are particularly set against JVs. Even when compared to the recent

trend among foreign-invested enterprises in which nearly 50 per cent of the new contracts made from 1997 through 1999 were for WFOEs, the Taiwanese stand out as biased against JVs (Sutter 2000, p. 2). Most Taiwanese interviewed expressed dissatisfaction with their ability to control JVs with Chinese partners as the motivating factor behind opting for WFOEs. The Taiwanese managers were convinced that the difficulties experienced by Taiwanese firms in earlier waves of investment were due to the necessity of dealing with partners from China.² Along with learning from past experience, the decision to eschew JVs may be connected to the export-platform strategy in PCs. With a concentration on exports, the Taiwanese firms have had no need to make alliances with local PRC firms to gain access to their sales and marketing networks in addition to being a loophole in China's protectionist measures.

Taiwanese investment in China in the early years of legal Taiwanese investment (investment in the Peoples' Republic was legalized by the Taiwanese government in 1990) concentrated in the provinces of Guangdong and Fujian (Hsing 1998, p. 23). Recently, however, the Taiwanese have begun to relocate their Taiwanese PC production networks in Guangdong and Greater Shanghai. The choice of Greater Shanghai over Fujian thus represents quite a shift in preferred investment locations by the Taiwanese. Interestingly, desktop producers appear to be concentrating in Guangdong while notebook producers are concentrating in Greater Shanghai. The top three Taiwanese desktop PC manufacturers, Acer, Mitac and FIC, have all set up manufacturing facilities in Guangdong. These three firms represented 85 per cent of Taiwanese total desktop production by the second half of 1998 (Institute for Information Industry 1998, p. 89). Of the top five Taiwanese notebook manufacturers, which represented a total of 74.2 per cent at the same time (Institute for Information Industry 1998, p. 89), all but Acer are building or have built production facilities in Greater Shanghai. Acer Peripherals has a facility in Suzhou, but this division is quite distinct from Acer's flagship computer division.

The Taiwanese PC production networks relocated to China seem to be quite isolated from local Chinese firms. The firms interviewed in China reported that they used local Taiwanese suppliers and overseas suppliers, both Taiwanese and foreign ones, but they did not use domestic Chinese firms. As these Taiwanese PC production networks in China

² All interviews referred to in this paper are interviews conducted by members of the Industrial Performance Center's Globalization Project team unless otherwise noted. Firms' names are not disclosed in keeping with IPC's promise of confidentiality to interview subjects.

are very young, the use of local Chinese firms could be a matter of time, with more such firms entering the Taiwanese production networks the longer these networks operate in China. Indeed, the Taiwanese networks are really not complete replicas of the supplier bases in Taiwan, as several firms described how they needed to falsify invoices to stay within their import quotas while importing components from Taiwanese manufacturers.

PRESSURES AND INCENTIVES FOR CHANGE IN TAIWAN'S PC STRATEGY

The failure of ODM (own design manufacturing) to protect profit margins is forcing Taiwanese firms to reconsider their previous strategies for PCs. At the same time, several factors are encouraging Taiwan to change its PC strategy. The lure of the Chinese PC market is greater than before, with the apparent saturation of advanced-country markets. The success of a few Taiwanese firms in branding in China also serves as an incentive for others to try their hand at the branding game in the China market. Finally, changes are afoot in Taiwan's technology transfer policy towards China that will make doing business across the Taiwan Straits easier. These pressures and incentives have been building for some time but now appear to be effecting a change in strategy.

The Taiwanese PC producers have been shifting from OEM (original equipment manufacturing) to ODM (Schive 1999, p. 2). The primary purpose of the out-sourcing firm in an OEM relationship is to reduce production costs, so that OEM production tends to have lower margins than ODM or OBM (own brand manufacturing) production. Thus, the logic behind the move to ODM is to increase margins because adding design capabilities will presumably enhance the value of the services offered to branded customers (Lee and Chen 2000, p. 7). The addition of global logistics services seems to be a further bid to enhance or at least preserve value by meeting the demand of global customers for these services (Lee and Chen 2000, p. 7).

