GROWTH IN AN INEFFICIENT ECONOMY:

A CHINESE CASE STUDY

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This paper was written based on a field-trip to Guangdong and Fujian in July 1991 during which visited about 35 factories and met with a variety of local officials. During the trip we tested a questionnaire which was subsequently used to obtain information from 420 firms in Guangdong, Fujian, and Sichuan provinces.

China Enters World Markets

Much drama surrounds China's explosive entry on to world markets. Threatened by a loss of its Most Favored Nation (MFN) status when selling to the United States, China potentially faces substantially higher duties and hence a diminished share in its most important market. A range of antidumping suits by U.S. and European producers allege that Chinese exports are being unfairly subsidised. Relations with Hong Kong, its main passage to world markets, remain clouded. Commerce with Taiwan has grown by leaps and bounds but the rules remain unclear. China's own reform process has been a series of stop-and-go measures. On top of all of this, the incidents in June 1989 did not help.

Amid all this, China's market share in a wide variety of products has increased in a most impressive fashion (see Table 1). In the lower priced, most labor intensive segments of garments, shoes, and toys, China is now the world's most dominant exporter. Rapidly, it is moving to higher value-added and higher quality products.

In July 1991, we undertook a three week trip to Guangdong and Fujian as a prelude to a systematic study of the forces generating growth in the coastal provinces of China. The impressions of that trip, while by no means constituting conclusive evidence, are extremely suggestive, and we offer them as a set of hypotheses to be examined more carefully.

Most China analysts have focussed on the reform process which has unleashed a vast amount of entrepreneurial energy. Without denying its importance, we would like to suggest that it may be time to shift the focus if continued growth is to be comprehended.

Free access to Hong Kong's superb infrastructure, followed by access to the human and capital resources of Taiwan are perhaps invaluable. Huge investments in transportation (ports, railways, expressways, airports), energy, and telecommunications are reducing dependence on foreign infrastructure and creating a wider outlet for production. Strong efforts to improve educational standards and attainments, complemented by training in the factories are laying the long-term basis for sustained growth. Various agglomeration economies, within specific regions and within company groupings, are deepening continued growth capabilities.

The defining moment of the field trip was a statement by a Japanese investor that although policy and regulations were not perfect and infrastructure needed to improve, he was confident that the direction of change was the right one. His presence in the region was based at least as much on expectations (regarding the behavior of other foreign investors and regional authorities) as on conventional variables such as low wages and large domestic market. Such confidence in the system may seem laughable and if expectations are consistently not realized then growth will collapse. However, expectations of this type tend to be reinforcing if enough investors hold them. The point at which positive expectations reach a critical mass, one observes a discontinuity in growth.

The World Bank's World Development Report for 1991 suggests the use of "market-friendly" instruments to promote growth. These include development of infrastructure and fostering of human capital and entrepreneurship. The main message of

this paper is that the key variable to be influenced by policy makers is the expectations held by investors. Infrastructure and human capital development can sometimes influence expectations, but as we shall show they are not always sufficient.

The shift in expectations in southern provinces of China occurred when foreign investors were able to consistently produce goods that met international specifications. They brought with them much of the needed infrastructure. Once they demonstrated the feasibility of operating the region as a base for international manufacturing, others were attracted. The critical mass of investors along with government policy initiatives in infrastructure and human capital triggered increasing returns processes which have sustained growth.

However, much could still go wrong and the coastal regions are not the whole country. Although China is not going to fade away from world markets, it has to face keen competition from other aspirants such as Indonesia, Thailand, Mexico, and Turkey. Chinese entrepreneurs seem to understand the competition well and are positioning themselves already to move upscale. Their ability or inability to do so will determine the future trajectory of growth.

Reforms

Most discussion on China centers on the reform process, which certainly is a riveting story. While it is important to understand the reform process, at least in the coastal provinces the basic reforms are probably done.

There were two basic areas of reform. First, prices were decontrolled along with a move away from mandatory targets to a greater role for price signals in determining firm output and investment decisions. Secondly, in support of the relative freeing up of prices, there was a move to delegate away from the central government to lower levels of decision making, with the ultimate goal of giving firms full autonomy. Much has been achieved in both areas.

However, even after these reforms the situation remains muddled. Complex systems of control and an even more involved tax system and other incentives makes it impossible to assess what the overall incentive or even disincentive effects are. Transparency in rules and procedures is nowhere close to being achieved. To apparently straightforward questions, the Chinese reply often is: “The situation in China is very complicated.”

Indeed, even a casual reading of recent World Bank reports on China would give the impression of an economy suffering from rigidities and complexities in its labor, capital and input markets, in its provision of education and infrastructure, and in its enterprise structures. These descriptions create the impression of an economy more distorted than, say, the Indian economy. Little in these reports prepare one for such an impressive overall export performance and such dynamic entrepreneurs in all types of enterprises (i.e., state, foreign funded, and town and village enterprises) that is witnessed in Guangdong and Fujian.

The reform process has no doubt released a repressed set of enterprises. The growth that followed, however, was a transitional, one-time response. The growth that continues despite the remaining complexities and "inefficiencies" needs to be explained through other sources.

At this stage, growth is doing as much to remove inefficiencies as the reforms contributed to unleashing growth earlier in the decade. Driven by a keenness to keep pace with other cities and counties, local governments are discovering ingenious ways of circumventing the letter and even often the spirit of the complex system of rules. Splitting-up investment projects into several parts to bring them under the limit that permits local governments to approve projects is just one example. Firms are discovering ways of enhancing their flexibility by forming closely related companies that are eligible for favorable government treatment. The untrained eye often fails to detect the social rationale for this behavior, but in the Chinese context it makes perfect sense.

Favorable International Links

For a large economy, the Chinese shift in focus towards international markets is truly remarkable. As an illustration of this, in 1979 exports as a share of GDP in China was 5.5% (see Table 2). Only 10 years later this share had risen to 12.6%. Other than Turkey, few countries have undergone such a dramatic shift in such a short period of time. Experts have debated for a generation whether and to what extent growth in East Asia was "export-led". This discussion is already under way for China (Fischer 1991).

