NAUBAHAR SHARIF AND MITCHELL M. TSENG

The Role of Hong Kong in Mainland China's Modernization in Manufacturing

ABSTRACT

We examine Hong Kong's role in the modernization of manufacturing industries in Mainland China and its province of Guangdong. Hong Kong's role has evolved from trading intermediary to low-cost mainland manufacturer to provider of key business, financial, and supply chain services.

KEYWORDS: Hong Kong, Mainland China, manufacturing, modernization, technology

INTRODUCTION

Hong Kong may comprise a tiny part of Chinese territory, but it has long played a major role in global business and trade. Yet, there is much to learn about the role it has played in the modernization of Mainland China's manufacturing base, given Hong Kong's new status following the 1997 transfer of sovereignty from Great Britain to the People's Republic of China.[1] China is, after all, rapidly transforming itself into the world's largest and most dynamic economy, a process that began in 1979 with new economic reforms and the "open-door policy." The changes have exerted a far-reaching socio-political influence within China and across the regional and global landscapes. In particular, Hong Kong exemplifies how a leader—in terms of best practices, management, innovation and technology, manufacturing, skills,

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1. Henceforth, our use of the term "China" serves to distinguish Mainland China from offshore territories such as Hong Kong and Macao, which are now special administrative regions (SARs). We use the term "Greater China" to denote a regional setting that includes Hong Kong, Macao, and Taiwan.

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and expertise—can serve as a center for excellence, leading the development of a larger, less-developed hinterland. Hong Kong's experience provides a model for other regions (such as the Middle East, where Dubai plays Hong Kong's role, and the Indo-Malay Southeast Asian region, where the part is played by Singapore).

This paper seeks to understand how investment by Hong Kong business interests in Chinese manufacturing enterprises has helped to modernize manufacturing processes and products—and thus to illuminate the future of the Hong Kong-China relationship. To achieve this, we divide the post-1979 era into three distinct phases, and focus on three critical factors that, in conjunction with Hong Kong investment, are helping to bring Chinese industries into the 21st century. The framework of our study comprises the following three developmental phases:

- Phase I: Initiation (1979–92)
- Phase II: Acceleration (1993–97)
- Phase III: Maturation (1998–2008)

We then examine Hong Kong's contribution to manufacturing modernization in China by focusing on the following three factors:

- Availability and use of capital investment resources from Hong Kong and China
- Sophistication of management systems and manufacturing technology in Hong Kong and China
- Mainland Chinese government industrial policies

Working within this framework, we find that Hong Kong's role in modernizing mainland manufacturing industries has evolved continuously and will likely keep doing so. Initially, Hong Kong was the main driver of innovations in management practices and technology. More recently, however, the trend has been to work with China on an increasingly complementary footing, whereby the two regions engage in a mutual exchange of information and technological expertise. Having served historically as a trading intermediary in the region, Hong Kong developed into a thriving manufacturing center, eventually moving much of its operations to the mainland, particularly to adjacent Guangdong Province. In doing so, Hong Kong leveraged mainland Chinese low-cost factors—land and labor—to great advantage. In the meantime, Hong Kong developed world-renowned capabilities in

finance and other business services, and has recently become a key source of management and business best practices. We note in our conclusion that in some ways China is poised to pass Hong Kong in such areas as research and development (R&D) and product and process development (especially with regard to semiconductors, machine tools, etc.), leaving Hong Kong's future role unclear. Our narrative describes how a smaller, nimbler, and more highly developed economy may be eclipsed by a more powerful economy as the latter learns from, and eventually catches up with, the leader.

We continue this introduction with a brief overview of Hong Kong's relationship with the mainland within the context of Greater China. Then, focusing on Hong Kong, we offer some observations about foreign direct investment (FDI) into China. In section 2, we review the research literature on economic relations between the mainland and Hong Kong, emphasizing the latter's effects on manufacturing. Section 3 spells out the conceptual design that frames the remainder of the paper, as well as our methodology. In section 4, we discuss Hong Kong's contributions to modernizing mainland manufacturing industries over the three phases of the relationship, explaining how each of the three main factors in our conceptual design helped to shape each phase. Finally, we add some reflections on our findings and a review of the study's limitations, in section 5.

Hong Kong and China: An Overview

Well before 1979, Hong Kong offered China a window to the outside world. Since then, its "middle-person" role has only been further underscored. As the world's largest shipping center and third-largest financial center, Hong Kong has played a pivotal role—as trading partner, intermediary, financier, and investor—in China's opening to the world. For example, over the 1990–92 period, Hong Kong transshipped and re-exported 40% of China's goods and supplied the largest portion of China's total FDI.[2] As of 2006, Hong Kong was China's fourth-largest trading partner (behind the European Union, the United States, and Japan), and the third-largest export market for mainland Chinese manufactured goods (behind the European Union and the United States). Hong Kong has also played a significant intermediary role in facilitating emerging economic integration across the Taiwan Strait.

2. Guangdong Bureau of Statistics, from CEIC China Premium Database (subscription electronic library database), <http://www.ceicdata.com/China.html>, accessed October 2, 2009.

LITERATURE REVIEW

Studies of Hong Kong-China ties began soon after the onset of the economic liberalization process in 1979. Several studies have examined Hong Kong's role in Greater China, showing how, for example, Hong Kong helped to integrate South China and Taiwan.[7] John Ravenhill studied the "threat" that China seemingly poses in the Southeast Asian region with respect to manufactured exports to global markets, concluding that such "pessimism regarding economic competition between the Association of Southeast Asian Nations and China is misplaced."[8] From the offshore perspective, Huang and Sharif, employing an industry-level database to study the 1999–2003 period, found no consistent evidence that economic activity on the part of Hong Kong-, Macao-, and Taiwan-funded companies contributed to productivity growth in Guangdong's domestic manufacturing firms.[9] Recently, the implementation of the Closer Economic Partnership Agreement (CEPA) and the high-profile promotion of the Pan-Pearl River Delta (PPRD) region have generated new research on the financial, managerial, and business-related challenges and opportunities Hong Kong will likely encounter in China.[10]

In spite of this scholarly interest, few researchers have examined Hong Kong's role in modernizing manufacturing activity in China.[11] To be sure, it is difficult to isolate Hong Kong's role in manufacturing modernization from Hong Kong's other influences on the mainland economy. Furthermore, Hong Kong's investments in manufacturing have been concentrated in Guangdong, where the Pearl River Delta (PRD) holds the greatest number of Hong Kong-owned manufacturing plants. Additionally, Hong Kong's entrepreneurs have invested in Shanghai Municipality and Zhejiang Province,

7. See Robert F. Ash and Y. Y. Kueh, "Economic Integration within Greater China: Trade and Investment Flows between China, Hong Kong and Taiwan," *China Quarterly* (Cambridge University Press, Cambridge, U.K.), Special Issue: Greater China (December 1993).