Interviews with leading Taiwanese desktop and laptop assemblers by Globalization Project research team at MIT's Industrial Performance Center (IPC) indicate that these firms regard the ODM strategy as an incomplete solution for enhancing value creation. The interviewees suggested that the Taiwanese desktop manufacturers have begun to move their production to China because the pressure of low margins has dictated a continued search for cost-cutting measures. A minority viewpoint maintained that the capital-intensive nature of production meant that labor cost was not an important factor. However, the very firm that made this claim was also planning to leave only pilot produc-

tion in Taiwan. Firms also mentioned the cheap price of land leased for 99 years under Chinese law as a cost-cutting incentive to relocate to China.

Thus, the increasing design capabilities of Taiwanese PC firms have not allowed them to escape cost pressures. Even notebook manufacturers have begun to relocate to China even though this segment previously seemed to be relatively immune to the problem of razor-thin margins forcing relocation to lower wage locations. As late as 1999, many of the notebook manufacturers interviewed did not have plans for production facilities in China. In the course of the following year, however, the notebook firms have been forced to move to producing lower priced models because the whole notebook market has shifted toward lower priced models. This shift has forced the Taiwanese firms to shift production to lower-wage countries, and they have all chosen to shift production to China.

The Chinese market has become increasingly attractive to Taiwanese PC firms. The Chinese market is nowhere near the saturation point, with less than one percent of households owning a computer, and rising incomes in China suggest a growing number of consumers who can afford computers. The advanced markets, in contrast, are extremely saturated. Every other US household has a computer (Bickers and Saywell 2000, p. 32). A number of Taiwanese firms in PC-related products have done well in branding in China. Microtek is the leading seller of scanners in China (*CENS* 10 April 2000, internet). Twinhead is the sales leader in notebook computers in China (*CENS* 24 June 1999, internet). Acer was the fifth largest retailer of desktop PCs in China in 2000 and aims to be the third largest in 2001 (*CENS* 18 January 2001, internet). In contrast, in advanced markets, Acer, Taiwan's PC brand leader, has tried and failed to establish a viable brand.

Though Taiwanese investment in China has been permitted since 1990, the Investment Commission of the Ministry of Economic Affairs reviews large-scale investments and has banned outright investment in certain technology products. Before 14 December 2000, all investments over USD 30 million were reviewed, and, subsequently, the investment trigger was lifted to USD 50 million. There have been a number of onerous technology restrictions related to the PC industry. Among the technology products under ban have been color TV monitors with 19-inch or larger screens, and notebook and desktop computer models with 586 or higher processors. It was anticipated that President Chen would loosen these bans in his Chinese New Year's speech on 24 January 2001, but no liberalization was announced at that time. Speculation continues, however, regarding further liberalization measures.

The investment restrictions have not been very effective for two reasons. Taiwanese firms can register offshore in the Caribbean or Hong Kong and then use those firms as official investors in China. Another tactic to escape the automatic investment review trigger is to split up the investment into smaller investments. This latter strategy may explain why many Taiwanese companies have one factory site with one firm as majority owner but have the different factory branches on the site registered under different company names.

While similar strategies using third countries to invest in China could be used to circumvent the technology transfer laws, firms in a position to do so have lobbied vigorously against the ban. This suggests that they take the enforcement of the ban seriously enough to expend resources on lobbying for change in the law rather than simply trying to circumvent the law. This lobbying effort could be due to the different stances of the presidential administrations of Deng-hui Li and Shui-bian Chen in Taiwan. The desktop producers set up their China plants during the Li administration. At least one interview subject suggested that the technology bans were not enforced under the Li administration once it was understood that the desktop producers would have to move due to cost considerations. However, the Chen administration has been more vocal about enforcement of government investment policies toward China just at the time the notebook producers began to view the move to China as desirable. Thus, the notebook producers have had to confront the problem of the investment ban, rather than simply circumventing it, as a long-term strategy. In the meantime, a number of firms have already begun to produce notebooks in China, and the remaining firms are only hurriedly building plants to do so. These firms anticipate a change in Taiwanese government policy.

