

# **Growth of Hong Kong Before and After Its Reversion to China: The China Factor**

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## 1. Introduction

For more than three decades, Hong Kong has been experiencing some of the highest growth rates in the world. In 1961, its per capita income was US\$410, about 13.8 percent of that of the United States in the same year. In 1996, its per capita income rose to US\$24,490, which was 85.1 percent of that of the United States. These figures suggest that Hong Kong has been catching up fast with developed countries like the United States, quickly closing the gap between their per capita income levels.

Starting from 1979, Hong Kong residents witnessed two important events that have various but vital impacts on the growth of the economy, both of them are related to China: the opening up of the Chinese economy to foreign trade and investment 1979, and the reversion of Hong Kong to China on July 1, 1997. The opening of the Chinese economy to the world offered Hong Kong new trade and investment opportunities. One notable result is the huge amounts of Hong Kong capital flowing to China. The reversion of Hong Kong to China means that the economy is now part of China. This could have significant impacts on the structure and growth of the Hong Kong economy.

In view of the rapid development of Hong Kong in the past, many questions have been raised concerning the impacts of these two events on the growth of the economy. How may the opening of the Chinese economy in 1979 have affected the growth of Hong Kong? How may the reversion of the economy to China affect future growth of Hong Kong?

Because Hong Kong has been growing rapidly in the past several decades, how big China is as a factor of the growth of Hong Kong is an issue not only vital to the future of the Hong Kong economy and its welfare, but also important for theorists who want to have a better understanding of the factors of growth.

To answer these questions, however, is not easy. On the one hand, most of the papers in the growth literature are theoretical ones. To apply these theories, many of which are derived from very abstract models, in empirical studies is far from straightforward. On the other hand, Hong Kong and China are linked together in many ways. To identify these many linkages is challenging, and to find out the implications of each of these linkages is very difficult.

This paper tries to answer these questions, focusing on the following three linkages between the Hong Kong and Chinese economies: Hong Kong's direct investment in China, Hong Kong as an entrepôt of the goods between China and the rest of the world, and immigration from China. These linkages are considered to be three of the more important economic relationships between the two economies. We want to analyse how they may have changed the growth rate of Hong Kong since 1979, and how they may change after the reversion of Hong Kong to China.

To analyse the growth impacts of these three linkages between the economies would be impossible if we do not know how and why Hong Kong may grow over time. Therefore

we make use of the results of Chou and Wong (1997) to identify various sources of growth. Basically, we focus on the following factors of growth: accumulation of physical capital, expansion of labour force, accumulation of human capital, and technology transfer. Accumulation of human capital comes from two sources: learning by doing and education. Since education is more of a domestic policy, it is not considered in the present paper, assuming that domestic education policies are not affected by China. As for accumulation of the labour force, we consider mainly the inflow of workers from China. How these workers may affect the local economy depends on, among other things, how different they are from the local workers. Some investigation will be made below.

After identifying the sources of growth using the techniques in Chou and Wong (1997), we try to estimate how each of the three linkages between China and Hong Kong may have contributed to the growth of Hong Kong since 1979. We then provide an analytical analysis of the impacts of the reversion of Hong Kong on the relationships between the two economies, and then examine how the changes in these relationships may affect future growth of Hong Kong.

In Section 2, we will present a brief discussion of the previous growth of Hong Kong. We will also compare it with the growth experiences in three other Asian economies: Taiwan, South Korea, and Singapore, as these four economies are often grouped together and dubbed the four little dragons. Section 3 provides a brief discussion of various important factors of growth that have been discussed in the literature. Section 4 presents some of the more important empirical work that identifies different factors of growth of Hong Kong. In particular, the techniques of Chou and Wong (1997) will be introduced. Sections 5 to 7 examine the three linkages between the economies of Hong Kong and China. Section 5 focuses on Hong Kong's direct investment in China. The role of Hong Kong as an entrepôt of China's products and products to China is discussed in Section 6, while section 7 turns to immigration from China. Section 8 provides a more rigorous examination of the impacts of each of these three linkages on the growth of Hong Kong. The purpose of that section is to estimate how the China factor may have contributed to Hong Kong's growth since 1979. Section 9 is a discussion of how these linkages between the economies and the China factor may change in the near future. Concluding remarks are provided in the last section.

## **2. Growth of Hong Kong**

Let us first look at the history of the growth of Hong Kong economy from 1961 to 1996. Following the tradition in the literature, the growth of the economy is measured by the growth rate of its per capita real GDP. The growth rates of Hong Kong from 1961 to 1996 are presented in Table 1. For comparison, we also present those of three other Asian economies that are very often compared with Hong Kong: Taiwan, South Korea, and Singapore.

Column 2 of the table shows the annual growth rates of Hong Kong in each of these five-year periods. Overall, these rates are impressive and are never lower than 3.5

percent. There are, however, ups and downs of the growth rates, with the highest during the 1961 to 1966 period, being 7.80 percent, and the lowest in the period of 1991 to 1996, being 3.51 percent. The seventies are characterized by high and fairly stable growth rates of more than 6 percent annually. Interestingly, Hong Kong experienced a drop in growth rates in the eighties, short after China opened itself to the rest of the world. The average annual growth rates were never above 6 percent, and indeed showed signs of declining. In fact, from 1991 to 1996, Hong Kong experienced the slowest growth rates in the entire period.

The other three economies included in Table 1 all show high growth rates in these periods. On the average, their growth rates in these periods are comparable to those in Hong Kong. However, if we compare their growth rates period by period, they show a wide range of differences, despite the fact that they are usually lumped together and collectively called the four Asian dragons. For example, in these years, Taiwan showed the most stable growth rates among the four economies, with annual growth rates ranging from 5.05 percent to 8.12 percent. Singapore, on the other hand, has the most volatile growth experience, especially in the sixties, having a growth rate of 2.76 percent in the 1961-66 period but a growth rate of 10.72 percent in the next five-year period. Furthermore, in the period of 1961 to 1966, while Hong Kong had the highest growth rate in the entire period from 1961 to 1996, Singapore had the lowest growth rate.

### 3. Factors of Economic Growth

We now present a theory of economic growth that can be applied to analyze the growth of Hong Kong. In particular, it can be used to identify the factors of economic growth of economies. It is based on the unified framework in Long and Wong (1997) where more details about the framework can be found. To abstract our analysis from intra-economy resource allocation, let us assume that the economy of Hong Kong can be represented by a single sector producing a homogeneous product. This sector consists of competitive firms, and its sectoral production function in any period of time is given by

$$Y = AF(K, L), \tag{1}$$

where  $Y$  is the aggregate output,  $A$  is a technology index,  $K$  is the physical capital input, and  $L$  is the labour input measured in efficiency units.<sup>1</sup> The production function satisfies the usual neoclassical assumptions: increasing, concave, and linearly homogeneous. For convenience, we further assume that it is differentiable. To simplify our notation, time subindices are suppressed.