8. John Ravenhill, "Is China an Economic Threat to Southeast Asia?" *Asian Survey* 46:5 (2006), pp. 653–74.

9. Can Huang and Naubahar Sharif, "Manufacturing Dynamics and Spillovers: The Case of Guangdong Province and Hong Kong, Macau, and Taiwan (HKMT)," *Research Policy* 38 (June 2009), pp. 813–28.

10. Y. M. Yeung and Jianfa Shen, "PPRD: Hong Kong's Opportunity," in *Interaction and Development of the PPRD and Hong Kong*, eds. Y. M. Yeung and Jianfa Shen (Hong Kong: Hong Kong Institute of Asia-Pacific Studies, Chinese University of Hong Kong, 2005).

11. For an exception, see Michael J. Enright, Ka-mun Chang, Edith E. Scott, and Wen-hui Zhu, *Hong Kong and the Pearl River Delta: The Economic Interaction* (Hong Kong: 2022 Foundation, 2003), which discusses the establishment of production networks in the region.

although to a much lesser extent. Therefore, while Hong Kong's contribution to modernizing manufacturing in China may have been significant, it is highly localized. However, the lessons learned from Guangdong have no doubt been transferred by the mainland Chinese to other regions, contributing to modernization in other provinces.

This article contributes a Hong Kong-centered perspective to the literature in evaluating the former colony's contributions to modernization in manufacturing in China. Hong Kong's considerable role has the potential to generate mutual benefits into the future, so this paper's sharp focus on Hong Kong nevertheless covers a significant chapter in the modernization story without presuming to account for factors originating in the mainland or, for example, Taiwan. The paper's broader theoretical significance extends to the transfer of technical expertise, management skills, and business practices "downstream" from a highly developed region to a less developed hinterland over time. Ultimately, exploiting a developing region as Hong Kong did has had its advantages, but disadvantages also arise as the hinterland catches up with and overtakes the leader.

CONCEPTUAL FRAMEWORK

We developed a conceptual framework within which to explore the contents of this research that operates on two levels. The first level comprises a theoretical apparatus that we used to analyze and understand economic transitions from a smaller but more highly developed region to a larger hinterland. Literature in the sociology of innovation diffusion is especially pertinent in this respect. Before explaining the second level on which our conceptual framework operates, we note three insights that we believe should inform the construction of any such analytic framework.

First, actors' decisions to adopt new ideas and practices are *socially driven*.[12] Agents of change enjoy greater success in influencing their targets' behavior when they use social networks as channels than when they use persuasion based solely on economic calculations. This observation clearly applies to Hong Kong's role in China, where cultural and linguistic familiarity, reinforced through investment and encouraged by national, provincial, and local policies, has created a natural affinity between Hong Kong firms and Guangdong Province. Second, individual actors are embedded in a range of social

12. Everett M. Rogers, *Diffusion of Innovations* (New York: Free Press, 1995).

networks that determine the *rate at which they adopt new ideas or practices*. While the diffusion process includes early adopters as well as laggards, the latter have weaker ties to agents of change and are relatively isolated from external exposure. Modernization in China began in 1979 and continues to this very day. The early "adopters" who moved their manufacturing operations to China in 1979 and the early 1980s may have initiated the process of economic transition and modernization, but that process has been reinforced over time even by the laggards, so the latter cannot be disregarded. Third, as new ideas inevitably challenge old practices, individuals and firms face a *counterforce* that discourages them from implementing new ideas. The more rooted an old practice is, the more difficult it is for individuals to adopt a new one. Although Hong Kong firms working to modernize manufacturing in China have inevitably met such a counterforce, it has proved to be largely inefficacious. Hong Kong's individuals and firms have found an audience in China (as well as in Hong Kong) that is willing and able to replace old practices and generally enthusiastic about implementing new ideas.

The second, less abstract, level on which we developed our conceptual framework reflects the extent to which Hong Kong's contribution to modernizing China's manufacturing sector varies by industry, evolving as the pace of industrialization quickened post-1979. As noted, we divide Hong Kong's contribution into three discrete phases, demarcating them according to the modes of economic development that have prevailed in China since 1979. Development in the first two phases reflected the speed at which economic reform occurred, whereas the third reflects a consolidation of economic activity accompanied by recent political changes.

Phase I, "Initiation," incorporates the changes that occurred when China announced its open door policy to the outside world in 1979. This phase continued until just beyond the tumultuous period marked by the June 4, 1989, Tiananmen incident. It includes punitive economic measures enacted by several industrial nations (that ironically opened up new opportunities for companies from Greater China, including Taiwan and Hong Kong). The demarcation at the 1992/1993 divide between Phases I and II represents the dwindling of the political disturbance caused by the Tiananmen incident and a renewed focus on economic issues. This was marked in particular by Deng Xiaoping's historic tour of South China—popularly known as his *nanxun* (southern tour)—during which he reasserted his economic agenda. Deng boldly called for continued radical economic reform and the

further liberalization of China. This tour sparked dynamic economic growth and dramatically changed the political and social landscape of the country. The second demarcation, dividing Phases II and III (1997/1998), is marked by the return of Hong Kong sovereignty to China, China's accession to the World Trade Organization (WTO), and the beginning of the Asian financial crisis.