Indeed, the Taiwanese government will probably relent, given the cost pressures on the PC manufacturers and the recent downturn in the IT hardware market. Liberalization in this particular market is needed, despite WTO accession of China and Taiwan. The Taiwanese state must respond to the market or lose the entire industry. With liberalization, Taiwan may be able to do in the PC market what it did in the shoe industry, placing production offshore while retaining headquarter functions in Taiwan.

THE NEW STRATEGY FOR PCs

The new Taiwanese strategy for the PC market in China is two-fold. First, Taiwan could take advantage of its geographical proximity and cultural ties to China for expansion in that market. Secondly, Taiwan could shift

from a PC-focus to production of a broader scope of goods: in essence, a transition of Taiwanese PC firms into CEMs (contract electronics manufacturers).

Taiwanese firms will try to expand their position in the Chinese PC market by increasing Taiwanese-owned distribution networks and forming alliances with Chinese PC firms. Acer Sertek, Acer's distribution arm, had established 500 sales offices in China by August of 2000 and planned to have 1000 by the first quarter of 2001 (*CENS* 25 September 2000, internet). Mitac has formed a JV with its Chinese partner to sell a branded PC in China, and Quanta is planning to use Chinese distributors for its quality brand of notebooks (*CENS* 3 May 2000, internet). Beyond retailing agreements, a number of the Taiwanese firms are entering OEM agreements with firms from China. Mitac's notebook subsidiary, Getac, has obtained notebook orders from Legend (*CENS* 17 May 2000, internet). FIC has entered a similar agreement with Legend (*CENS* 27 April 2000, internet).

There are still constraints to Taiwan's expansion in the Chinese market. Under Chinese law, most of the wholly Taiwanese-owned firms have to export 70 per cent of their production, either directly or as components in the exports of other firms. Furthermore, there is a requirement of balancing imports with at least the equivalent value in exports to encourage import-substitution. Even if firms do not want to evade the system by under-reporting the imports, there would still be the problem of the government's faulty accounting system in some parts of the country, in which they weigh the imported goods on faulty scales rather than counting the imports individually. Thus, even Taiwanese firms have to resort to falsifying their import receipts. Other options are hiring legal trading companies that engage in a variety of illegal activities to cover up the imports but do not share the incriminating information about these activities with their Taiwanese customers. Finally, firms may even resort to creating fake damaged imported goods to balance the imports and exports.

While the WTO does not allow such export requirements, China will only gradually come under the WTO regime. Loopholes from the past have consisted of gray channels from Hong Kong exporting Chinese-made goods back to China and JVs with the local plant being only the most basic assembly. Indeed, Twinhead and Kenda's notebook JV simply places the CPU into an already built notebook computer, and Twinhead leads in sales in the Chinese notebook market. Nevertheless, some firms seemed to want to be able to have access to China's consumer market and make use of its labor market at the same time. One of the new notebook manufacturers in the Kunshan export processing zone in Jiangsu Prov-

ince claims it intends to find a way to sell legally in the Chinese market despite being in the dedicated export processing zone. Considering that none of the Taiwanese firms are setting up manufacturing JVs, the strategy appears to be to attempt to win the right to sell a greater percentage of production in the local environment, or to form distribution alliances with local firms to sell the goods or to do both.

As part of a move to escape from the razor-thin margins offered by computer products, Taiwanese firms have tried to expand the scope of manufacturing to other IA (information appliance) products, such as PDAs (personal digital assistants), cell phones and digital cameras. In at least some cases, this expansion of the product scope appears to be a conscious mimicking of the successful (primarily American) CEM firms. This very strategy will only enhance the position of China within the strategy of the Taiwanese firms. By going head-to-head with the large global CEM players in a variety of products, the Taiwanese will probably simply increase the cost pressures in the new product lines they enter rather than creating opportunities to enter product areas with higher margins. These cost pressures will drive more production capacity to relocate to China to take advantage of the much lower labor costs there. Furthermore, the move to these other products will also increase the lure of the China market as these new products, particularly cell phones, have great market potential in China.