The debate continues on how exactly exports can lead growth. In the Chinese case, the goal is principally to use exports as one instrument for linking with international sources of technology and marketing information. In addition, Chinese authorities and enterprises somewhat surprisingly often state that their domestic market is small. Though on the surface surprising, the statement is a sensible one. For years, both the Indian and Chinese markets have held promise of large domestic demand which has just not yet materialised. The problem is aggravated by growth of local autonomy in China which makes authorities overzealous in protecting their local markets. On the other hand, international markets have been used effectively by East Asian firms to gain economies of scale. Chinese leaders also sense a window of opportunity in world trade. Rising wages and land costs in the East Asian NIEs are reducing their competitiveness in a range of labor intensive products. The NIEs are also willing to use their capital and expertise in lower wage locations. Early development of long term market links and early investment in infrastructure can create a persisting advantage over latecomers. The last decade has thus been viewed very much as an investment in entering international markets at a favorable time. Firms have been willing to accept the relatively lower profitability of exports (compared to the domestic market) and the government has been willing to subsidize export activity.

At the enterprise level, the profitability of exports has been in question. The system of pricing for both the domestic market and the export market is not easy to unravel. Foreign equity holding allows freedom to export directly (bypassing state-owned

foreign trade companies) and also the freedom to choose export prices. Large domestic exporters also can export directly and choose prices. Foreign funded exporters enjoy duty free access to imported materials and equipments.[1] In general, all this allows exports to be priced at levels below domestic prices. However, since the mechanism for domestic pricing remains unclear, it is still difficult to determine the relative profitability of exports.

Exports have been promoted through administered targets and explicit and implicit subsidies. The relevant government authority and the enterprise agree on the share of output to be exported. The manner in which these export shares are arrived at is not clear and the shares also tend to vary significantly from one firm to the next. In the firms we visited, the proportion of output to be exported ranged from 50 to 80 percent. Presumably to compensate firms for losses they may incur on account of forced exports, various export subsidies were provided. These included explicit subsidies, which were mainly administered through subsidized prices on both imports and exports. In addition, exporters were and still are provided tax breaks when they locate in specific areas. Generally, these tax incentives are reserved for foreign funded ventures, however, state-owned enterprises (SOEs) are able to set up joint ventures with sleeping partners to enjoy the benefits. Given the price reforms, the explicit subsidies are being phased out and with them the system of export targeting is also expected to go. However, tax incentives to attract foreign investors can be expected to stay in place for quite a while.

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[1] It is not clear whether non-foreign funded exporters also have duty free access to materials and equipment.

A few enterprises we visited not only met their export targets but even exceeded them, suggesting that exports are perhaps profitable for them.[2] However, an even larger number of enterprises stated that exports were less profitable than domestic sales. In spite of this, these particular enterprises claimed that they would continue to expand exports even if the targets were lifted since they viewed exporting as a long-term investment. By participating in the international market, they expected to gradually raise product quality and thereby eventually raise the profitability of exports. The domestic market is small and consumers are not very selective, so it does not allow the learning which is possible in export markets. Such strategic thinking was evident not only in foreign funded enterprises but also, quite strikingly, in state-owned enterprises.

Pattern of Foreign Investment

In each of the past several years, a single Special Economic Zone (SEZ), Shenzhen, located in Guangdong Province less than one hour from Hong Kong, has drawn in more foreign investment than all of India. China and India reflect two extremes in their attitude to foreign investment and so the observation, while striking, is easy to understand. More significantly, perhaps, China is competing successfully with Philippines, Indonesia, Thailand, and Malaysia for quality foreign investors (see Table 3).

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[2] However, a Chinese enterprise exceeding export targets does not always mean that exports are profitable using the normal definition of the word. When export targets are exceeded, the enterprise is allowed to retain a much larger share of the foreign exchange earnings. Hence, exports are profitable to the firm in that

An important form of foreign investment is not captured in the international data sources and when that is considered, Chinese ability to attract investment is even more impressive. This is the so-called "processing/assembly" investment which has been a major source of exports for the Chinese coastal provinces, especially Guangdong.[3] For some reason, few records are kept on this form of investment. However, we do know that even today, the number of processing factories is about 10 times the number of joint ventures plus wholly owned foreign enterprises in several important coastal communities. When the value of such investment is included, as it should be, Chinese performance in attracting foreign investment would be seen to be truly impressive.

In the processing factory, the Chinese side provides the land and the labor while the foreign investor brings in the equipment, technology and management. Raw materials are imported on a duty free basis by the foreign investor, who also undertakes the task of marketing the product. The extent of control retained by the foreign-investor is quite exhaustive. In a visit to one processing factory, the general manager of the enterprise could not even place a value on the output that was produced by his enterprise. In the early days (the first half of the 1980s), such investments were in very labor intensive, low quality production. However, they had a tremendously galvanizing effect. For the first time, agricultural communities (e.g., Dongguan) or barren areas (Bao'an County) were

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valuable foreign exchange is earned which in turn may be used to import essential raw materials and equipment.

[3] While the value of processing/assembling investment is not captured in the statistics, neither is the value of exports.

exposed to modern manufacturing. Local workers were trained in the simplest skills as thousands of such factories spread across the Pearl River Delta. Today, processing factories are no longer synonymous with labor intensity and low quality. Some relatively sophisticated investors (Mabuchi Motors of Japan) have chosen to use this route.

The pattern of direct foreign investment (not including the processing type investment) in China since 1985 is presented in Table 4. First of all, it is evident that the regions of Guangdong and Fujian have received a substantial share of total foreign investment in China. In the period 1985 to 1989, these two regions received approximately 48% of total regional utilized direct foreign investment (DFI). Although such a large percentage of DFI has been made in Guangdong and Fujian, there have been links between this investment and the rest of China. It is quite common for the Chinese partner in a joint venture to be an enterprise or even a local government from another province. In such an instance, personnel from the other province will be sent to work in the joint venture enterprise and will to the extent possible, transfer the technology back to the originating province. Hence, there are substantial indirect benefits to the rest of China from the DFI in Guangdong and Fujian.

A second distinct pattern is that the vast majority of DFI--more than 60% during the period 1985 to 1989--has been from Hong Kong. In terms of country of origin, Japan (12.7%), the U.S. (11.2%) and Taiwan are next largest sources of DFI, however, the share of Taiwanese DFI is generally understated and hard to pin down. Given the nature of relations with Taiwan, much Taiwanese investment has traditionally been channeled

through third countries (i.e.., Hong Kong and the U.S.). Starting in about mid-1988, as Chinese relationships with Taiwan have been normalising, the share of investment directly from Taiwan has been noticeably increasing.