The labour input in the production process depends on two factors, the number of workers employed,  $N$ , and the average human capital level of each worker,  $h$ , as described by the following equation:

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<sup>1</sup>In empirical work,  $Y$  can be represented by the GDP of an economy. Many governments provide some estimation of the stock of aggregate physical capital. The technological index and the labour input measured in efficiency units, however, are not directly observable.

$$L = g(h, N), \quad (2)$$

which is strictly increasing in both  $h$  and  $N$ . Making use of (2), the production function reduces to<sup>2</sup>

$$Y = AF(K, g(h, N)). \quad (3)$$

Let us define  $y \equiv Y/N$  as the per capita output or output per worker, and  $k \equiv K/N$  as the capital-worker ratio. Divide both sides of equation (3) by the work force to yield

$$y = AF(K, g(h, N))/N. \quad (3')$$

Denote the growth rate of a variable by a “hat;” for example,  $\hat{y} \equiv d \log y/y$ . The growth of Hong Kong is represented by  $\hat{y}$ .

Differentiate both sides of (3') and rearrange the terms to give

$$\hat{y} = \hat{A} + e_K \hat{k} - (1 - e_K - e_L j_N) \hat{N} + e_L j_h \hat{h}, \quad (4)$$

where  $e_i$  is the elasticity of function  $F(., .)$  with respect to factor  $i$ ,  $i = K, L$ , and  $j_j$  is the elasticity of function  $g(., .)$  with respect to factor  $j$ ,  $j = h, N$ . Equation (4) identifies the following factors of growth: technological progress,  $\hat{A}$ , an increase in the capital-worker ratio,  $\hat{k}$ , a (negative) change in the work force,  $\hat{N}$ , and an accumulation of human capital,  $\hat{h}$ .

The neoclassical theory of growth is characterized by the following two features: (a) a neglect of human capital in the production process; and (b) exogenous technological progress. Feature (a) implies that human capital is treated as a constant such as unity, and the labour force is thus directly proportional to the number of workers. In terms of the present notation, it means that  $j_N = 1$ , and  $\hat{h} = 0$ . Furthermore, with linear homogeneity of the production function in factor inputs,  $e_K + e_L = 1$ . Equation (4) thus reduces to

$$\hat{y} = \hat{A} + e_K \hat{k}. \quad (5)$$

Feature (b) of the neoclassical theory implies that technological progress is usually treated as an exogenous factor. Equation (5) then states that in the absence of a technological progress, an economy grows if and only if its capital-worker (or capital-labour) ratio increases.

The dependence of economic growth on the accumulation of physical capital is that investment may dry up as the economy grows. It can be shown that with certain

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<sup>2</sup>Various forms of equation (3) have been used in the growth literature.

assumptions about investment, the growth rate of the capital-labour ratio is a positive function of the average product of capital (or the marginal product of capital), which decreases as the economy grows. In the Solow-Swan model with a Cobb-Douglas type production function, the capital-labour ratio of the economy is bounded from above and from below. In a steady state, the capital-labour ratio is constant, implying that the growth of the economy depends on the technology progress, which is treated as exogenous. (Solow, 1956; Swan, 1956.) This means that in the absence of technology progress, the growth of an economy, which may be positive in the short run, is not sustainable in the long run. Solow (1956) and Pitchford (1960) suggested the use of CES production function, and if the elasticity of substitution is greater than unity with saving sufficiently large,  $\hat{k}$  is bounded from below at a positive level in the long run. In this case, growth of the economy can be sustained.

For the growth of economies like that of Hong Kong, it is important to have not just accumulation of physical capital, but also technological progress and accumulation of human capital. This provides not only sustained long-run growth, but also higher short-run growth rates. Technological progress comes from an improvement of the productivity of primary factors, an increase in the varieties of products (intermediate inputs or consumption goods), or emergence of new products, and an increase in the quality of existing products. Accumulation of human capital can be achieved through education or learning by doing.<sup>3</sup>

#### **4. Empirical Studies of the Growth of Hong Kong**

Hong Kong provides a very good case for the study of the factors of growth. The main reason is that its economy satisfies to a good extent the usual assumptions found in the models widely used in the growth theory: perfect competition, sectoral factor mobility, price flexibility, and no (or low) government intervention.

With the growing interest in the growth of some Asian economies such as Hong Kong, a number of papers in the literature have studied the factors of growth of these economies. However, diverging, sometimes conflicting, conclusions have been suggested by various papers.

Young, in a series of papers, (Young, 1992, 1994, 1995) estimates the change in the total factor productivity (TFP) in various economies, and finds that while Hong Kong did experience certain factor productivity growth, the growth of other East Asian economies was attributed mainly to physical capital accumulation. For example, he finds that the TFP growth of Hong Kong from late 60s to late 80s was slightly more than 2 percent, while the contribution of TFP to the growth of the economy from 1971 to 1990 was 35 percent. Kim and Lau (1994, 1996) estimate the production functions of various Asian economies including Hong Kong, and note that for some types of production functions, the productivity growth in these economies was not significantly different from zero. Färe and Grosskopf (1997), on the other hand, do find productivity growth in

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<sup>3</sup>For a recent survey on endogenous growth and international trade, see Long and Wong (1997).

economies like Hong Kong from 1975 to 1990. For example, they estimate that the annual TFP growth of Hong Kong in this period was 2.1 percent.

The papers of Young, Kim and Lau, and Färe and Grosskopf focus on the change of TFP in Hong Kong. Very little effort has been made to explain how and why the TFP may change. In other words, their focus is on how much TFP has changed, not on why it changes. As a result, their work is not directly useful for estimating the future growth of Hong Kong and for suggesting any government policies to promote growth.

A more fruitful approach to studying the growth of Hong Kong is to estimate not only the growth of TFP but also the factors that improve the TFP. This approach requires a direct estimation of an equation like (4). The problem of doing that is that some of the variables are not observable. One way to solve this problem is to search for observable factors that affect those unobservable variables in equation (4), and then in estimating the equation, only observable variables are included as explanatory variables. The main advantage of this approach is that if the future changes in the observable explanatory variables are known or can be estimated, the change in the growth rate of Hong Kong may also be estimated.