Delimiting our analysis according to these phases allows us to trace the evolution of Hong Kong's role. In each phase, we focus on developments that influenced the rates of capital investment, comparative technological and managerial transfers, and government policy, in order to capture the dynamics of the process. To be sure, the three factors do not capture all influences upon China's manufacturing sector, but they draw attention to key aspects of its evolution, as well as to the part played by Hong Kong.[13]

METHODOLOGY

This paper was informed partly through direct communication with key industry figures representing firms of various sizes, measured in terms of company net worth and number of employees. Two managers were from firms worth US$500 million (with up to 45,000 employees), respectively; others spoke on behalf of firms worth less than US$50 million (usually employing several hundred employees each). We selected firms of various sizes in order to sample a cross-section of large to medium-sized to small manufacturing enterprises. We sampled another cross-section based on company age, so some firms we targeted had long histories in Hong Kong, preceding China's opening in 1979, while others were established in the mid-to-late 1970s. We were also cognizant of differences based on a company's position within the global supply chain. As such, our interviewees represent not only manufacturers but also suppliers to those manufacturers, trading companies that buy from the manufacturers, and customers of the manufacturing enterprises. A final criterion for selecting our interviewees was industry type. Our interviewees represent a variety of industry types, including electronics, garments, leather, and light industries. All industrialists were interviewed formally.

In Hong Kong, we interviewed chief executive officers (CEOs) of major conglomerates that have invested in China in each of the three phases under

13. The exact role played by a particular factor cannot be quantified to a definitive percentage. Rather, the factors provide us with valuable insights into the major influences in any given period.

study. The interviewees included Samson Tam, chairman of Group Sense (International), Ltd., a leading manufacturer of electronic dictionaries and other handheld information devices; Cliff Chan, director of Esquel China Holdings, Ltd., a leading producer of premium cotton shirts; Roy Chung, group vice-chairman of Techtronic Industries Company, Ltd., an industry leader in electronics and household electrical appliances; and Peter Wong, executive director of Business Plus Consultants, Ltd., a major consulting firm for mainland Chinese manufacturers. We also considered the views of other individuals whom we engaged in informal conversations but did not quote directly (at their request). These included senior government policymakers in Hong Kong, bureaucrats in Guangdong Province, policymakers stationed in Beijing during the period of relevance to our study, and owners of manufacturing enterprises in both Hong Kong and Guangdong. Conducted in Hong Kong and China between December 2006 and May 2007, the interviews were guided by three overarching research questions:

- How has Hong Kong's role in the development of manufacturing in China changed over the past 27 years?
- How has Hong Kong been involved in manufacturing in China?
- How and where (by sector) have Hong Kong manufacturing companies or business people contributed most effectively to the modernization of manufacturing in China?

All interviews were arranged in advance, digitally recorded, and conducted with no significant interruptions. Some handwritten notes were taken during these interviews. Each lasted between 45 minutes and two hours. The audio recordings were subsequently transcribed and analyzed.

The interviewees whom we did not quote directly included 16 government policymakers—six senior policymakers from the Hong Kong side involved in the now-defunct Industry Department or its new embodiment, the Innovation and Technology Commission (ITC) and 10 from the mainland Chinese (central and provincial) side. There were also six other owners of manufacturing enterprises. Although we acquired useful information from these conversations, the individuals with whom we spoke were not interviewed formally because they were typically involved in only one or two of the three phases covered by this paper (especially the government bureaucrats on both sides of the border). This rendered their insights, reflections, and observations incomplete. These conversations occurred variously

at business conferences, trade association meetings, dinner gatherings, or similar meetings and were, in general, shorter, lasting between 15 and 60 minutes. The primary data gathered through these interviews were then verified, wherever possible, with secondary data from officially published statistics and, in some cases, archives. Most of the individuals interviewed in this mode wished to remain anonymous, and it was impractical to record such conversations. In one case, handwritten notes were taken, but in the remainder of the cases, we wrote up interview notes only after the conversations ended.

Finally, we conducted an in-depth analysis of government policies introduced on both sides of the border during our study period, and corroborated the policymaking influence against the interviews we conducted. In this way, the primary data gathered through the interviews were verified with secondary data from published official policies and statistics and, in some cases, archives. We believe our findings reflect a balanced weighing of government policy, industry practice, and statistical data.

HONG KONG'S ROLE IN THE THREE PHASES OF CHINA'S MANUFACTURING MODERNIZATION

We can best explain the dynamics of manufacturing activity in China and Hong Kong's contribution to its modernization by focusing our attention on Guangdong: an area far from the industrial heartland and with limited natural resources, its contribution to the pre-reform development of China's heavy industries was very limited. Add to these liabilities a lack of transportation links with the rest of China, and it is not surprising that Guangdong was an industrial laggard from 1949 until 1979. All of this changed, however, in 1979, when Guangdong was moved to the forefront of China's reform program. It was chosen for special treatment because of its proximity to Hong Kong and Macao, its distance from the heartland, its relatively sluggish economic growth, and its leadership, which comprised some of Deng Xiaoping's closest allies in the reform era such as Xi Zhongxun and Yang Shangkun.

Consequently, Guangdong was granted greater political and economic autonomy than other jurisdictions in China, particularly with respect to financial and fiscal matters, foreign trade and investment, commerce and distribution, materials and resources allocation, manpower, and prices.

Significantly, beginning in 1979, the central government ceded its monopoly control of foreign exchange by introducing a *waihui liucheng zhidu* (foreign exchange retention system). This allowed both export-producing enterprises and their superordinate level of governmental administration to claim—in 1985—a 35% share of foreign exchange earnings from exports of goods and services. Structured to provide greater incentives to exploit new trading opportunities, this share was the largest accorded to any province. In return, however, Guangdong was required to be self-sufficient in terms of capital investment. This set the stage for gradually increasing autonomy in provincial investment and expenditure decisions. The province was also given greater control over economic planning and the approval of foreign investments and foreign trade, and it assumed control over several local state-owned enterprises. These measures launched rapid economic development, mostly in the special economic zones established in the PRD area.