Local officials with whom we spoke, generally reaffirmed something that we could only speculate about prior to our visit. It appeared to us that the behavior of the Taiwanese and Hong Kong investors was quite different. we did in fact find that there are substantial differences between the two. Hong Kong investors are very much traders with a relatively short term focus. On the other hand, investors from Taiwan are very much entrepreneurs with a much longer term time horizon. Although most local officials welcomed all types of foreign investment, when asked to choose between investment from Taiwan and investment from Hong Kong, the former was nearly always preferred.

However, in addition to providing foreign investment, Hong Kong has played many roles in the development of the Chinese coastal provinces. Granted, in many cases just financing is provided by the Hong Kong investors. However, in at least as many cases, the Hong Kong investor provides a whole range of functions including marketing, management, training, technology acquisition and even raw material acquisition. Indeed, many have come to China with their hands held by Hong Kong investors.

Factors Attracting Foreign Investment

What factors are responsible for China's success in attracting foreign investment? Factors explaining foreign investment trends are largely .the same as those explaining

overall growth performance. They are briefly sketched here and then discussed in below in detail.

Stability and Complexity of Rules. Economic and political stability are thought of as necessary prerequisites to attract foreign investors. If this were the dominating factor, little investment would have come to China. The past decade has been marked by significant economic and political instability. The reform process has been stopped and reversed on a number of occasions.[4] Grave doubts are often expressed about the lack of well defined property rights, a contract system that is very different from that operating in Western industrialised countries, and complex and rigid rules of operation (for example, with regard to labor recruitment and wages and export targets).

In practice, investors have worked around the uncertainty and lack of transparency of rules. They have made limited investments in periods of reform retrenchment but have expanded rapidly in more favorable periods. Most who have survived appear to have grown used to the policy instability and have more importantly learnt to work around the rules.

Labor. Low-waged labor is an obvious attraction in China. The thousands of processing factories in the Pearl River Delta use cheap labor for highly labor intensive assembly. While this factor has been of great importance in the past, its future significance is more limited. Wages have significantly increased in much of the coastal region, and presently Indonesia and Thailand offer equally low, if not lower, wages.

Moreover, rapid technological change even in so-called mature products makes the demand for the most basic labor intensive products income inelastic. Some of the earliest processing factories set up in the coastal provinces have experienced only limited growth in recent years. The ability to produce high quality products to fine specifications and to respond flexibility to changes in market demand is becoming increasingly important. Growth is occurring most significantly in products that have more than the basic design content and in products that cater to a higher quality market segment.

China's long run advantage is being developed to exploit high quality, trained labor rather than cheap, untrained labor. Firms are using educated technicians and engineers from the Northeast part of China and are investing heavily in training all workers. Some of these efforts are described in greater detail below.

Incentive Policies. The "preferential policies" or incentives provided to foreign funded enterprises are nearly identical in the various types of locations in the two provinces (i.e.., SEZs, Economic & Technological Zones, open cities, etc.). The standard menu of incentives includes preferential tax rates, duty free import of raw materials, duty free import of machinery and equipment, direct export rights, repatriation of profits, and preferential land-use terms and rates. On the books, quite often only the absolute magnitude of the incentive (such as a 15% income tax rate vs. a 10% tax rate) will vary among locations. In reality, the important differences are often found in the way in which the incentives are administered. In many areas, incentives are not clear and to obtain them

[4] See for example Crane (1991).

is extremely complicated. On the other hand, some local officials boasted that investing in their city was easy, implying a type of "one stop shop" for investors.

In contrast to foreign funded enterprises, special policies granted to non-foreign funded firms are even more vague and ad hocly granted. In some locations, such as the Fuzhou Economic and Technological Development Zone (FETDZ), state-owned enterprises enjoy the same privileges as foreign funded firms. However, this is a rarity in both provinces. With regards to exporting directly, SOEs are allowed to apply for the right but often the approval procedure is extremely lengthy. We spoke with one enterprise who clearly met all the required characteristics--i.e.., the firm was fast growing with a high quality product, capable management, and a stable export customer base. This particular enterprise had applied for direct export rights two years previously and had just recently heard from MOFERT on the subject for the first time.[5] MOFERT representatives were expected to tour the enterprise within the next month to assess whether or not the direct export rights should be granted. Even if the visit from MOFERT were to take place as expected, the firm has no clear idea on whether or when the direct export rights will be granted. Needless to say, the whole subject was very much a joking matter at this stage.

The presence of foreign investors in increasing strength is creating a strong constituency which local authorities are eager to please. Simplification of rules, flexibility in interpreting them, and often bending of rules is common. Local authorities have become

entrepreneurs in a real sense. They compete vigorously with each other in providing foreign ventures as hospitable an environment as they can. Indeed, competition may well have become excessive making incentives unnecessarily generous. The need for cooperation between local authorities may also be necessary to finance the growing need for infrastructure.

Infrastructure. The lack of infrastructure can strongly dampen the enthusiasm of foreign investors. All the fiscal incentives are not enough when goods cannot be transported, telephone calls cannot be made, and electricity and water are in short supply. Investors we interviewed were very clear on this point and the authorities are also acutely aware of the vital importance of infrastructure.[6]

Regional authorities have taken very different approaches to the timing of infrastructure investment. In Fujian, infrastructure has preceded investment, and in the early 1980s authorities began investing in ports, roads, and electricity. The Special Economic Zone in Xiamen acquired an international airport a decade ago.[7] Such large investment in infrastructure is risky because it does not guarantee the attraction of foreign investment which Fujian has discovered with some pain. Only in 1988 did Taiwanese

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[5] MOFERT is the Ministry of Foreign Economic Relations and Trade.

[6] The Vice Mayor of one city we visited told the story of a Hong Kong investor who had (in the early 1980s) undertaken an 18 hour car journey over a pot-holed road to reach the city. The investor who compared the trip to a "bumpy" horse ride, explained that tax incentives and cheap labor were not enough to bring him back.

[7] This is in sharp contrast to Shenzhen. Although Shenzhen is several times larger than Xiamen, it lacks an international airport even today. Admittedly, the proximity of Shenzhen to Hong Kong is a big factor and such an airport will be opening shortly.

investors start making slow moves into Fujian. It is interesting to speculate what Fujian's growth path would have been in the absence of such investment.

In contrast, Guangdong province has allowed infrastructure to evolve with demand. Experience from this province shows that infrastructure is not a hard prerequisite. Infrastructure has grown with the foreign investment rather than preceding it. Only more recently, as the local communities are becoming wealthier, are they beginning to anticipate the infrastructure needs in coming years. So far, they have had a hard time-keeping pace with the ballooning demand and are still trying to "catch up".