To carry out this kind of estimation, what factors that may affect the unobservable variables in equation (4) should be determined. As for the technological progress, three factors can be identified: innovation, imitation, and technology transfer. Innovation is the effort to develop a new technology to improve factor productivity, to invent a new product, or to improve the quality of some existing products. Imitation is an effort to learn and improve the technology developed by other firms. Both innovation and imitation require the expenditure of resources. Technology transfer can be due to technology spillover through firm-to-firm or person-to-person contacts (the contagion effect).<sup>4</sup> For an economy like Hong Kong, trade, foreign investment, and labour migration can bring ample opportunities to local firms and individuals to absorb foreign advanced technologies.

For accumulation of human capital, two channels have been analyzed in the literature: learning by doing and education. Learning by doing is a process in which an individual gains more experience and improves his/her productivity through the activities of working. Education is a more intentional process in which some individuals transfer their experience and knowledge to others. However, learning by doing and education by themselves do not necessarily lead to perpetual growth of an economy. Usually inter-generational spillover is assumed to allow human capital to accumulate over generations.

In the case of Hong Kong, it is believed that its growth can be attributed to these factors: accumulation of primary factors such as physical capital and labour force, technological progress, and human capital accumulation. Empirically, it is important to identify these factors, and to estimate how they have contributed to the growth of Hong Kong. If one is interested in forecasting future growth of Hong Kong, one way is to investigate how these factors may change.

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<sup>4</sup> See, for example, Findlay (1978) for an in-depth analysis of the contagion effect.

Chou and Wong (1997) provide an estimate of some of these factors of growth for Hong Kong. They obtain the following long-run growth equation:

$$\hat{y} = 0.01 + 0.34\hat{k} - 0.46\hat{N} + 0.42\hat{E} + 0.09\hat{L} + 0.02\hat{F}, \quad (6)$$

where  $E$  is the total government expenditure on education,  $L$  is a variable that measures both the learning by doing effect and technology spillover effect via trade, and  $F$  is the overseas investment in the local manufacturing industries. The variables  $E$  and  $L$  are assumed to contribute to human capital accumulation. In the Chou-Wong model, the learning by doing and technology spillover effects as measured by  $L$  come from two sources: previous-period value-added of manufacturing sector and previous-period real retained imports of capital goods. The value-added of the manufacturing sector is assumed to be purely learning by doing effect, while the retained import of capital good is assumed to contribute to learning by doing and technology spillover through firm-to-firm and person-to-person contacts with Hong Kong's trading partners. There is one additional variable that explains technological progress: foreign capital inflow in the local manufacturing sector. This reflects technology spillover from foreign firms to local firms. Innovation and imitation, two main sources of technological progress, probably play a smaller role in Hong Kong as the majority of the firms in Hong Kong do not have any sizable research departments and expenditures.

The coefficients in equation (6) represent elasticities. For example, it implies that a one percent increase in the physical capital stock, while the work force and other factors are held constant, could lead to a 0.34 percent increase in the growth rate of the Hong Kong economy.

The Chou-Wong growth equation has strong implications on the education expenditure and on foreign trade and foreign investment. It suggests, among other things, that an increase by one percent in the government expenditure on education could lead to 0.42 percent increase in the growth rate. Foreign investment also has a positive impact on growth, possibly working through technology spillover. Foreign trade, on the other hand, can encourage learning by doing and thus is another source of growth.

## **5. Hong Kong's Direct Investment in China**

In this and the following three sections, we will analyse the following three relationships between Hong Kong and China that may have effects on the growth of Hong Kong: direct investment from Hong Kong to China, Hong Kong as an entrepôt to China trade, and immigrants from China to Hong Kong. Since China opened up its economy to foreign trade and investment starting from 1979, our analysis will concentrate on the period after 1979.

### *5.1 Direct Investment in China*

Hong Kong's direct investment in China is very large. According to Chinese figures,



Hong Kong's cumulative direct investment in China from 1979 to 1995 was US\$78.6 billion. The majority part of Hong Kong's outward FDI (foreign direct investment) is going to China.<sup>5</sup> For example, in 1995 the FDI from Hong Kong to China accounted for 59 percent of all the FDI received by China from the world. Largely as a result of Hong Kong's investment in China, China has become the foremost recipient of FDI among developing economies since 1992, and Hong Kong has become the foremost source of FDI among developing economies since 1991. Since 1993, China has been the second largest recipient of FDI in the world after the US. From 1993 to 1995, Hong Kong has been the world's number three source of FDI after the US and the UK, but ahead of Germany, France, or Japan. In 1995, Hong Kong's FDI in China was US\$ 20 billion, or nearly three times the total inward FDI of US\$ 7 billion in Mexico, which was the world's number two recipient of FDI among developing countries. Hong Kong's 1995 FDI in Guangdong province alone amounted to US\$8 billion, exceeding the total inward FDI in Mexico.

More figures of Hong Kong's FDI in China are presented in Table 2. The second and third columns show the nominal and real FDI (1985 prices) in China, respectively. These numbers are based on China's official published data. Unfortunately, though annual data on total FDI were available since 1979, annual data on FDI by source started only from 1984. However, the cumulative FDI by source from 1979 to 1983 was available, giving Hong Kong's share of total FDI in the period. The figures in column 2 of the table are estimated on the assumption that Hong Kong's share of total FDI was constant from 1979 to 1983.

Both the nominal and real investment series show signs of rapid growth of investment from Hong Kong to China, with only some small dips in the rates in some of the years. The investment measured in nominal term reached a peak in 1995, with US\$ 20 billion, but when deflated, the real investment reached a peak in 1994, with US\$ 12.5 billion.

In addition to sending capital to China, Hong Kong also receives capital from China. In fact, Hong Kong is the prime destination of Chinese investment. China's direct investment in Hong Kong, however, is much smaller than Hong Kong's direct investment in China. China's 1995 direct investment in Hong Kong was US\$ 13.7 billion, a mere 17.7 percent of Hong Kong's direct investment in China. Hong Kong is thus a large net investor in China and the net flow of investment earnings from China to Hong Kong should be very large.

The figures of Hong Kong's FDI in China as provided by the China official publications seem to be too large, especially in recent years. For example, in 1995, Hong Kong's flow of FDI in China amounted to 14.3 percent of Hong Kong's GDP, or 47 percent of its gross domestic capital formation. This seems to be incredibly large. Two main reasons can be provided to explain this apparent upward bias of the figures.