Phase I: Initiation (1979–1992)

The initiation phase of the modernization of the manufacturing sector featured the introduction of economic reforms that set China on its current path. During this phase, China began transforming itself from an agricultural economy into a global manufacturing center, attracting considerable FDI in spite of sparse and generally underdeveloped transportation and telecommunications facilities. Many major infrastructure construction projects, such as the freeway from Guangzhou to Shenzhen and the Beijing-Wuhan-Guangzhou coaxial cable project, had only just begun.

China's fragmented infrastructure made it difficult for Hong Kong-owned enterprises to establish operations in the mainland since they could not easily transfer their physical capital and equipment. Hong Kong-based companies therefore had to build their manufacturing operations there from scratch. This ethos was reflected in one respondent's comments:

> To establish a factory in China in the '80s, we had to bring up all the resources to the site by ourselves—including even the very small items like nails and pins. We could not rely on the supply of even those small items from China because the infrastructure was so poor. However, China changed very quickly, and by the 1990s everything could be sourced from within China![14]

14. Interview with Peter Wong, executive director, Business Plus Consultants, Ltd., Hong Kong, December 8, 2006.

This sentiment was echoed by another interviewee:

> Years ago, 25 years ago, it was very tough to establish manufacturing operations in China. There was no developed infrastructure; the roads were terrible. Just traveling to Guangzhou [from Hong Kong] took five hours, whereas it takes only one hour today.[15]

The critical aspect here is that Hong Kong-based companies had to utilize their own resources to overcome the poor state of Chinese infrastructure while there were few available external sources of financing, a situation that improved through Phases II and III. Issues involving transportation, supplies, and labor had to be addressed by companies wishing to establish manufacturing operations.

During Phase I, the central and provincial governments imposed various restrictions on FDI, in particular on the mode of entry and modalities of ownership of joint ventures established by foreign-funded enterprises. During this period, Hong Kong enterprises entered China as "Sino-foreign joint ventures." Although cheap labor was abundant, there was a distinct shortage of personnel—human capital—with the requisite technical and managerial skills. Employment by Hong Kong-, Macao-, and Taiwan-funded enterprises during this period represented less than 1% of total employment in Guangdong.[16] Government policies dictated, however, that foreign-funded enterprises could recruit only from nearby regions and provinces with the approval of the provincial Labor Bureau. Recruitment from outside the province where an enterprise was located would be approved by provincial authorities only if the enterprise could show that the province lacked appropriately skilled personnel. This changed, however, in 1986, when foreign-funded enterprises could recruit people independently of governmental authorities. By that time, only international recruitment was restricted by the central government.

In Phase I, the shortage of technical and managerial personnel required Hong Kong managers and technicians either to be stationed more or less permanently in manufacturing plants in Guangdong, or to commute there frequently. One respondent noted:

15. Interview with Roy Chung, group vice chairman, Techtronic Industries Co., Ltd., Hong Kong, December 19, 2006.

16. Guangdong Bureau of Statistics, CEIC China Premium Database.

> At that time, recruitment of qualified people was very difficult and those Mainlanders that were available for employment lacked the requisite management know-how and technical knowledge. They weren't able to distinguish between different ways of treating their workers (subordinates) and their customers! So you can imagine what kind of manufacturing business they were able to conduct![17]

Without well-trained technicians, companies often resorted to splitting tasks into smaller, discrete functions so that workers could be quickly trained to complete the individual steps competently. To ensure competence and security in daily business operations, permanent managers who could oversee day-to-day business activities were posted on the mainland.

Also in Phase I, capital machinery—rudimentary by international standards—was employed mainly in the production of basic, labor-intensive goods, requiring little technological sophistication. The era of mass production using advanced capital equipment had yet to begin in earnest, as firms sought to reduce costs. This combination of relatively unsophisticated machinery, unskilled labor, and cheap land created a clear disincentive for Hong Kong's manufacturing firms to invest in R&D: It was far easier to exploit the cheap factor resources. This finding is corroborated by a study whose author contends that firms funded by Hong Kong and Taiwan enterprises in general have not been on the cutting edge of technology and organizational sophistication.[18] Compared with foreign firms funded by American, European, and Japanese companies, Hong Kong firms have had to rely on their capability for timely delivery of uniform-quality products to overseas markets, or on their ability to adapt mature technologies to a labor-intensive mode of production. Therefore, during Phase I, machinery and personnel providing a relatively higher level of sophistication and knowledge were "imported" from Hong Kong. One respondent noted: "Even if we did find the odd, highly trained technician [in the mainland], he was more often than not isolated—there was no cluster of people who could exchange ideas, skills, and knowledge. This meant that the competent technician did not have any opportunities to upgrade his skills."[19]

17. Interview with Samson Tam, chairman, Group Sense (International), Ltd., Hong Kong, December 28, 2006.

18. Kevin Honglin Zhang, "Why Does So Much FDI from Hong Kong and Taiwan Go to Mainland China?" *China Economic Review* 16 (2005), pp. 293–307.

19. Tam interview.

In spite of numerous difficulties—the underdeveloped state of mainland manufacturing infrastructure, shortages in physical and human capital, a low level of technological sophistication, and some unfavorable government policies—Hong Kong business people discovered a gold mine during Phase I. By moving their manufacturing operations to an emerging manufacturing powerhouse with an abundance of cheap land and labor, Hong Kong's manufacturers exploited their geographical and cultural proximity to great effect. As one respondent recounts,

> In the late 1970s and 1980s, foreign companies hadn't yet moved to China. Hong Kong people were able to make a lot of money during that time. But competition started at the end of the 1980s. Many manufacturers moved to China in the 1990s and the situation changed dramatically around that time. Competition became keen and the business environment became tougher too—everyone was able to come in and compete.[20]

As shown in Figures 1 and 2, this period represented the beginning of changes in employment patterns in Hong Kong as the numbers of individuals employed in various sectors shifted dramatically from manufacturing to financing, insurance, real estate, and business services.