The lesson is that infrastructure investment, while lumpy in general, can proceed in small increments for a period of time. Firms are willing to make some of these investments on the expectation that more efficient infrastructure will be forthcoming. In the interim, they find means of overcoming the deficiencies such as installing electric generators and digging wells. Clearly, a situation in which deficiencies persist is not acceptable. Enterprises we visited clearly had positive expectations regarding long-term infrastructure provision in their respective localities. They gave credit to local authorities for efforts being made and these efforts seemed sufficient to create the expectation of continued growth and progress.

Foreign Investment. Foreign investors are attracted by other foreign investors. In short, foreign investors have been guided by hope and faith as much as by monetary incentives and quality of infrastructure. The faith in this case has been self-fulfilling, creating even better conditions for investors.

Three examples illustrate the nature of investor expectations. A sophisticated producer of electronics equipment (using one of the few surface mount machines in China) made it very clear that one reason for locating in Bao'an County was his expectation that many foreign specialized component suppliers would locate in that region which would in turn allow him to source inputs quickly and at low cost.

A second example, also from the same county, is that of an intermediate goods producer: processed steel. This producer was attracted to the region because the growth of the mechanical industry in that region had created sufficient demand to justify the scale needed for processing steel. Over 90 percent of the steel sold by this producer was used in goods that were eventually exported. In turn, the steel processor claimed that his presence was also a factor attracting more firms in the mechanical industry.

Finally, a more speculative plan is being played out in Xiamen. A large Taiwanese automobile producer has located a few coach and van assembly lines along with spare part factories. During our visit, we were shown detailed plans of 20 other Taiwanese producers in the automobile industry who were planning to set up factories in Xiamen. But even more ambitious, the large Taiwanese automobile producer with help from the Xiamen government, is planning an "automobile city" in the Zone. One hundred Taiwanese automobile related firms and several firms in China have been surveyed and are being canvassed to set up shop in the Zone. Through such coordinated action, it is hoped that the critical level of expectations will be generated.

Lessons for Attracting Foreign Investment

The simplest message is that each country trying to attract foreign investment must identify its Hong Kong! A one variable explanation for level of development even within the coastal provinces is distance from Hong Kong. This may seem an impossible condition for many countries. However, the central point is that a business community that is in touch with world trends in production and marketing is required to jump start the system. Trading communities in many countries have such links. In India, for example, it is possible to ride piggy back on diamond exporters for a significant range of products; shoe exporters from the southern state of Tamil Nadu have developed close international links and these could be strengthened in many ways (e.g., export marketing funds, technical assistance in production).

The second important lesson from China is the relative degree of freedom given to foreign investors. Few restrictions in terms of ownership, export commitments, or import substitution requirements are placed. De facto, many of the goals of export performance and import substitution are being met; but this is not through imposing performance requirements.

Special Economic Zones are clearly important in creating a focal point of action. Shenzen has brought in some of the finest companies in the world and become the site of significant industry agglomerations (e.g., electronics and software, bicycles). The large size of Shenzen has generated overall scale economies in terms of infrastructure development and use. One has to be extremely careful of narrow cost-benefit calculations:

much of the learning in Shenzen will be rewarded over the years and, moreover, much of the learning from Shenzen is being transferred to other zones and localities.

Finally, while the government's catalyzing role in the creation of a zone is clearly important, once the system is performing, private sector initiatives can be brought in for further infrastructure developments (e.g. Shekhou).

Labor/Education. While "cheap labor" was probably one of the first factors attracting investment to the coastal regions, it's already been pointed out that this advantage is probably running its course. In this section, we look at three important labor issues which are gaining in importance: labor recruitment and mobility, turnover, and education and training.

Recruitment/Mobility. There is a severe shortage of scientific, technical, and engineering manpower in both regions. It appears that to some extent that engineers and technicians are even rationed or distributed by the government in some locations. The majority of engineers are from the Northeastern part of China, but are very attracted by the more open societies of Guangdong and Fujian. As an example of this strong attraction, in Xiamen we met with the general manager of a small electronics company established in 1989. Prior to founding and heading this enterprise, this particular gentleman was a nuclear scientist who had previously worked both in China and the US. Attracted by the more open regime and feeling as though he could make a larger contribution as a businessman in Xiamen, this general manager eagerly returned to his home province to

head up the enterprise. Although the enterprise was visibly struggling, the manager remained optimistic that it would succeed in the near future.

In terms of recruiting production workers, there are no problems as the supply is obviously more than adequate. while there does seem to be some intra-regional migration occurring (i.e., towns and villages to cities), there seems to be little inter-regional migration. In a somewhat "regionalistic" vein, most managers look to provide employment for persons from surrounding counties and villages.

Turnover. In general, the labor turnover rates were surprisingly low. Many of the firms we met with reported that annually less than 1% of their labor force had to be replaced. However, Bao'an County seems to be an exception in this respect. A wholly foreign-owned electronics firm we visited had a labor turnover rate of 2% per month for production workers and 4% per month for middle level staff. [8] While the company only started production in January 1990 and presently has 1,250 production workers, only 25 of these workers were with the company at the time of formation.[9] Although the same company owns a plant in Mexico which has an even higher turnover rate (10% per

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[8] Two out of three enterprises visited in Bao'an County had production worker turnover rates of 2% per month.

[9] The majority of production workers at this factory were young women from rural villages who came to the firm at the age of 17. About half of those who leave are attracted by other firms in the area, and another 25% return to their home villages to get married or start up their own businesses. On the other hand, the middle level staff who leave are generally from other provinces and come to Bao'an with the objective of earning a lot of money in as short a time as possible. As there is a relative shortage of engineering and supervisory level personnel in the country, these people are easily lured by new companies setting up in the country which offer very attractive starting salaries.

month), labor turnover is presently one of the firm's major concerns. [10] The firm has no trouble recruiting production workers, it just has a hard time keeping them. Even if the enterprise did ever encounter problems finding workers, the county has made a commitment to play the role of "head-hunter" in recruiting additional production workers to the area.

To our surprise, few enterprises we visited relied much on temporary workers. However, in the case of one small software development and computer assembly operation, this wasn't the case. Due to sporadic material imports from Taiwan, the enterprise often went months without assembling any computers. As a result, approximately 20% of the firm's labor force--although technical school graduates and quite highly skilled--are temporary. This seems to be a rather unique situation and in the near future the enterprise plans to hire these workers as permanent employees.