How is this new CEM approach affecting the positioning of China within the Taiwanese IT strategy? New products are going straight to China for production. The Taiwanese state is still trying to constrain the movement of these new technologies to China. Nevertheless, a number of Taiwanese firms, such as Quanta and Acer, are reported to be already planning to start cell phone production in China even though they have just begun production of cell phones in Taiwan (*CENS* 3 May 2000, internet). With estimates of China's cell phone market ranging upwards of 250 million sets in annual demand by 2005, a number of the new Taiwanese cell phone entrants are eager to sell in the Chinese market. Acer, Kinpo-Compal, Hon Hai, Inventec and GVC are all applying to China's Ministry of Information Industry for permission to sell cell phones in China (*CENS* 30 October 2000, internet). The pull of the Chinese market plus the push of cost pressures will most likely drive the Taiwanese to step up production in China.

TAIWAN'S IC STRATEGY

TAIWAN'S GLOBAL IC STRATEGY

Taiwan's IC strategy has been global, and there has been no specific Chinese strategy as a significant part of this global strategy. The growth and development of the Taiwanese IC industry occurred in the context of strong interaction with the international IC industry located in advanced industrial nations. Thus, it is not surprising that the Taiwanese industry has had a global strategy with little particular focus on China. The two key features of this strategy have been granularity of production and the expansion of production into advanced markets.

Unlike the traditional IDMs (integrated device manufacturers) in the IC industry, Taiwan's success has come from breaking up the integrated production chain from design to packaging and having firms specialize in one of these particular activities. The Taiwanese have first and foremost specialized in fabrication service, the pureplay foundry model. Two Taiwanese firms, TSMC and UMC, are the world's largest pureplay foundries, and these two firms occupy well over half the worldwide foundry market. These firms have formidable price and technology leads over their potential rivals. They are near the technology frontier in terms of process technology. TSMC has volume production of 12-inch wafers and has done successful trial runs of the 13-micron process (*CENS* 19 and 25 December 2000, internet). UMC has jointly developed 13-micron technology with Infineon and IBM (*CENS* 15 December 2000, internet). While the foundry firms have served US fabless design houses – firms that concentrate solely on design of chips with no fabrication facilities – the fabless design house segment is a significant and growing niche in Taiwan as well. In the area of chipsets, the Taiwanese have seen spectacular success with VIA, ALI and SIS, all major international players in this design segment.

The Taiwanese government has helped to build and support the IC industry infrastructure in Taiwan, especially with the formation of the original Hsinchu Science-based Industrial Park and the newer Tainan Science-based Industrial Park. Many Taiwanese have returned from the US, bringing with them tremendous human capital and a strong network of relations with American firms. However, Taiwanese firms are not and cannot be content to keep their operations completely concentrated in Taiwan. Relocating some activities to advanced industrial markets offer four benefits to the Taiwanese industry. The advanced markets, firstly, offer access to technology, particularly in centers of innovation such as Silicon Valley. Thus, many Taiwanese firms at least have listening posts in

Silicon Valley, and the more sophisticated design firms actually have full-fledged R&D centers there, such as VIA's R&D center that focuses on microprocessor technology through the acquisitions of Cyrix from National Semiconductor and IDIT's Centaur processor division, both of which are located in the US. Secondly, the advanced industrial markets also offer human capital resources. Although Taiwan itself has formidable human capital resources, there is a worldwide shortage of strong IC human capital so firms look to those countries with well-developed IC industries for personnel. There is also concern, thirdly, to diversify risk through geographical diversification. This need for risk diversification is particularly acute in the foundry segment, as fabless firms are dependent on foundries to get their products to the market. The need to have fabrication services outside of Taiwan was driven home in the autumn of 1999 when the earthquake in central Taiwan set off fears that Taiwanese production of chips would be halted for some time. Finally, there is an argument that proximity to customers is important to foster communication, learn from customers and to acquire new clients. Thus, TSMC set up a fab (fabrication facility) in the US, Wafer Tech, and UMC has set up two different foundry firms in Japan.