The first reason is that not all of Hong Kong's FDI in China really originates in

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<sup>5</sup> A more accurate term to use should be *external direct investment* rather than *foreign direct investment*, as Hong Kong is part of China. However, this paper uses the latter term because of its popularity in the literature.

Hong Kong. The large share of Hong Kong in China's investment conceals an important middleman role of Hong Kong. In China's statistics, investment from Hong Kong includes the investment of the subsidiaries of foreign companies incorporated in Hong Kong. (This is consistent with international statistical practice.) Many multinational companies like to test the Chinese investment environments through investments from their Hong Kong subsidiaries because Hong Kong has the required expertise and is the foremost centre for China's trade and investment. Chinese enterprises also invest in China from their Hong Kong subsidiaries to take advantage of the preferences given to foreign investors. This "round tripping" of Chinese capital in Hong Kong inflates both the amounts of Hong Kong investment in China and also China's investment in Hong Kong. Unfortunately, there is no reliable estimate on the amount of "round tripping."

The second reason for the apparent upward bias in Chinese figures on Hong Kong's FDI in China is that officials in planned economies tend to exaggerate economic performance (the 'success indicators' problem). From anecdotal evidence, it is known that Hong Kong investors often overstate the value of their investments in China with the connivance of local officials. For example, Hong Kong manufacturers tend to put a high value on the outdated machinery they move to China.

As the figures on Hong Kong's investment in the China provided by the Chinese statistics are believed to be exaggerated, one may hope to get better results with Hong Kong data. Unfortunately, Hong Kong has yet to compile statistics on its outward investment.

## *5.2 Income Generated by Foreign Direct Investment in China*

Hong Kong, however, does compile and publish statistics on external factor income flows. Unfortunately, country data are available only for 1995.

### *5.2.1 External Factor Income Flows*

Table 3 shows Hong Kong's 1995 external factor income flows with China and with the world. Four different types of external factor income flows were distinguished, namely, direct investment income, portfolio investment income, other investment income, and compensation of employees. **Direct investment income** includes earnings of residents from enterprises outside the economy in which they have significant control (holding ten percent or more of equity). Both dividends and retained earnings are included. **Portfolio investment income** flows were smaller than direct investment income flows, especially for flows with China. This is expected because not many Chinese enterprises have issued securities for sale outside the mainland. **Other investment income** includes other external flows of interest income arising mainly from activities of the banking sector. This item is large for Hong Kong because of Hong Kong's status as an international financial centre. **Compensation of employees** refers to residents' wages and salaries earned from short-term employment outside the economy. This item is small for most economies and also for Hong Kong.<sup>6</sup>

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<sup>6</sup>The wages of most Hong Kong residents working in China are not included because they are still paid by Hong Kong companies. The wages of employees working in Hong Kong under labour importation schemes are also excluded because they usually have contracts of over a year (Ma and Hawkins, 1997: 6).

Hong Kong's total external factor income from China (four categories combined) in 1995 was US\$ 3,342 million or 2.4 percent of Hong Kong's GDP. However, the outflow payment to capital investment in China exceeded the inflow payment, making the net inflow payment negative.

Portfolio investment is volatile and includes a substantial amount of speculative flows. Other investment income includes interests from short-term loans such as interbank loans and loans for trade financing. As far as long-term economic growth is concerned, direct investment income should be the most relevant type of cross-border payment among the four. Hong Kong's direct investment income from China in 1995 was US\$ 1,178 million, a mere 0.84 percent of Hong Kong's GDP. The outflow payment to China again exceeded the inflow payment from China, making net income flow from China negative.

While China's figures on Hong Kong's FDI in China were incredibly large, Hong Kong's figures on direct investment earnings from China were incredibly small (US\$ 1,178 million). The latter figure implies that Hong Kong's direct investment in China makes an annual rate of return of only 1.5 percent!

If Hong Kong's earnings from investment in China were as small as what the official figures indicate, the impacts on Hong Kong's growth of such investments are likely to be small. However, we believe and will argue that Hong Kong's figures grossly understate the earnings of its investments in China. As a result of subcontracting and also transfer pricing, such earnings are usually embodied in Hong Kong's re-exports and they do not appear as external factor income flows.

### *5.2.2 Income from Other Foreign Investment*

One reason for the insignificance of Hong Kong's investment earnings in China is that Hong Kong's funding of numerous contractual processing and assembling operations in China is **Other Foreign Investment (OFI)** instead of **FDI**. Unlike FDI, OFI does not give legal control of the enterprise to the foreign investor. According to the Chinese terminology, FDI includes investment in the three types of foreign-invested enterprises, namely, fully foreign-owned enterprises, equity joint ventures, and contractual joint ventures. OFI mainly includes foreign funds involved in contractual processing and assembling, or contractual processing for brevity. In contractual processing, Chinese firms process raw materials supplied by foreign firms for a processing fee. The foreign firms often provide the required machinery, product design, and technical assistance. The foreign investor earns a profit by exporting the processed products. The profit of the investment is embodied in the value of goods exported and is not reported as external factor income (i.e. other investment income) because the profits accrue directly to the Hong Kong firm instead of the mainland firm.

The distinction between FDI and contractual processing is not sharp because the foreign partner in contractual processing often has *de facto* though not *de jure* control of the Chinese firm. However, the foreign funds involved in contractual processing constitute commercial credit rather than FDI because the Chinese partner legally controls the operation

and usually pays for foreign machinery and technical assistance with labour services used in making goods for the foreign partner.

According to Chinese regulations on foreign investment, the output of contractual processing should all be exported, whereas foreign-invested enterprises are permitted to sell a certain portion of their output in the domestic market. Firms undertaking contractual processing tend to be small and labour-intensive. Foreign-invested enterprises are usually bigger and they involve long-term commitment. Contractual processing was popular in the early days of the open era. As a result of China's maturing investment environment and the attraction of China's domestic market, many contractual processing operations have been converted to foreign-invested enterprises in the 1990s. This has led to a decline in OFI and an acceleration in FDI in China.

### *5.2.3 Income from Direct Investment*

Many foreign-invested enterprises also process imported materials for export under contract. Instead of earning a processing fee as in the case of contractual processing, the foreign-invested enterprise sells the processed output for a profit. However, as the foreign-invested enterprise is often the subsidiary of a foreign firm, the prices of inputs and outputs of the subsidiary are determined by the foreign firm. The distinction between processed exports from foreign-invested enterprise and from contractual processing is thus very small. Processed exports constitute respectively 85 percent and 89 percent of the exports of foreign-invested enterprises in 1995 and 1996. (Data for earlier years have not been published.) By 1996, contractual processing and foreign-invested enterprises together accounted for 53.8 percent of China's exports. As Hong Kong has accounted for the bulk of the foreign investment in contractual processing as well as foreign-invested enterprises, Hong Kong investment is the crux behind China's spectacular export drive.