Education/Training. There has been emphasis placed on education and training by both the local governments and the enterprises in the provinces. To begin with, enterprise entry requirements are rather steep. In the majority of state owned enterprises, an entry level production worker must have as a minimum a junior middle school education (i.e., 9 years). The education level required for employment in a joint venture was often even higher. In many cases, such workers are required to have completed at least high school.

[10] It certainly appears that the nature of the processing industry and high turnover rates may be correlated to some degree. This does have important policy implications for certain locations in the province.

The training provided by the majority of these enterprises--especially joint ventures--was substantial. Over and above basic job related skills training, the number of enterprises which trained their employees in the use of Total Quality Control--TQC--was impressive. In more than one case, the enterprise and/or the local industry association administered TQC qualifying examinations.

Complementing the training at the enterprise level, there has been a heavy investment in training on an even larger scale by the individual localities and cities. As an example, authorities in the city of Dongguan have made education and training a high priority and have come a long way in a short period using a multi-faceted approach. Initially, much of the training of workers in Dongguan was done by technicians from Hong Kong who were sent by businessmen investing in the city. In the next stage, enterprises began to send more workers abroad to study and in turn these workers would return to their enterprises and train others. More recently, the government of Dongguan City has started to annually send 300 local students abroad to study at foreign universities. It is expected that these students will return to the city and enhance the local education and training capabilities. In addition, the city has established an engineering college and plans to build a total of 20 vocational schools, of which five are already recruiting students.

Finally, some of the specialised industrial estates--such as Shekou Industrial Zone and Guangzhou Economic and Technological Development Zone (GETDZ)--have also invested heavily in training facilities. Within Shekou there is a renown training center

which offers courses in management, finance, international trading and other topics of current relevance to the enterprises. When this center was initially established, the courses offered were of a quite different nature, generally lasted an entire year, and were often taught by foreigners. Today, in addition to offering a new and wider curriculum, the courses on average last a month and many of the professors are from China. The success of this center can largely be attributed to the fact that it has been able to adapt and adjust over time to meet the evolving needs of industry. Not only does the Shekou leadership provide this high quality training, but it is also rather selective on who it allows to seek employment within the zone. Shekou was quite unique on our trip in that all production workers in the zone had to have high school diplomas and all managers had to be college graduates.

In sum, impressive strides have been made in education and the comprehensive plans for the future, if achieved, will further add to the human capital strength. In both provinces, the average number of years of schooling has steadily increased and will continue to do so as localities raise mandatory education levels. Combined with the extensive training provided by many firms, it is fairly easy for enterprises to find good quality labor. As a result, in many functions the Chinese are now taking over roles previously played by foreign joint venture partners. As an illustration of this, we cite the

example of a large electronics enterprise in Xiamen.[11] When the enterprise was initially established in 1984, there were numerous expatriates from Hong Kong including 35 managers responsible for all the key departments. Not surprisingly, all these expatriates were assigned by the joint venture partner, but in a slightly more unusual move, the Chinese partner also assigned a Chinese counterpart to each of these managers. These Chinese counterparts were in effect being groomed to take over the roles of the Hong Kong managers. The "first time" everything was done (i.e., such as the first time international standards specifications were sought or marketing trips to specific international locations were made), the Chinese followed the Hong Kong managers around watching and learning. Over time around, the Chinese have attempted to do things by themselves. Initially, the Hong Kong investor resisted relinquishing control of the company to the Chinese, but the Chinese partner won out. Today the enterprise was a few employees from Hong Kong, but the most important is director of the tooling factory. All the top managers are Chinese.

[11]This story must be prefaced by noting that the education level in Xiamen is higher than in other localities, as for a number of years the government has realized its importance in the development of the city.

Infrastructure

The city of Foshan illustrates well the vast impact that infrastructure can have on the development of agglomerations. On the map, Foshan city appears to be easily "covered" from Guangzhou. When suggesting a day trip to Foshan to begin our work in Guangdong, some of our Chinese counterparts found the idea to be preposterous claiming that it took four hours to cover the distance between the two cities. They were possibly correct in that prior to the completion of the Guangdong-Foshan expressway in 1988, it did take four hours for the journey. Today on the expressway the trip takes approximately 45 minutes. Easy access combined with some flexible and innovative leadership, makes Foshan City an extremely dynamic location today.

The timing, scale, and financing of infrastructure can follow different routes. Fujian has built infrastructure ahead of demand, whereas Guongdong has built infrastructure as demand has become more evident. In Guongdong, the provincial government has catalysed infrastructure by its commitment to seeding specific projects (e.g., special economic zones) and by providing easy access to credit and loan guarantees.

In Guangdong province, therefore, much of the planning and financing of new infrastructure is done at the city or county level. More than one local official remarked that if they waited for provincial financial assistance, no roads would ever get build. However, in Fujian province there seems to be a greater level of provincial involvement in infrastructure development. Given that Fujian is a net recipient of central government

funds, there is more money at the provincial level earmarked for infrastructure and as a result the majority of projects are at least partially funded by provincial money.

Officials at all levels are constantly seeking ways to fund new infrastructure projects. While many traditional sources, such as government commercial banks, international grants, and loans from international organizations are standard sources of infrastructure finance, some localities have been creative in taping into new resource sources. The city of Dongguan is exceptional when it comes to financing infrastructure. The residents of Dongguan City have been prosperous over the last decade, with more than 90% constructing new homes and the vast majority accumulating substantial savings. At the same time, the local government has had an ambitious highway construction and reconstruction plan. Using an innovative yet fairly simple approach, the local government has tapped into local savings to finance the entire highway construction plan. By the end of 1990, the local government had borrowed 550 million Yuan (approximately $US 100 million) from the savings of Dongguan residents and will continue to finance the entire investment using this approach. Although the city does collect some revenue from user-fees on the highways (i.e., tolls), the amount which they collect is regulated by the provincial government and doesn't even come close to even covering the interest payments.

A different model of infrastructure development has been used in Shekou. China Merchants Steam Navigation Company, Ltd. (CMSN) has business of purchasing and producing of steamships since 1872. By the late 1970s, the company had expanded into

such areas as dock management, marine machinery and engineering, warehousing, surveying, tourism, hotels, banking and investments. As the business climate in China began to open up, CMSN was in a prime position to invest in China.[12] In 1979, China Merchants was given full authorisation to develop the 8.2 square kilometer land area which is now known as Shekou. Given that China Merchants is very entrepreneurial, it has handled the development of Shekou much like it would any other commercial proposition. Infrastructure development has been a priority part of the "provider of services" role that CMSN has established for itself. Port, railway, electricity, and water along with the more traditional services such as customs and trading are presently among the range of service offered. These services are not all profitable but it is expected that they will be sometime in the future. It is interesting to note that in addition to investing in services, China Merchants has also invested heavily in financial institutions and industrial enterprises.