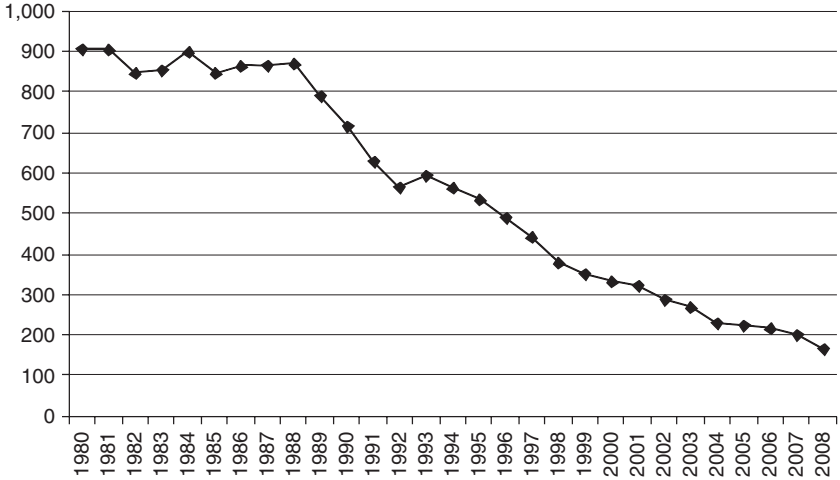
Phase II: Acceleration (1993–1997)

The acceleration phase was indelibly marked by Deng Xiaoping's 1992 southern tour of the cities of Guangzhou, Shenzhen, and Zhuhai, where he generated enthusiastic local support for his reformist platform. Deng then stressed the importance of economic construction and development in China, and criticized those who opposed expanding the reforms. His catchphrases, "To Get Rich Is Glorious" and "Let a Small Number of People Get Rich First," have since sparked dynamic economic growth in China—especially in the coastal areas and the delta regions of the Pearl and Yangtze Rivers—and dramatically changed the political and social landscape of the country.

During the acceleration phase, deeper economic links were forged between Hong Kong and the PRD, as Hong Kong's economy began to shift from manufacturing to support services. The open door policy, coupled with economic reforms, allowed Hong Kong to exploit a production hinterland and provided a market outlet for its own manufacturers. These policies also

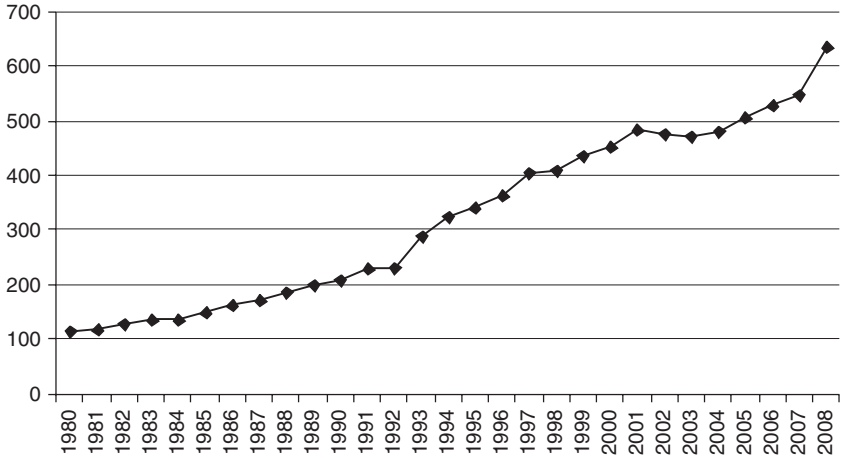
20. Chung interview.

FIGURE 1. Employment ('000) in Manufacturing in Hong Kong, 1980–2008



SOURCE: Census and Statistics Department (C&SD), HKSAR government, *Hong Kong Annual Digest of Statistics* (Hong Kong: C&SD, various years).

FIGURE 2. Employment ('000) in Financing, Insurance, Real Estate, and Business Services in Hong Kong, 1980–2008



SOURCE: Ibid. to Figure 1.

generated numerous business opportunities for a wide range of service activities, including freight transportation, storage, telecommunications, banking, real estate development, and professional services in law, insurance, and accounting.

To be sure, government policies played a large role in Phase II as well as in Phase I. Such policies included the *Catalogue of the Guidance for Foreign Investment Industries* issued in 1995, which encouraged FDI in capital- and technology-intensive industries while discouraging its use in projects using standard technologies. This supported investments made by Hong Kong entrepreneurs in automation and customization of production technologies (see below). Aside from the *Catalogue*, the Anti-Unfair Competition Law was implemented during Phase II, as well as other laws that enhanced China's desirability, such as the Company Law and the Insurance Law. This combination of regulatory changes accelerated integration between Hong Kong and China, particularly in Guangdong Province.

During Phase II, Hong Kong's manufacturers learned to adapt to formidable challenges. As a direct result of intensifying competition in the mainland Chinese market, a fundamental change in the business model of Hong Kong manufacturers emerged in the mid-1990s. For example, Techtronic Industries (power hand drills) and Gold Peak Holdings (lithium ion batteries for watches and calculators) began to shift from the norm in Phase I, original equipment manufacturing (OEM), to hybrid versions of OEM—original brand manufacturing (OBM) or original design manufacturing (ODM)—and outright brand ownership in Phase II.[21]

The acceleration phase also witnessed the onset of rapid development in mainland infrastructure. Expenditures on capital construction began to increase significantly between 1993 and 1997, in contrast to 1979–1992 (during which such expenditures were largely stable), and continued to increase even more dramatically through to 2006.