THE HURDLES TO IC ACTIVITIES IN CHINA

Beyond the obvious fact that China as a developing country does not have the resources possessed by the developed world to induce Taiwanese firms to relocate activities in China, there are two other significant hurdles to IC activities in China. First, most of China has relatively poor infrastructure. Stable supplies of water and electricity are critical to the industry. Even in Taiwan, the IC industry is located in science-based industrial parks because the electricity provision to these zones has been more stable and abundant. Secondly, the Taiwanese government has a ban on the transfer of six-inch wafer and subsequent generations of IC technology to China. While there is talk of lifting the ban on six-inch fabs, there appears to be little prospect that the ban will be lifted on eight-inch fabs. Although such bans are not completely effective, they do deter the large, listed Taiwanese IC firms from pursuing fabrication activities in China.

Both of these hurdles are not completely insurmountable. Engineers familiar with the new IC fabs in Shanghai have stated that the industrial infrastructure in terms of water and electricity supply may be better than in Taiwan, given the lower demands placed on the infrastructure by the few fabs in Shanghai. While the Taiwanese infrastructure must supply a large number of fabs and the Shanghai system needs to supply very few,

Shanghai's infrastructure is thought to be good enough to support ten new fabs and remain reasonably competitive with Taiwan's infrastructure. Air quality is an additional problem in setting up fabrication facilities in parts of China, particularly in Beijing, but this problem can be overcome, albeit at some cost, by replacing air filters more frequently. The Taiwanese firms engaged in fabrication cannot directly invest in such facilities in China, but two new start-ups in Shanghai, Grace and SMIC (Semiconductor Manufacturing International Corporation), have significant amounts of money from Taiwan via third countries and have drawn on Taiwanese engineering talent as well.

WILL CHINA PLAY A PART IN TAIWAN'S GLOBAL IC STRATEGY?

Currently, there are three IC fabrication firms with ties to Taiwan in China. In Shanghai, the son of Formosa Plastic's magnate, Yong-qing Wang, has founded Grace Semiconductor, and Richard Chang, former head of WSMC, a Taiwanese foundry bought out by TSMC, has started SMIC. In Wuxi in Jiangsu Province, CSMC (Central Semiconductor Manufacturing Corporation) has ties to Mosel-Vitelec, though an interview subject who recently left the firm claims these ties have been severed. Despite these activities involving Taiwanese engineers and businessmen, it is an open question of whether these firms fit into Taiwan's global strategy in any significant way.

One point is that these firms do not have direct financial links to Taiwan. Even CSMC had links to the Mosel-Vitelec subsidiary in Hong Kong rather than links directly to the parent firm. Though Taiwanese engineers from all the big Taiwanese IC fabricators, including TSMC, UMC, Winbond and Macronix, have come to the new foundry companies in Shanghai, the Taiwanese firms themselves are not allowed to invest in China and thus are very reluctant to move there. The strategy of CSMC has been to concentrate on foundry service for lower-end consumer electronics products designed for the Chinese market. The firm utilizes older process technology of 0.5 to 0.6 microns and six-inch wafers. The two new Shanghai foundry firms aim to use the more advanced eight-inch wafers and approximately 0.25 micron process technology, but this is still significantly behind the 12-inch wafers and 0.13 micron technology to be used in the fabs the Taiwanese firms are currently building. Thus, in the short-term, head-to-head competition with the big Taiwanese foundries is unlikely.