While considerable infrastructure development has taken place, there is still much that is lacking. Despite infrastructure gaps, in many instances enterprises are making long term commitments to areas on the basis of the momentum of the growth process. A Japanese cooperative joint venture in Bao'an County, which rolls imported steel, has had to overcome many obstacles since its establishment in 1988. Electricity supply has been

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[12]The ownership of China Merchants is interesting to note. In 1950, torn between siding with Taiwan or Beijing, the company went with the latter and became a state owned enterprise. However, a major branch of the company remained in Hong Kong where today CMSN is headquartered and registered. As a result, in China the company is now registered as a foreign investor.

inadequate and the enterprise had to install two generators. Also, in the beginning there were often periods of 24 hours or more in which there was no water available to the enterprise. The enterprise dug its own wells. The firm has, therefore, adapted and improvised when necessary. Although the manager readily admits that there are still gaps in the infrastructure, he has also seen a lot of improvements in just three years. As a result, he is confident that the job will get done eventually.

Agglomeration

In this section, we provide illustrations of three different models of agglomeration. First, we give some examples of the model in which a location is built from scratch. We show two variations which differ due to the geographical placement of locations, and conclude that in this model initial conditions play an important role in the determination of the growth response. In our second model, we provide examples of existing locations which are given special encouragement: in locations we visited, we saw that rather dynamic growth can result in such a model. Finally, we look at conglomeration in the sense of coordinated action. The properties of conglomerates as efficient internal capital markets or mechanisms for diffusing information have been discussed by Williamson (1975). In China, different institutional forms (trading companies, holding companies directing credit to particular projects) are trying to create a substitute for such conglomerates. Unlike in the Williamson model, often the conglomerate is economizing on the skills and dynamism of a specific individual whose role is to act as a catalyst in the

growth process. By no means do we suggest that these three models are mutually exclusive. Instead, we are merely categorising what we observed and recognize that there is much room for overlap.

"Policy-correct cities". Our first model of agglomeration--creating a "policy-correct city" from scratch and hoping that agglomeration effects take place--has been widely used in Guangdong and Fujian, as well as in many countries (i.e., export processing zones). This model in fact, has two variations. The first variation, which is illustrated by Shenzhen, Xiamen and the other SEZs, involves starting from scratch in that location is more determined by preferences of potential foreign investors than by existing suppliers, industries, and infrastructure. While in the case of Shenzhen this model has worked well and the predicted growth has occurred, in Xiamen and the other SEZs there has been a long lag in the growth response. This is not to say that the agglomeration economies do not operate but only to point out that initial conditions matter.

Although Shenzhen a decade ago was an agricultural wasteland, initially it had the tremendous advantage of being less than 20 miles from Kowloon. Infrastructure was not very well developed, but it mattered less given the proximity to Hong Kong. Because of this, infrastructure (and other "key ingredients") have been able to develop simultaneously with the development of Shenzhen.

On the other hand, Xiamen (located near Taiwanese investors) was not so lucky. Although in 1979 Xiamen did exist as a city with some production capacity, for years it had been terribly isolated for defense related reasons. Compared to other parts of the

Chinese mainland, Xiamen is relatively close to Taiwan but the distance is still over 150 nautical miles.[13] These differences do not, in our judgement, account for the wide differences in investor reaction. While Hong Kong businessmen flourished in -Shenzhen, Xiamen first had to "prove itself" by putting an infrastructure into place.

A variation on the model of creating special economic zones close to investors is that of locating the zone next to an existing industrial base. To illustrate this, we provide the parallel cases of GETDZ and FETDZ.[14] Both of these zones are located close to more conventional centers of activity (i.e., the provincial capitals), but both have been slow in gaining momentum.[15] The development of GETDZ began in 1984 and by the end of 1990 there were 120 productive enterprises. This particular zone caters primarily to production for the domestic market and import substitution. While this type of growth is not necessarily bad, in the Chinese experiment such "open policy" areas were supposed to promote growth through exports. In many respects of these respects FETDZ is quite similar to GETDZ. FETDZ presently has only 88 productive enterprises, but investment levels have been comparable, and again the export growth response has been slow to materialize.

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[13]As another illustration of the relative remote nature of Xiamen, it is located 240 miles away from the provincial capital Fuzhou. For comparative purposes, Shenzhen is located approximately 70 miles from its provincial capital Guangzhou.

[14]GETDZ is the Guangzhou Economic and Technological Development Zone, and FETDZ is the Fuzhou Economic and Technological Development Zone.

[15]It should be noted, that while these sites are "close" to the provincial capitals, in the early years there were still infrastructure obstacles that made them seem far. For example, GETDZ is only 20 miles from the center of Guangzhou, but even this distance initially caused problems with respect to attracting labor which in turn lead to problems attracting investors.

The explanation for slower growth here seems to lie in the relatively small size of these agglomerations. They have not necessarily benefited from the nearness to the city since commuting times are still quite long and input supplies have not developed.

Existing localities taking off. In this regard, therefore, starting from an existing agglomeration with sufficient scale would seem to be a more attractive policy. The city of Shishi in Fujian province provides an interesting example of our second model of agglomeration. The city was established three years ago and was denoted as an "experimental city"--the only one of its kind in China.[16] Shishi has long been famous for its garments and other small products, but had always been under the administrative authority of Quanzhou City. In the last few years with its new status, the city has prospered and is full of dynamic businessmen. The managers that we spoke with felt that it was extremely beneficial for them to be located in an area that had so many competitors. For the most part, managers felt that the localized competition drove them to be more innovative in exploring new product lines and also in forcing them to improve quality. At least one manager said that much of the success of his enterprise could be attributed to competitive pressures from other enterprises in the city. There is also evidence that important new linkages are beginning to form in Shishi. Some enterprises we visited had reduced their dependence on imported materials and were developing stronger

[16] As an "experimental City", Shishi provides preferential policies similar to the SEZs and has a government which plays a less direct role. For example, in Shishi planning plays a smaller role than in other Chinese cities. City administrators prefer to think of themselves as facilitators or coordinators and not as planners.

linkages with Vocal material input producers. The city has been reinforcing these linkages by developing a quality control bureau which periodically inspects products and even provides assistance in solving quality problems.