In Phase I, Hong Kong enterprises had been attracted north of the border into Guangdong by cheap labor and low overhead. As Techtronics Industries' Roy Chung puts it, "In the early days of China's opening up, nobody cared about efficiency and automation. They made profit by selling at high

21. In OEM, products ordered are designed mainly by customers who usually own a brand name. Products are sold under buyers' labels. Suppliers only focus on the manufacturing process, and the keys to success are low cost and high flexibility in response to customer demand. ODM includes the provision of enhanced design services. While products are still sold under buyers' labels in ODM, the proprietary design work is central to ODM, where overseas buyers purchase products designed and manufactured by suppliers. In order to avoid an over-reliance on buyers, to achieve product differentiation, and nurture customer loyalty, some Hong Kong companies instead develop their brands and distribution networks. This kind of business is known as OBM.

prices while costs remained very low."[22] In Phase II, Hong Kong manufacturing enterprises transitioned from exploiting low-factor costs to investing in automation and customizing the production technologies. This investment allowed Hong Kong manufacturers to realize economies of scale, as recounted by an interviewee:

> In the mid-1990s, Hong Kong companies began to develop automation more actively. Before the 1990s, Hong Kong's companies had simply moved north to utilize the cheap land and labor. But as they did more and more business, they realized that they, too, had to invest in production capabilities, and they did so [in the form of customization and automation technologies].[23]

This sentiment was echoed by another interviewee, who stated: "In the mid-1990s, we had to adopt a tight control on efficiency—we invested in automation to stay ahead."[24]

Investment in automation and customizing technologies was necessitated in part by the changing competitive landscape in manufacturing. Whereas in Phase I, Hong Kong companies were essentially able to establish operations without significant competition, in Phase II, competitive pressures in China increased. In particular, mainland-owned companies transitioned from supplying components—land and basic tools—to Hong Kong-owned manufacturing companies to competing directly with them. As mainland-owned companies mimicked the operational model and management style of the new Hong Kong-owned entrants, the latter were forced to transform their business models in search of a new competitive advantage. The Hong Kong-owned companies did so, not only by investing in more capital-intensive processes and automation technologies but by introducing good manufacturing practices to their plants, ensuring a degree of quality and transparency lacking in Phase I. The chief source of capital in Phase II shifted from the firms' own internal resources to commercial loans that mainland Chinese banks were willing to extend. It should be noted, though, that these investments in technology (which the mainland Chinese firms were able to mimic) still did not bring cutting-edge technologies or expensive R&D to the mainland. Significant investment in R&D by mainland Chinese- and foreign-owned firms did not occur until very recently, in Phase III and beyond.

22. Chung interview.
23. Wong interview.
24. Chung interview.

Phase III: Maturation (1998–2008)

By shifting some operations to China, Hong Kong industrialists vastly increased the scope of their enterprises. By 1998, Hong Kong manufacturing companies employed some five million people in their plants in Hong Kong and China, a more than fivefold increase since 1984.[25] According to a study commissioned in 2002 by the Federation of Hong Kong Industries, the figure was estimated to be 11 million.[26] From 1980 to 2001, the PRD region was the fastest-growing portion of the fastest-growing province in the fastest-growing large economy in the world.[27] A study of economic interaction between Hong Kong and the PRD region sponsored by the Hong Kong-based 2022 Foundation outlined several clusters of service-enhanced industrial development that involved a division of labor between international service providers located in Hong Kong and production facilities in the PRD.[28] Another report sponsored by the Federation of Hong Kong Industries similarly underscored the strong economic linkages in the region and the importance of enhancing infrastructure to support R&D activities among companies in Hong Kong and the PRD. It was hoped that such initiatives would tap into various regional strengths, such as Hong Kong's strong intellectual property rights framework and the availability of affordable R&D staff in the PRD.[29]

In the course of these developments, during the maturation phase, the expression "Hong Kong as front-end shop and China as back-end factory" was coined, succinctly capturing international acknowledgment of the vast profits that Hong Kong-owned manufacturers had realized by locating their operations in China. China had become not only Hong Kong's factory but the "world's factory." To be sure, Hong Kong both contributed to and benefited from this shift, as international enterprises chose it for their headquarters, given its marketing and financial prowess and free-market environment. Hong Kong companies were intimately familiar with the way business was conducted in the mainland and, more important, they provided superior service in financing, remote management, professional services (in banking

25. See Suzanne Berger and Richard K. Lester, *Made in Hong Kong* (Hong Kong: Oxford University Press, 1997), p. 10.

26. Federation of Hong Kong Industries, "Made in PRD: The Changing Face of Hong Kong Manufacturers," Part II and Full Report, 2003, <http://www.industryhk.org/english/fp/fp_res/files/prde.pdf>, accessed January 20, 2006, p. 81.

27. Enright et al., *Hong Kong and the Pearl River Delta: The Economic Interaction,* pp. 21–25.

28. Ibid.

29. Federation of Hong Kong Industries, "Made in PRD."

TABLE 2. Three Largest Sources of FDI in Four Provinces in China, 2007

Province/Rank	*1st Largest Source of FDI (%)*	*2nd Largest Source of FDI (%)*	*3rd Largest Source of FDI (%)*
Guangdong	Hong Kong (48)	Virgin Islands (27)	Western Samoa (3.5)
Shanghai	Hong Kong (25)	Korea (7)	Singapore (6)
Zhejiang	Hong Kong (41)	Virgin Islands (24)	Taiwan (2.5)
Jiangsu	Hong Kong (31)	Republic of Korea (7)	Taiwan (6.8)

SOURCE: Statistical Bureau of Guangdong Province, *Guangdong Statistical Yearbook,* 2008; Statistical Bureau of Shanghai, *Shanghai Statistical Yearbook,* 2008; Statistical Bureau of Jiangsu Province, *Jiangsu Statistical Yearbook,* 2008; Statistical Bureau of Zhejiang Province, *Zhejiang Statistical Yearbook,* 2008.

and accountancy), and shipping and logistics. This mutual relationship contributed to mutual prosperity.

By 2006, Hong Kong entrepreneurs had gained sufficient confidence to invest beyond Guangdong in other manufacturing-centered provinces and regions such as Jiangsu, Zhejiang, and Shanghai. As shown in Table 2, FDI in these three areas and in Guangdong was dominated by Hong Kong entrepreneurs.