Nevertheless, the Chinese market will probably become a more substantial part of the Taiwanese IC strategy for several reasons. First, the ambitions of at least one of the new Shanghai foundries is to challenge

TSMC and UMC over the next ten years. This challenge will utilize the advantage of the fact that IC consumers, such as PC firms, are moving their production facilities to China. The confluence of the ambitions of the new China-based firms and the increasing importance of China as a manufacturing base for IT will demand a response from the Taiwanese firms. Almost all industry insiders expect the Taiwanese government to relent and allow investment in the IC industry in China so that Taiwanese firms will eventually have the freedom to respond as they wish to the current trends in China. Conceivably, they could set up their own firms or, as they have done in Taiwan and Japan, they could buy up the local fabs and integrate them into their firms. In the quite near future, China may offer some of the lures that the advanced markets offer. The benefit of diversifying geographical risk will no longer be offset by an inferior industrial infrastructure in China. China will gradually be able to provide more human capital in the industry as the new foundries intend to cultivate local talent despite most of their current engineering talent being from the US and Taiwan. Finally, while there will not be the same level of demand from design houses that prevails in Taiwan or the US, being close to the end-users of the chips – the IT end-product users – will offer the advantage of customer proximity.

THE CHALLENGE TO JAPAN AND THE JAPANESE RESPONSE

THE CHALLENGE TO JAPAN

The very different nature of the strategies of Taiwan's PC and IC industries has led to various challenges for Japan. The Taiwanese PC industry has a well-defined China strategy while the IC industry's strategy for China is still relatively underdeveloped. Thus, the Taiwanese PC industry represents a much more significant challenge to Japan. Moreover, the very fact that the Taiwanese and Japanese IC industries have often been complementary to one another rather than in competition with each other also suggests that the Taiwanese IC industry's strategy even when developed will not present much of a threat to the Japanese.

The new strategy for China by Taiwanese PC producers presents two distinct challenges to Japanese firms. First, Taiwanese firms could develop significantly better ties with local Chinese firms than their foreign rivals due to both the common cultural background between mainland Chinese and Taiwanese firms and the potentially better treatment by the Chinese authorities, given the at least nominal status of Taiwanese as Chinese. These better ties and treatment in turn could give Taiwanese

firms better access to the Chinese market than their foreign rivals. Secondly, as Taiwanese firms launch their CEM strategy, they could increase the cost pressures on the vertically integrated Japanese electronics firms in two ways. The very fact of more CEMS competing for the same business should push down prices. On top of that, the potential ability of Taiwanese firms to take better advantage of the cheap labor in China than their American CEM or Japanese vertically integrated rivals could drive down prices even further.

These challenges should be qualified. The Taiwanese may have a slightly better ability to maneuver the institutional landscape of China demonstrated by their greater ability to operate WFOEs in China, but the Taiwanese are still not regarded as China's nationals in economic terms by the Chinese state, and their firms are emphatically not treated as Chinese national champions. Thus, the abilities of Taiwanese to garner better access to the Chinese market and to better utilize local resources are not established facts but plausible conjectures. It is true that Taiwanese interview subjects have admitted entertaining some hopes of being able to get exceptions to Chinese regulations that prevent them from selling in China, even to the extent of being able to sell in China from export-processing zones where all production is required to be exported. In contrast, Japanese firms do not even entertain having guaranteed and easy access to China after WTO accession, and they anticipate swings in Chinese regulatory attitude to imports that will require production facilities in China even after WTO. Clearly, there is some discrepancy at least in the hopes the firms of the two countries entertain for China, but the current reality is that firms of both countries face the same export requirements, import tariffs and regulatory hurdles.