Shishi is a prime example of a city which started out with a somewhat well-developed industrial base in place. with the introduction of the appropriate policy measures and government encouragement, the existing structure has been allowed to evolve and the city has taken off. The current enthusiasm and momentum in the city has to be seen to be believed.

A similar situation exists in Quanzhou, also in Fijian province. Enterprises in Quanzhou expressed analogous benefits associated with the immediate concentration of industry (mainly textiles and garments). One particular textile company we visited benefited greatly from other garment producers in the area. while including the pressure of competition, the supply of skilled labor and information received from other companies as three of the biggest benefits, there was one slightly different benefit in this city. An informal sub-contracting network had developed through which certain enterprises acted as “coordinators” and had other enterprises filling orders they couldn’t handle. As a result, there was quite a bit of firsthand contact among sometimes directly competing firms.

Catalysts of Agglomeration. Finally, in our third agglomeration model we have the existence of an agent whose role is to catalyse the growth process. This agent may be an individual but is generally part of an institutional structure which may take on a variety of

forms. We will refer to these institutional forms as "conglomerates". Again, in these two regions there are numerous examples of this model which for the most part are achieving successful results.

As our first illustration, we introduce the notion of the city as a conglomerate. Returning to Foshan as our example, the city did have an industrial and foreign trade base prior to the reforms. Due to support from Beijing and an especially strong entrepreneurial mayor, Foshan was the first large community in Guangdong to take off after 1978. The mayor of Foshan in the late 70s and early 80s was Mr. Yu Fei. He has been labeled as "bold and controversial", yet "a creative problem solver who was not afraid to push projects even when not everyone favored them".[17] Under Mr. Yu's leadership, industry in Foshan both grew and diversified tremendously. Industrial profits were reinvested both in industry and also in projects which helped to develop the urban infrastructure. The enterprises we visited very much gave credit to the city leadership as partially responsible for their success. As Vogel puts it very well, the "leaders had a broad vision of modernization and successfully converted its industrial base into a program of comprehensive development for a metropolitan region as the core city became an engine of growth that helped pull along the surrounding rural areas".[18]

The importance of city mayors in the development process cannot be overemphasized. In a sense, they are true Chinese entrepreneurs who are acting as the

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[17] See Vogel (1989) page 182.

[18] Vogel (1989) page 189.

counterparts of the foreign investors. Mayors who accompanied us on our field trips had intimate knowledge of the workings of individual firms. They were clearly thinking with and coordinating with investors in providing infrastructure and training. They have continued to play the important role of "appropriately interpreting" rules written at higher levels of the administration.

Another manifestation of conglomerates are the local "Construction and Development Corporations". In just about every locality we visited, there was a local Construction and Development Corporation.[19] As the SEZ was being developed, the CDC of Xiamen was formed as a comprehensive company with five main areas of activity: 1) foreign investment, 2) foreign trade, 3) banking, 4) real estate and 5) consulting. The company is owned by the Xiamen municipal government and has invested in more than 60 joint ventures in Xiamen. Along with investing in a Joint venture, CDC often provided assistance in management, technical assistance, recruitment, raw materials procurement, and marketing. Again, CDC has played a big role in the development of Xiamen and has attracted many enterprises.

However, in the next three to five years the company will be going through a transformation. Instead of directly investing in enterprises, CDC will continue to help attract investment to Xiamen by providing information on the location and its policies. In this capacity, CDC will focus its activities more on trading and on enterprise

development. Given that recently more foreign investors are coming to Xiamen, the company feels that it can play a more crucial role in the growth process by helping to develop international markets and by providing feedback to enterprises based on its experiences in the international trade arena. This particular company -provides an interesting illustration of how this sort of conglomerate can change roles and adapt to take on new roles as these new needs arise.

Next, we provide an example of a more traditional conglomerate which again has close ties to a local government--i.e.., the Huaxia Group and the Xiamen City Government.[20] The Huaxia group was established in 1987 and initially was primarily funded by the Xiamen city government. The group has invested in approximately 80 electronics enterprises in Xiamen, but also is engaged in trade and more importantly research and development. In Xiamen, the Huaxia group has financed the set-up of 10 branches of research institutes located in other parts of the country. Through the efforts of the Huaxia group in combination with the Xiamen government, the electronics industry has steadily grown in Xiamen since the mid-1980s. In addition, innovations are starting to emerge as a result of the emphasis on R&D.

Using similar conglomerate structures, however concerned more with restructuring of existing enterprises, recently more group companies are emerging in China. A few years

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[19]Since we spoke at great length with representatives of The Construction and Development Corporation (CDC) of the Xiamen Special Economic Zone, most of this discussion revolves around our knowledge of that organization. However, it is our understanding that most CDCs perform similar functions.

[20]The group also has as a partner the China Electronics Industrial Corp which is located in Beijing.

ago there were a limited number of groups, today there are 57 groups, and predictions are that there will be at least 100 groups five years from now. These groups are forming as the government "matches" together strong firms with weaker firms in the hopes that the former can keep the latter from going out of business. It will be interesting to observe what if any agglomeration effects this new group movement will have in the years to come.

A Comparison with South Korea

It is tempting, if not downright hazardous, to compare the Chinese coastal provinces with the East Asian NIEs. In many respects, developments in the coastal provinces bear remarkable similarity to developments in South Korea in the early 1980s.

The first similarity is in the importance attached to capital goods. Both countries have relied heavily for new technology on imported capital goods. Machinery has been China's leading import in recent years. Chinese producers, often lacking budgetary discipline, have sometimes been faulted for excessive import of equipment. However, given current foreign exchange shortages this problem should not persist and without a doubt, many Chinese enterprises have put imported equipment to good use. Some of these same enterprises have also had clear-headed strategies for worker training and performance incentives that have facilitated the efficient use of imported equipment.

A second and related feature that is detectable in at least the more progressive Chinese firms, is reverse engineering of equipment. In the early 1980s, Korean producers

would proudly demonstrate reverse engineered and locally manufactured machines working alongside imported (generally Japanese) machines. They would claim superiority for their machines. Chinese enterprises are doing the same. Naturally, one has to be careful of exaggerated claims given the history of wounds inflicted through excessive emphasis on self-reliance. However, in the coastal provinces the pressures of competition are such that dangers of inappropriate self-reliance are minimal.