By the beginning of Phase III, the eastern coastal areas of China had achieved a relatively sophisticated level of infrastructure. In order to broaden the development base for inland regions, the government embarked on similar development programs in western China. Furthermore, whereas previously manufacturing processes were hardly affected by new R&D, investments in advanced manufacturing technologies, process efficiency, product design, and value-added activities such as creating and developing brand names all gained traction in this phase. This sentiment was offered by a respondent:

> Of our more recent investments in manufacturing in the mainland, we invest in processes, new advanced manufacturing technologies, supply chain management, and in the creation of a brand. Our new product—wrinkle-free technology—and our company is an example of a company taking an innovative role in process engineering and productivity.[30]

Hong Kong has played an important role in creating a favorable environment for developing technological and management systems in China through its investment in capital- and R&D-intensive industries (computers, electronics, telecommunications equipment, etc.). Hong Kong entrepreneurs

30. Interview with Cliff Chan, director, Esquel China Holdings, Ltd., Hong Kong, May 25, 2007.

may not have contributed as much through actual investments in R&D, but they provided a conduit through which modern technologies and management practices were allowed to emerge in China. In other words, Hong Kong entrepreneurs, as exemplars of their trades, paved the way for the arrival of new ideas, concepts, systems, methods, and knowledge from outside China's borders. As soon as mainland Chinese enterprises opened up to the possibility of introducing best practices from abroad, they found enough stimulus to pursue their own indigenous investments in R&D.

In Phase III as in the two previous phases, government policies on both sides of the border have had a profound impact. Perhaps the best example is CEPA, signed on June 29, 2003, to strengthen trade and investment between Hong Kong and Mainland China and promote joint development through the reduction or elimination of tariffs. Not only has CEPA induced additional capital investment in manufacturing in China, but arguably it has also benefited manufacturing and manufacturing-related service operations on both sides of the border. Aside from CEPA, tax concessions involving the business tax, the value-added tax (VAT), the customs duty, and the corporate income tax have also played a role.

Hong Kong-owned manufacturing operations in China have also changed the human capital stock in the region. In Phases I and II, relocated employees funded by firms from Hong Kong, Macao, and Taiwan dominated mainland Chinese manufacturing enterprises. Table 3 shows that by the end of Phase III in 2008, 13% of all workers originated from Guangdong, as compared with 2%–3% in Phase II.

The decrease in the number of Hong Kong employees is explained by an interviewee:

> In the 1980s and even in the 1990s, there were a large number of Hong Kong expatriates working [in] the plants in China. However, by the late 1990s, you were more likely to see only a small number of Hong Kong employees, usually at the level of manager or senior manager, or in quality control or high-level engineering management. As the finance and marketing functions were in Hong Kong anyway, there no longer remained a need to hire Hong Kong people for regular supervisory roles. Chinese people had become better trained and of a higher quality! China didn't stand still, you know! The majority of activities took place in the mainland. Before, everything was done by our people from Hong Kong.[31]

31. Wong interview.

TABLE 3. Employment by Hong Kong, Macao, Taiwan (HKMT)-funded Enterprises in Guangdong Province, 1994–2007

	Total Number of Persons Employed in Guangdong Province (millions)	*Number of Persons Employed in HKMT-funded Enterprises* (millions)	*Percentage of Persons Employed in HKMT-funded Enterprises*
1994	34.932	0.7	2
1995	35.512	0.941	3
1996	36.413	0.896	2
1997	37.019	0.964	3
1998	37.839	1.0017	3
1999	37.963	1.0387	3
2000	39.893	1.0374	3
2001	40.586	1.055	3
2002	41.344	3.919	9
2003	43.959	4.2079	10
2004	46.819	4.9745	11
2005	50.23	6.0272	12
2006	52.501	6.3084	12
2007	54.026	6.7553	13

SOURCE: Guangdong Bureau of Statistics, CEIC China Premium Database.

In addition, over the past few years, Hong Kong-owned manufacturing firms have begun to suffer from a labor shortage, despite China's huge labor market. Such a shortage seems to stem, on the one hand, from the reluctance of migrant workers, most of whom come from inland areas, to work far away from their home towns. On the other hand, education and training of workers have improved, which increasingly draws them away from menial factory work.

Phase III has also seen shifts in capital sourcing. Capital resources have multiplied, from internal enterprise resources in Phase I to commercial loans from mainland Chinese banks in Phase II to equity raised through initial public offerings (IPOs) in Shanghai, Shenzhen, or sometimes even Hong Kong, in Phase III. Large manufacturers now enjoy more options than ever when seeking financial capital for their operations.

These Phase III developments have brought corresponding changes to the internal operations of Hong Kong-owned manufacturing enterprises in China, in particular a strategic shift toward investing in value-added

activities. Lower costs alone no longer offer a sufficient competitive edge; rather, investments in R&D and other value-added services have changed the business model. As a large Hong Kong-owned manufacturer of power tools commented,

> Over time we had to improve via building up a brand name, product knowledge, technology, finance, good supply chain system, and distribution systems. We've had to focus on those areas in which China cannot catch up with us within a short period of time. We have to invest in value-added items. After the turn of the millennium there has definitely been a higher premium on value and product differentiation, on product design and development, and [on] advanced manufacturing technology.[32]

China's central government, recognizing the importance of R&D and seeking to strengthen its support of indigenous R&D and innovation efforts, announced in March 2006 an ambitious strategy, dubbed the *National Mid- and Long-Term Science and Technology Development Plan for 2006–2020*, to nurture home-grown innovation over 10 years. The Guangdong provincial government had already, in September 2005, published its own "Decision on Enhancing Indigenous Innovation Capability and Improving Industry Competitiveness," aiming to strengthen its role as an economic growth engine in southern China and to maintain its edge in an increasingly competitive global market. The "Decision" calls for boosting the province's innovation system, reducing its dependence on foreign technology, fostering the central innovative role of enterprises, cultivating the industry-academia relationship, protecting intellectual property rights, and promoting international cooperation.