Another reason for the small amounts of Hong Kong's investment earnings in China is that the earnings of direct investments were understated due to transfer pricing. Due to China's foreign exchange controls that hamper the flexibility of use of funds, Hong Kong investors has an incentive to book their profits in Hong Kong rather than in China. Transfer pricing is easy as the greater part of Hong Kong's enterprises in China are involved in outward processing in which the Hong Kong parents supply the raw materials, purchase the outputs, and determine the prices. The bulk of China's processed exports are re-exported via Hong Kong to the USA and the European Union (Sung 1997: 54). Due to transfer pricing, these earnings do not appear as external factor income inflow but form part of Hong Kong's re-export margin, which is the difference in value between re-exports and imports for re-exports. The upward bias in the value of inputs supplied to Hong Kong enterprises in China inflates the re-export margin of Hong Kong's re-exports to China (the bulk of these inputs are purchased from third countries). The downward bias in the value of output sold to the Hong Kong parents inflates the re-export margin of Hong Kong's re-exports of China origin (80 percent of which were processed exports). Hong Kong's earnings from contractual processing can similarly be gauged from the re-export margin, and the estimates will be presented below.

### 5.3 Shrinkage of the Hong Kong Manufacturing Sector

A major portion of the investment in China from Hong Kong comes from firms that find China an attractive place for investment because of its lower wage rates, its proximity to Hong Kong, and similar cultures. The import restrictions imposed by some developed countries on the products from Hong Kong also play an important role in the movement of Hong Kong capital to China. The result of such movement of capital is the shift of some production activities from Hong Kong to China, and the shrinkage of the manufacturing sector in Hong Kong.

Table 4 shows some of the statistics about the changing size of the manufacturing sector in Hong Kong from 1977 to 1996 using two important measures: its employment and its value-added. Column 2 of the table shows the employment in the manufacturing sector. In the seventies, it was rising, reaching a peak of slightly more than 900,000 workers in 1981. After that year, the employment level has been declining fairly steadily, though it was relatively stable in the early eighties. Starting from 1987 the decline became more obvious, especially in the nineties. In 1996, only slightly more than 300,000 workers were employed in the sector, down by nearly two-thirds from the figure in 1980. The employment expressed as a percentage of the labour force, as given in column 3 of the table, gives an even more dramatic picture, mainly because the labour force in Hong Kong has been rising constantly. The shrinkage, in a relative sense, actually began sometime at the end of the seventies. In 1978, 47.8 percent of the labour force in Hong Kong was employed in the manufacturing sector, but in 1996, the figure was down to 12.7 percent.

The shrinkage of the manufacturing sector is due to the shift of the production processes to China, but it also reflects a change in the structure of the industrial base of Hong Kong. What has happened is that while Hong Kong firms move the labour-intensive production processes to China, they have expanded the provision of skill-intensive services to their subsidiaries. This means that the shrinkage of the manufacturing sector is coupled with an expansion of the service sector. We will have more to say about this point later.

Another measure of the size of the manufacturing sector is its value-added and its share in the GDP. These are given in columns 4 and 5, respectively. These columns give a similar picture as the employment figures do. For example, in 1980, the manufacturing sector contributed to 22.4 percent of the GDP, but its share dropped down to 6.7 percent in 1996.

Of course, the size of the manufacturing sector in Hong Kong is due to many factors, and based on the figures in Table 4, the downsizing of the sector may have started some time in the eighties. To determine how the size of the sector may have been affected by the flight of capital, we ran the following regression, using the data from 1984 to 1995 and the least squares method:

$$V_t = a + bt + qt, \quad (7)$$

where  $a$ ,  $b$ , and  $q$  are coefficients,  $t$  is the time trend variable with a value of 1 for 1984, 2

for 1985, and so on,  $V_t$  is the real value added of the manufacturing sector in 1990 billions of HK dollars, and  $I_t$  is the foreign direct investment to China in 1990 billions of HK dollars. The variable  $t$  is used to capture the contributions of factors that have not been included in the regression. Note that in the regression we used only the data in and after 1984, because no earlier annual data on direct investment in China are available.

The results are given as follows (standard deviation in parentheses):

$$\begin{aligned} a &= 97.72 (6.03); \\ b &= 0.80 (1.32); \\ q &= -0.461 (0.13); \\ R^2 &= 0.7844. \end{aligned}$$

The above result confirms the common belief that capital flight to China does cause a shrinkage of the manufacturing sector. In particular, it suggests that an outward flow of capital of HK\$ 1 billion to China causes the manufacturing sector to shrink by HK\$ 461 million. Equation (7) also suggests that if there was no capital outflow to China, the manufacturing sector could be expanding at a rate of HK\$ 800 million a year (in 1990 prices).

Using equation (7) and the estimated coefficients, we can estimate how FDI to China could affect the size of the manufacturing sector in the economy. Columns 2 and 3 of Table 5 give the estimated value-added of the manufacturing sector, in 1990 billions of HK dollars, with and without Hong Kong investment in China, respectively. These two columns show that capital movement had small effects on the size of the manufacturing sector in the early eighties because the size of the capital movement was small in those years. Toward the end of the eighties and in the nineties, the effects became much larger. For example, the table suggests that in 1995 the FDI may have caused a shrinkage of the sector from HK\$ 107 billion to HK\$ 67 billion, or a shrinkage by nearly 40 percent.

## **6. China-related Entrepôt Trade**

### *6.1 The Volume of Entrepôt Trade*

With the opening of China's economy in 1979, Hong Kong regained its historic role as China's entrepôt. From 1979 to 1996, China's trade via Hong Kong with third countries rose a hundredfold from US\$1.2 billion (4.2 percent of China's trade) to US\$120 billion (41.3 percent) of China's trade. Around 30 percent of this entrepôt trade was traditional or pure entrepôt trade where the Hong Kong traders acted as a middleman, and the rest (70 percent) was related to Hong Kong's outward processing activities in China. Both types of entrepôt trade have become prominent since 1979.