Thirdly, a strategy of apparently impeccable pedigree which has descended from Japan through Korea, is the reliance on conglomerate organizational form. Chinese conglomerates are small and dispersed and not yet at the maturity level of Korean conglomerates in the early 1980s, but are certainly beginning to think in the same aggressive manner.

Fourthly, as in Korea, Chinese enterprises and the government work closely together, although the changing nature of the reforms makes it difficult to fully assess the relationship. An indicative sign of the close relationship is the intimate knowledge that administrators have of firm operations. It is not unusual for a bureaucrat to rattle off detailed performance statistics and operational strategies of specific firms. The role of the government in the coastal provinces is largely a supportive one. Production, export, and profit targets are set either explicitly or implicitly but there is a sense of working together to achieve them. Rapid provision of infrastructure is a priority at all levels of government. Facilitation of technology transfer and incentives to innovate is an important element of the government's strategy.

Finally, perhaps to a greater extent than in Korea of the early 1980s, both firms and governments (provincial and local) are in agreement that the coastal provinces need to move away from extensive dependence on cheap labor to a product strategy which is more technology intensive. Both sides are working together to achieve this important goal. It is interesting to note that this shift in China is occurring at wage levels that are much lower than was the case in Korea.

Despite the comparisons, nothing as dramatic as Samsung's 1984 investment in dynamic random access memories (DRAMs) is in the offing. However, a slower but steady shift to knowledge and capital intensive industries is definitely occurring in the Chinese coastal provinces. Polyester fiber for the textile industry, shifts from simple lathes to numerically controlled lathes, the move from low price/low quality bicycles to medium price/medium quality bicycles are some of the examples of the upscale trend. Even when producing mature products, substantial number of factories in the coastal provinces use automated equipment near world standards to ensure quality and consistency. Product design is being emphasised to a greater extent, and the role of skilled workers in the production process is increasing rapidly.

History is divided on the wisdom of the Chinese strategy to go upscale. Chinese factories are notorious for ambitious attempts to move beyond their capabilities, often leading to great waste. However, Korean investments in ships, steel, and semiconductors were criticized (the last even by the Korean government), only to prove great successes.

At least a few indicators point favorably for the Chinese. The investments in materials supply are being integrated with the plans of large domestic users of these materials. The process is occurring incrementally as producers absorb the lessons of their investment before moving further upscale.

Unlike South Korea, China has relied heavily on foreign investment. One possible reason is that the state system in China could be shaken only so much, and alternative entrepreneurship was in short supply.[21] Korea also looked to new entrepreneurs for its shift to export markets and these entrepreneurs were in turn nurtured to eventually become massive conglomerates. The Chinese chose to look to foreign investors to provide the catalytic role and they had a ready source in Hong Kong businesses whose production and marketing experience could not be matched in China.

[21] Although, the recent success of township and village enterprises (TVEs) does show that entrepreneurship has not been absent in China.

Conclusions

The lessons from the Chinese experience are not favorable for other aspiring entrants to world markets. Growth is not easily sustained in the best of circumstances. The Chinese example shows the pattern of reinforcement required for growth to continue. A window to the world market through Hong Kong, education and training, continuing heavy investments in infrastructure, and agglomeration effects have all played their roles. Not one of these factors by itself could have produced the strong performance of the last decade.

Some of the strengths that made growth possible were unique to China, but even these have had to be cultivated. Hong Kong was a potential resource waiting to be utilized. Special Economic Zones, which provided a favorable climate to investors, drew in capital and technology from Hong Kong. The example of Hong Kong investors has catalyzed others, including more recently the Taiwanese.

The reservoir of trained human resources in China was also waiting to be tapped. However, organisational forms and incentive mechanisms did not always permit effective use. Better use today is occurring not only in the foreign ventures but also in state-owned enterprises. At the same time, educational strengths are being heavily reinforced through training. Firms are making significant investments in training but are also being supported by state training colleges and quality associations. State instituted examination and certifications systems are also being used effectively by firms to recruit and upgrade their workers.

Certain agglomeration effects have also grown on existing clusters. Ceramics in Foshan have seen renewed growth in recent years. Traditional industries (flashlights, batteries and locks) have also benefitted from the recent upsurge and have used the momentum to modernize their skills. New bicycle clusters are bringing together old skills and providing the training and exposure needed to compete in world markets. However, certain new clusters use old skills only indirectly--the famous example of electric fans in Shunde County illustrates this well.[22]

The most important new efforts have been in the provision of infrastructure. Bottlenecks on account of poor infrastructure are being vigorously eliminated. This has created new financial and management pressures, both of which are being addressed through flexible use of international capital markets and organizational forms new to China.

It is well to remember that amidst all these changes, the Chinese economy has remained substantially "distorted" in the conventionally understood sense. Markets have functioned in a limited way, and neither transparency of rules, nor economic or political stability have been characteristic of the period. It may not be possible to prove this conclusively, but it does appear that the growth and the foreign investors have forced the more efficient functioning of markets, rather than efficient markets facilitating growth.

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[22]The Yuhua Electric Fan Factory in Shunde made soy sauce and plastic tops for thermos bottles until the late 1970s when it lacked sales outlets for these products. The factory manager decided to move into plastic electric fans and was producing 1.2 million and exporting by 1985. (See Vogel (1989) page 172).

The lesson is that grossly distorted markets, as prevailed in China before 1979, do hamper sustained development of resources. However, it is not necessary to wait for the fully efficient functioning of markets to promote the efficient utilisation of resources. Continued picking away at market reforms is likely to run into diminishing returns unless complementary efforts are made. Governments, using a variety of market-friendly instruments, can directly promote better resource utilization, which in turn can create conditions for the more efficient functioning of markets.

The relative success of the Chinese coastal provinces does not offer great hope for other aspirants because it also points to the difficulties of achieving growth. Not every country has a Hong Kong ready to open a window to the world. Not every country has a potential depth of well-educated people. Moreover, the continued coordination of the various elements contributing to growth is a delicate task which depends not only on skill but on a certain amount of luck. Finally, in some product areas, Chinese success has had the direct effect of constraining growth in other countries. To the extent that growth is derived from learning-by-doing or agglomeration effects, Chinese firms are building an advantage that will be self-sustaining for quite a period of time. time.

The success of the Chinese provinces, however, has important lessons for other countries even if replicability will not be easy. The need to experiment with basic drivers of growth (infrastructure, human capital, institutional structures such as conglomerates) in various forms suited to narrowly specified locations is critical. Infusion of foreign

knowledge into the system through foreign investors, capital equipment, and foreign buyers must be a critical element of any growth strategy.

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