Guangdong's innovation initiatives mirror those of Hong Kong, creating further opportunities for cooperation. Because of its low factor-input costs, the province hopes to lure more foreign firms into pursuing R&D activities in addition to manufacturing.

Finally, Hong Kong's contribution as a re-export center has also diminished since 1998, mainly after China joined the WTO in 2001, prompting China's trading partners to bypass Hong Kong. In their turn, both Hong Kong's and China's manufacturing firms have had to adapt to these changes. For their part, as already mentioned, Hong Kong-owned manufacturing enterprises are

32. Chung interview.

increasingly moving their manufacturing-related service operations and their product design and development activities to China for access to international markets. On the other hand, mainland Chinese manufacturing firms are more inclined simply to bypass Hong Kong as a gateway, relying on signals from international markets and customers to dictate their production schedules. Moreover, Hong Kong universities, research institutes, and in some cases, private firms are increasingly aiding manufacturers in China, training their personnel, introducing production technologies and processes, and providing product design and engineering services to upgrade their R&D. A prime example is the Hong Kong Productivity Council, which is engaged in a broad and diverse range of such activities in the PRD.

CONCLUSIONS, DISCUSSION, AND LIMITATIONS OF THE STUDY

Beginning with the opening up of China in 1979 and its accompanying adoption of appropriate market systems, Hong Kong has played an important role in the modernization of mainland manufacturing operations. We have divided this period of change into three phases, examining Hong Kong's role with reference to three key factors: capital, management and technology, and government policy. In each phase, Hong Kong has provided the mainland with critical resources, but the origin and nature of those resources have evolved as the mainland economy accelerated. So far, Hong Kong has responded successfully to each succeeding configuration of industrial requirements on the mainland, but its capacity to do so may be nearly exhausted.

Furthermore, the nature of the competitive environment has changed: China continues to open up to the world. Taiwanese firms are circumventing Hong Kong to conduct business in China directly as the political climate increasingly encourages such business activities. At the same time, mainland city-regions such as Shenzhen, Guangzhou, Xiamen, and Shanghai are rising, each aspiring to assume leadership in economics, business, and finance as Hong Kong did before them. Obviously, assuming a position at the nexus of China and the rest of the world is no longer Hong Kong's sole prerogative. These changes suggest that Hong Kong's monopoly as the gateway or middle-person is being challenged.

Although we choose not to speculate about the future of the economic relationship between Hong Kong and China, we are confident that it will

TABLE 4. China Investments in R&D, 1998–2007

	1998	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*	*2006*	*2007*
Gross expenditure on R&D (GERD) (US$billion)	6.65	8.20	10.80	12.60	15.56	18.61	27.75	29.91	36.79	37.10
GERD/GDP (%)	0.69	0.83	1.00	1.07	1.22	1.31	1.23	1.34	1.42	1.49
For comparison—Hong Kong GERD/GDP %	0.43	0.46	0.47	0.55	0.59	0.69	0.74	0.79	0.81	n.a.
Composition of business expenditure on R&D (BERD) as % of GERD	44.83	49.59	59.96	60.43	61.18	62.37	66.83	68.32	71.08	72.28

SOURCE: National Bureau of Statistics and Ministry of Science and Technology, *China Statistical Yearbook on Science and Technology* (Beijing: China Statistical Yearbook, various years); and C&SD, HKSAR, *Hong Kong as a Knowledge-based Economy: A Statistical Perspective,* 2006 edition.

continue to evolve with regional and global economic developments and the rapid transformation of manufacturing worldwide. How does Hong Kong address competitive forces? What role, if any, will a macroeconomic strategy play in the future? Can Hong Kong realistically assume that it can maintain its leadership role? Does a decline in Hong Kong leadership even matter, if it continues to grow rapidly in absolute terms on the coattails of China?

Recently, we have observed a buildup of R&D capabilities in both the private and public sectors in China, along with a diminished reliance on Hong Kong-based manufacturing-related R&D. As shown in Table 4, the sheer speed at which China's R&D expenditures have increased proportionate to GDP signals to the world that Hong Kong may be unable to keep pace with the technological tides sweeping across the mainland. Hong Kong's role vis-à-vis mainland industrial manufacturing has thus gone through three stages: First, as a trading intermediary; then, as a key supplier of capital goods; and finally as a provider of key business and marketing services and strategic supply chain infrastructure. The question now is, how long and how effectively will Hong Kong endure in its latest capacity?

Our study shows that not only has China's landscape altered dramatically through the involvement of Hong Kong-owned manufacturing plants, but Hong Kong's contribution has also been dynamic. One of the key strengths

of Hong Kong's business people is their ability to adapt quickly to global changes. During the period covered in this paper, Hong Kong's entrepreneurs have swiftly altered the nature and means of their involvement in China's manufacturing operations.

Our research topic is as vast as the manufacturing landscape of the world's most populated country, and we do not presume to have treated it comprehensively. Our study is therefore subject to several limitations. We have focused on the evolving role played by Hong Kong in facilitating the transformation of manufacturing in China, particularly from the perspectives of management, technology, government policy, and investment. More important, we have considered only a few industrial sectors. Hong Kong firms may have driven industrial change in China's watch-making, consumer electronics, and toys industries, to name a few. But Hong Kong corporate roles have been much smaller in other key, yet successful, mainland manufacturing industries, such as advanced digital switching equipment, software, and automobiles. This study can therefore only partially explain the modernization of manufacturing industries in China.

A final limitation of the study is worth mentioning: We have not examined the potential *negative* impacts of Hong Kong's role in China's industrial modernization. For example, have Hong Kong-owned manufacturing firms contributed to polluting the PRD or to aggravating social tensions? China is fast becoming an economic giant on the global stage, and our study's limitations reflect the sheer magnitude of the task that economists, sociologists, and other scholars face in understanding how far it has come and where it is headed.