The rapid growth of entrepôt trade related to outward processing was mainly due to the relocation of Hong Kong manufacturing to China. In outward processing, the mainland

subsidiaries of Hong Kong firms process raw materials and semi-manufactures purchased by the Hong Kong parent firms in the world market, and the processed outputs are sold via the parent firms to the world market, generating huge entrepôt trade for Hong Kong. By relocating the labour-intensive processing to China, Hong Kong manufacturers have been able to concentrate on skill-intensive operations and services such as product design, production management, sourcing, order-taking, financing, and marketing. Hong Kong manufacturing firms reportedly employ up to 6 million workers in Guangdong.

The expansion of exports from processing operations in Guangdong also increased the demand for Hong Kong's service industries, including entrepôt trade, shipping, insurance, business services and financial services. Both the Hong Kong manufacturing sector and the Hong Kong economy became increasingly service oriented, serving as the service hub of an industrialised Guangdong.

The rapid increase in China-related pure entrepôt trade is related to the decentralisation of China's foreign trade, resulting in rising search costs as the number of entities with the power to trade has increased by leaps and bounds since 1979. Intermediation emerged to economise on search costs, and Hong Kong has been able to capture a substantial portion of the demand for intermediation due to its efficiency in trade (Sung, 1991: 28-43).

## *6.2 Income Generated by External Investment and Entrepôt Trade*

As mentioned above, Hong Kong's earnings from contractual processing and from FDI in enterprises producing processed exports are embodied in the re-export margin, which is the difference in value between re-exports and imports for re-exports. The re-export margin also includes costs of storage, transportation within Hong Kong, and perhaps also costs of packaging and minor processing that is not substantial enough to change the form and nature of the product (otherwise, the product will be regarded as Hong Kong's **domestic exports**, i.e. exports made in Hong Kong, and not **re-exports**). The profits and value-added of the Hong Kong partners would also appear as part of the re-export margin.

Table 6 shows the rates of re-export margin as percentages of the value of re-exports obtained from surveys conducted by the Hong Kong government.<sup>7</sup> The rates of re-export margin are much higher for re-exports of Chinese goods than for re-exports of other goods. The rate of re-export margin for Chinese goods rose from 11.5 percent in 1989 to a record of 26.1 percent in 1993, and then declined to 24.9 percent and 24.7 percent in 1994 and 1995, respectively. The rate of re-export margin for other goods was 10.3 percent in 1989, and declined to only 5.6 percent in 1995. The increase of the rate for Chinese goods is largely due to the rise in the share of products related to outward-processing in Hong Kong's re-exports of Chinese origin.

The re-export margin includes not only direct value-added of re-exporting, but also

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<sup>7</sup> The results were first released in Census and Statistics Department, *Hong Kong Monthly Digest of Statistics*, February 1996.

indirect value-added as the value are of intermediate inputs (such as transportation and financing) are included in the re-export margin. In fact, the re-export margin overstates total value-added slightly because the Hong Kong trader/investor is likely to use directly or indirectly some imported inputs (for example, electricity generated from imported coal), which represent a source of leakage. Such leakage should be deducted from the re-export margin to arrive at total value-added. However, as re-exporting mainly involve services that require few imported inputs, the bias is very small.

It should be noted that the 'take' of the Hong Kong is not limited to the re-export margin. Besides the re-export margin, Hong Kong firms usually provide the service in exporting the processed output from China to Hong Kong. The differential in the value of Hong Kong imports (valued c.i.f.) and the corresponding Chinese exports (valued f.o.b.), representing the cost of insurance and freight, usually accrues to Hong Kong. The differential is estimated to be 6 percent of the value of Chinese exports.<sup>8</sup> From 1993 to 1995, the take of Hong Kong in re-exporting processed exports, including both the re-export margin and the cost of insurance and freight from China to Hong Kong, should thus be close to 30 percent if the value of Hong Kong's re-exports of Chinese goods is used as the base, or over 40 percent if the value of China's exports is used as the base.

In China's processing exports, the 'take' of Hong Kong investors/traders is much higher than that of China. China's rate of processing margin was 20 percent to 26 percent from 1990 to 1995.<sup>9</sup> The 'take' of Hong Kong is relatively high because Hong Kong performs a lot of value-adding services for processing operations in China, including product design, marketing or order-taking from importers, sourcing, quality control, trade financing, co-ordination of shipping, etc. Moreover, a substantial portion of Hong Kong's earnings from investment is embodied in the re-export margin.

The fact that China is dependent on Hong Kong for so many of the above services reveals the weakness of the Chinese system. China's processing operations are dependent on Hong Kong's trade financing because of the system of credit rationing in China, which favours state-owned enterprises. China depends on external investors to perform international marketing and order-taking from importers partly because it is cumbersome for Chinese nationals to get passports to travel overseas. Processing operations tend to import most of their raw materials because the quality or reliability of local suppliers is less dependable. The rigidity of China's economic system hampers the development of forward and backward linkages to local enterprises.

More details about the income generated by Hong Kong's China-related trade and investment are given in Table 7. The income generated by Hong Kong's re-exports of Chinese goods (equal to re-exports times the re-export margin) is very large due to the high re-export margin, which includes the profits of Hong Kong's investment in China as well as Hong Kong services embodied in the goods re-exported. As a percentage of Hong Kong's GDP, such income rose from 0.39 percent in 1997 to 14.1 percent in 1996 (column 2).

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<sup>8</sup> This is the average obtained from IMF, *Direction of Trade statistics*, various issues.

<sup>9</sup> Computed from data on the value of imported inputs used in producing processed exports (published in *China Customs Statistics*).



Official statistics have grossly understated Hong Kong's investment earnings in China because the bulk of such earnings are embodied in the re-export margin. As a percentage of Hong Kong's GDP, the income generated by China-related trade and investment rose from 1.7 percent in 1997 to 24.4 percent in 1996 (column 7).

## **7. Chinese Immigration to Hong Kong**

When Britain took over Hong Kong as a colony, it signed a treaty with the Ching government of China that Hong Kong cannot refuse the entrance of Chinese people from Mainland China. For about one hundred years, Hong Kong has allowed free immigration from China. With civil wars and the establishment of the People's Republic of China in 1949, over a million refugees came to Hong Kong, including capitalists and skilled workers from places like Shanghai. Hong Kong's post-war growth and export miracle was built on refugee capital and labour.

After China's entry into the Korean War in 1950 and the onset of the Cold War in East Asia, China sealed the border with Hong Kong, placing more and more severe restrictions on emigration. However, many refugees continued to make their way to Hong Kong, some legally and some illegally, providing the manpower for Hong Kong's labour-intensive exports.