In the IC industry, Japanese and Taiwanese firms have had strategies marked by cooperation rather than competition. The Japanese firms have generally been IDMs with some fabrication outsourced to Taiwanese foundries. The Japanese have also had extensive relations with Taiwanese DRAM firms. Winbond has been a recipient of Toshiba memory technology and has in turned served as a fabrication facility for Toshiba's memory products. Powerchip has served a similar role for Mitsubishi. None of the DRAM firms in Taiwan has generated its own technologies to compete with the current generations of technology produced in Japan, the US and Korea. The expansion of UMC into Japan has been in anticipation that Japanese firms will outsource even more fabrication, and one of the two UMC ventures in Japan is a JV with Hitachi. There is even discussion of UMC and a group of Japanese producers creating a pureplay foundry together. Thus, even as Japan begins to foray into the foundry business, they are cooperating with the Taiwanese to set up these businesses.

In China, the Taiwanese foundries and the DRAM fabs set up by NEC with JV partners, Shougang in Beijing and Huahong in Shanghai, also do not seem in direct competition. Though this may change as NEC-Huahong has an established goal of increasing foundry production to 20 per cent, it will be hard for NEC-Huahong to be both a foundry and an IDM. Past history has shown that firms pursuing both IDM and foundry business are not looked upon favorably by foundry customers. Thus, NEC-Huahong will either have to leave the foundry business or become completely committed to it. The latter strategy is much more risky for NEC-Huahong given that most of its current business is from NEC and NEC is not experienced in handling a pureplay foundry. The reasonable assumption is that NEC-Huahong will remain as the captive fab for NEC products.

JAPAN'S RESPONSE

The Japanese need to respond to the challenges presented by Taiwan's PC firms. Fortunately, Japanese firms have already tentatively experimented with the proper means to meet some of these challenges. Principally, these means are expanding the relationship that Japanese firms have with Taiwanese OEM producers and outsourcing production to the international CEM firms. Both of these measures would cut down on manufacturing costs, which would meet one of the two major challenges that Taiwanese production in China creates.

For the other major challenge of cracking open the Chinese market, the Japanese have not yet developed even a tentative response to the Taiwanese bid for market access. The question remains as to whether they need to develop a response, as the Taiwanese vision of their access to the Chinese market is not yet a reality. Furthermore, the current relationships between Legend and other domestic Chinese producers on the one side and the major Taiwanese OEM/ODM firms on the other may sour if and when the Chinese firms and the Chinese state are not satisfied with the technological dependency on the Taiwanese inherent in the relationship. Thus, the relationships that Taiwanese firms have established with their Chinese counterparts may closely resemble the relationships and their tensions between Japanese firms and Chinese ones, such as the cooperation between Toshiba and Legend in marketing Toshiba's products. Then, there is the issue of the uncertainty of what WTO accession will actually mean for economic regulation in the Chinese market. Will China's entry into the WTO effectively lift many of the retailing regulations designed to keep foreign firms out of the Chinese market, given the clear illegality of many of these regulations under WTO rules? Other countries have main-

tained effective trade barriers in certain industries, such as automobiles in South Korea, despite being members of the WTO. However, China's market has such potential that it will surely come under closer scrutiny by foreign firms and governments than other, smaller WTO members. If China is forced to create a much more level playing field for all firms, any Taiwanese advantage in negotiating the old, pre-WTO Chinese regulatory environment could be eliminated.

What are the concrete measures the Japanese have taken in response to the Taiwanese challenge? Japanese firms have ordered desktop PCs from the Taiwanese since the mid-1990s and notebooks starting from 1997. Some Japanese firms report that they have to spend significant amounts of manpower and time to ensure the quality of notebook orders from Taiwanese firms. However, the trend of outsourcing to the Taiwanese is likely to continue and expand as margins decline and as Taiwanese firms improve their quality through interaction with Japanese customers. Japanese firms have begun to order a variety of products beyond computers from the Taiwanese OEM firms. A number of Japanese conglomerates have also ordered digital cameras from Taiwanese firms. In terms of critical components, the Japanese have been the force driving the transfer of AMLCD (active matrix liquid crystal display) technology to Taiwanese producers. In return for transferring the technology, the new Taiwanese AMLCD producers have been major suppliers of large-screen LCDs for notebooks and monitors for the Japanese technology transfer partners.