The loosening of social controls in China after Mao's death led to an influx of over 0.5 million legal and illegal immigrants into Hong Kong from 1976 to 1980. As a result of the rapid rise in income in Hong Kong and the improvement of social services and social welfare, unskilled immigrants were regarded as a liability rather than an asset. Moreover, unlike the refugees of the 1950s, the illegal immigrants of the late 1970s were looking for better economic opportunities instead of fleeing from political persecution. There was little public sympathy for the illegal migrants and, with the support of the Chinese government, the Hong Kong government deported them back to China starting late 1980.

China also co-operated to curb the flow of migrants. To demonstrate its goodwill in the Sino-British negotiation over the future of Hong Kong in 1982, China imposed an exit quota of 75 migrants per day to Hong Kong. As a result of policy changes in Hong Kong and China, the labour market in Hong Kong became extremely tight starting from 1986. From 1986 to 1994, the annual unemployment rate in Hong Kong never rose above two percent, and Hong Kong's manufacturers started to relocate to China in droves.

As the spouses of Hong Kong residents in China have to wait for ten years or more before they can migrate to Hong Kong, China increased the exit quota to 105 per day in 1993 and to 150 per day in 1995 to ease the pressure. Table 8 presents the number of legal immigrants from China to Hong Kong. Except for 1981 and 1982, the number of Chinese immigrants was fairly stable, at about 26,000 per year, which accounts for about 0.5 percent of the population in Hong Kong. The number of Chinese migrating to Hong Kong has increased since 1993 with the increase in China's exit quota. In 1994, nearly 40,000 people came from China to Hong Kong. In 1995 and 1996, this number increased to 45,700 and

61,200, respectively, although the number is expected to drop to 54,750 in 1997.

Some of the social and educational characteristics of recent immigrants from China are shown in Table 9. These numbers are derived from the micro-data of the 1981, 1991, and 1996 Census/By-Census. Natives are those who were born in the Hong Kong, and recent immigrants are those who came to Hong Kong within six years of the census dates.

Table 5 shows that “recent immigrants” have changed from predominantly male in 1981 to predominantly female in both 1991 and 1996 (rows 3 and 5). These numbers reflect the fact that in recent years, more and more residents of Hong Kong went to China and got married, and their wives are moving to Hong Kong for reunion. There are also signs that “recent immigrants” are slightly older people, with an average age being 25.3 in 1981 rising to 27.9 in 1996.

One “surprising” fact suggested by Table 5 is that the educational profiles of the “recent immigrants” are quite close to those of the natives, at least in terms of the number of years of average schooling. In fact, the average schooling of “recent immigrants” in 1981 was marginally higher than that of the natives, although in 1996, it was significantly lower: 7.4 years as compared with 8.3 years.

However, one has to be cautious in interpreting these numbers, because the average schooling of a population depends, among other things, the age distribution of the population. For example, in 1981 the share of young children (age 14 or below) in “recent immigrants” was only 20.7 percent, whereas the share for the natives was 39.9 percent. The educational attainment of young children tends to be low simply because they have not yet finished their education. If we had restricted the comparison to adults, the educational attainment of natives would be higher than that of recent immigrants. The lower proportion of young children among recent immigrants is reflected in a higher average age: 25.3 years for immigrants as opposed to 19.2 years for natives (Table 9). Furthermore, the average schooling does not tell us the quality of education. In particular, one year of education in China may not be compared with one year of education in Hong Kong, partly because the training and education in Hong Kong is more applicable in the Hong Kong job market.

With the opening of China in 1979, cross-border marriages became increasingly common. As a result of the legacy of illegal immigrants who were predominantly young males, there were many more males than females in Hong Kong in 1981. Table 9 shows that the gender composition of the 1981 cohort of recent immigrants was biased heavily in favour of males. With the opening of China in 1979, these young males found wives across the border.

Illegal immigration decreased to a trickle after 1980 due to the policy of deportation. Immigrants after 1981 consisted largely of legal immigrants who were admitted mainly on the basis of family reunion, and many of them were wives and children of former illegal migrants. This explained both the reversal in the gender composition of recent immigrants and also the shrinking gap in the average age of recent immigrants and natives in 1991 and 1996. In 1996, comparison of average years of schooling between natives and recent

immigrants would not be biased as the proportions of young children in the two groups were roughly the same. As the age-composition in the two groups narrowed, the average schooling of recent immigrants in 1991 fell below that of natives and the gap in average schooling between recent immigrants and natives grew wider in 1996. The educational attainment of immigrants is not expected to improve as China has altered its quota allocation system in 1997 (in response to requests from the HKSAR government) to favour family reunion for children.

## **8. Growth of Hong Kong – the China Factor**

In the above discussion, we focused on the following three relationships between Hong Kong and China: direct investment in China and the accompanying shrinkage of the local manufacturing sector, Hong Kong as an entrepôt, and immigration from China. We now examine how these three factors may have contributed to the growth of Hong Kong in the eighties and nineties.

### *8.1 Direct Investment*

As explained earlier, as China opens up its economy to the rest of the world, one of the biggest impacts on the economy of Hong Kong is its attraction of large amounts of foreign investment in China. We now examine what kind of impact such flows of capital may have on the growth of Hong Kong. Two growth effects of FDI can be pointed out and will be focused on below: the effect through an accumulation of physical capital and the effect through an accumulation (or decumulation) of human capital. These two effects are described and evaluated below.

#### *8.1.1 The Growth Effect through Physical Capital Accumulation*

In the neoclassical framework, accumulation of factors such as capital is regarded as the main source of growth of an economy while technological progress is taken as exogenous. However, the growth that depends mainly on factor accumulation very often is not sustainable because declining marginal product of capital that is caused by growth will eventually discourage further accumulation of capital relative to labour.

Deardorff (1994) analysed a case in which physical capital in an economy with the neoclassical structure can continue to accumulate relative to the labour force. In this case, the economy allows and experiences outflow of capital, and if the rest of world is large enough and has a higher growth rate of population, such capital flow can continue in the long run. The capital outflow prevents the marginal product of capital from dropping to a very low level and thus investment can continue perpetually.<sup>10</sup> Deardorff's analysis thus points out the importance of outward foreign direct investment in maintaining the marginal product of capital from falling too much. Along a balanced growth path, there is a one-to-one correspondence between the amount of capital outflow and the amount of investment.

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<sup>10</sup> If the large economy has the neoclassical structure, it will not have perpetual growth before and after the inflow of investment from the small open economy.