In terms of working more closely with the established CEM firms, there is some evidence that the Japanese themselves have begun to set up such relationships. Sony recently sold two plants, one in Taiwan and one in Japan, to the world's largest CEM firm, Solectron. This sale marks the first CEM firm to establish a manufacturing presence in Japan. The sale is more of a strategic partnership than a mere sale of assets as Sony will be a major customer of the products manufactured at both new Solectron facilities (*Electronics News* 18 October 2000, internet). NEC has sold much of its manufacturing capacity in cell phones and turned to CEM firms for cell phone production capacity (*Bloomberg News* 12 December 2000, internet). The Japanese may find that expanding ties to CEMs will be even more fruitful than continuing to cultivate ties to the Taiwanese firms because CEMs produce a wider range of products. Also, CEM firms do not have the aspirations that many of the Taiwanese ODM firms have to enhance their design capabilities and even to become OBM firms in their own right. Some Japanese firms interviewed saw a link between Taiwanese firms with strong design capabilities and firms with aspirations to emerge as branded rivals of the Japanese electronics firms. Thus, they

would rather choose Taiwanese firms with weaker overall capabilities in order to ensure that they were not cultivating future rivals.

The ability to maintain control over product definition, marketing and distribution when outsourcing production and some design functions has been questioned by vertically integrated firms, particularly Japanese ones. The history of the US branded IT firms suggests a more positive reading of the ability of branded firms to maintain control over these functions when outsourcing. Indeed, the US branded firms have been so successful that Stan Shih, chairman of Acer, has suggested that there is a smile-shaped curve in the PC industry in which the high return activities are located at the product definition front end and the marketing and distribution backend. The middle segment of manufacturing is the low-return bottom of the smile. Taiwanese suppliers have not forced the American firms out of the product definition, marketing and distribution areas. It is reasonable to expect that if the Japanese begin to pursue more extensive outsourcing, they too will be able to maintain their control over certain critical parts of the business.

The more extensive cooperation between the IC industries of Taiwan and Japan suggests less of a challenge and, consequently, less of a need for a response. However, the Japanese may need to change their strategy in China to head-off competition. The perception of the Chinese is that NEC does not share technology and train Chinese personnel. In contrast, the new Taiwanese foundries are actively recruiting Chinese personnel from overseas and from the ranks of recent graduates of China's major technical universities. This discrepancy in corporate image may negatively impact NEC's operations further down the road and should be addressed. Also, in the future, the very inability to use Chinese recruits effectively may hamper the efficiency of the operations so the current culturally closed strategy of NEC should be changed. Finally, if the Japanese firms at home decide to expand into the foundry sector, in conjunction with Taiwanese partners or not, they should also consider opening operations in China for precisely the same reasons the new Taiwanese foundries have set up shop: proximity to customers and access to human capital.

THE OPPORTUNITIES FOR JAPAN

The Japanese frustrations over Japanese business operations in China are not specific to Japan alone. In the electronics industry, their Taiwanese rivals may have begun to concentrate on China due to the push of competitive pressures and pull of the large, geographically and culturally close Chinese market. However, the Taiwanese will also confront prob-

lems in operating in China if the operations are not export focused. Thus, the major impact of the Taiwanese movement of production to China, a rapid relocation of the core production in the case of PCs and a more gradual movement of some operations in the case of ICs, may be on the competition Japan faces in the international market rather than the Chinese one. American firms have used the cost competitive Taiwanese OEM/ODM firms in the PC industry and the pureplay foundries in the IC industry to their advantage in international competition. Thus, the Taiwanese movement to low-wage China and simultaneous transformation into CEMs with a broader scope of products presents an opportunity to Japanese branded firms even as it poses a threat to the current vertically integrated structure of the Japanese electronics firms. The Japanese firms have the chance to convert the Taiwanese strategy for China from a competitive threat to an asset, but embarking on the radical outsourcing necessary to take full advantage of this opportunity will require the will to bear with the pain concomitant with such radical change.

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