Deardorff's model can be applied to analyse the effects of capital outflow to China on the growth of Hong Kong. As he pointed out, the outflow of capital not only raises the rental rate to capital, it also encourages domestic private (and possibly public) investment. Domestic investment and capital accumulation in Hong Kong, as equation (6) shows, can contribute to the growth of the economy.

A quantitative evaluation of the growth effect of FDI through investment can be obtained by making use of equation (6). First, we note from the equation that the elasticity of the growth rate with respect to the growth rate of the physical capital stock is equal to 0.34. Next, we want to find out how FDI to China may affect the domestic investment rate. Unfortunately, no such data are available, and no straightforward approach to estimating the dependence of domestic investment on capital outflow seems to exist. Thus, the assumption is made that FDI to China is matched quickly with an equal amount of investment. This assumption implies that the figures on FDI to China shown in column 2 (for nominal FDI) and column 3 (for real FDI) of Table 2 also give the domestic investments that are due to the outflow of capital. The last column of Table 2 then gives the resulting growth rate of physical capital.

In terms of estimating the GNP, we assume that the direct investment from Hong Kong to China receives at least the same rental rate as the local capital receives. To determine whether this assumption is strong, we note that the official data seem to suggest otherwise, meaning that the Hong Kong investment in China is not doing so great in terms of profitability. As explained, we believe that this is an understatement. After all, if Hong Kong capital cannot earn (at least in an expected sense when risks are present) at least as much as it can earn in Hong Kong, why would it want to move?<sup>11</sup>

Once the growth rate of physical capital is known, the impact on the growth rate of Hong Kong is obtained from equation (6). Column 2 of Table 10 gives the result. It shows that the positive effect of FDI on the growth of Hong Kong was very small from 1980 to 1983, ranging from 0.118 percent to 0.21 percent, mainly because the levels of FDI in these years were very small. The effect becomes much larger toward the end of the eighties, reaching a peak of 1.237 percent in 1988.

### *8.1.2 The Growth Effect through Human Capital Accumulation*

FDI to China can also affect the growth rate of Hong Kong through another channel: human capital accumulation. As explained above, when Hong Kong firms invest in China, very often they move their plants with them to take advantage of the lower labour costs in China and to avoid the quota restriction imposed on their products by countries like the United States. We also explained that foreign investment in China leads to two impacts on the economic structure of Hong Kong: a shrinkage of the manufacturing sector and an expansion of the service sector.

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<sup>11</sup> Of course, one could bring in non-economic factors to explain the apparent low rates of return of Hong Kong investment in China, but no non-economic factors seem to be significant enough to provide an adequate explanation of the huge difference in the rates of return in Hong Kong and China.

The work of Chou and Wong (1997) confirms that for the case of Hong Kong accumulation of human capital through learning by doing is directly related to the value-added of the manufacturing sector (and the retained imports of capital goods), but not on the size of the service sector. This result is consistent with what is found in the literature. We can thus make use of this result and estimate how these changes may have affected the growth of Hong Kong.

Table 5 shows the value of retained imports of capital good,  $M$  (column 4). According to Chou and Wong (1997), the learning by doing effects in Hong Kong in period  $t$  can be represented by  $\hat{L}_t = \ln V_{t-1} + \ln M_{t-1}$ . Let us denote the estimated value added of the manufacturing sector without the direct investment to China in period  $t$  by  $V_t$  (column 3 of Table 5), and that with the direct investment to China by  $V'_t$  (column 2). Assuming that such direct investment does not affect the retained imports of capital goods, the growth rate of the learning by doing,  $\hat{L}_t$ , as caused by the FDI to China can be given by

$$\hat{L}_t = \frac{\ln V'_{t-1} - \ln V_{t-1}}{\ln V_{t-1} + \ln M_{t-1}}. \quad (8)$$

The results about the change in the learning by doing effect are given in column 5 of Table 5.

The effects of the shrinkage of the manufacturing sector on human capital accumulation through learning by doing are negative, as expected. These effects are small in magnitude in the eighties and early nineties, but as direct investment in China became significant starting from 1993, the detrimental effects are getting larger and larger.

After deriving the rate of change of the learning by doing effect, we can use equation (6) to determine the impact on the growth rate of Hong Kong. Since equation (6) suggests that a one percent increase in learning by doing leads to an increase in the growth rate of Hong Kong by 0.09 percent, we multiply the rate of change in learning by doing with 0.09 to yield the effect of the shrinkage of the manufacturing sector on the growth of Hong Kong.

Because we do not have reliable figures of the value of direct investment from Hong Kong to China before 1984, and because of the loss of one observation due to the use of lagged investment in calculating the effects on learning by doing, the impacts on the size of the manufacturing sector before 1985 cannot be estimated and are not reported in Table 10. However, it is believed that the growth effects of a shrinkage of the manufacturing sector in these years are small due to the low levels of investment.

The effects of Hong Kong investment in China through a shrinkage of the local manufacturing sector from 1985 to 1995 are shown in column 3 of Table 10. As explained in the paper, these effects are all negative, due to the loss in the learning-by-doing effect. The magnitudes of these effects from 1985 to 1992 were not significant, as

the levels of investment were also not large enough. The impacts became larger in magnitude in 1993 to 1995. For example, as the table shows, in 1995, the direct investment to China had lowered the growth rate of Hong Kong by 0.462 percent through its impact on the size of the manufacturing sector.

Of course, the net effect of direct investment to China is still positive. For example, in 1988, while the negative impact through a shrinkage of the manufacturing sector of direct investment on Hong Kong's growth rate was  $-0.043$  percent, its positive impact through physical capital accumulation was 1.237 percent, giving a net effect of 1.194 percent. This is indeed the year in which the net growth effect of FDI to China reached a peak. In 1990, the net effect dropped to 0.915 ( $= 0.963 - 0.048$ ) percent.

## 8.2 *Entrepôt Trade*

We now turn to the role of Hong Kong as an *entrepôt*. This role is bi-directional, but the growth impact of each direction could be quite different. When China products pass through Hong Kong on their way to other countries, Hong Kong provides various types of services such as insurance, transportation, banking, finance, design, marketing, and so on. These services earn Hong Kong income and are thus beneficial. However, they involve mainly resource allocation, and could have very little growth effects, if any. In other words, rendering these services mainly shifts the production point on the production possibility frontier (PPF) of Hong Kong, but it does not tend to shift the PPF outward.

Hong Kong also serves in another manner as the middleman between China and the rest of the world: It acquires the technology and finance for China firms in the latter's development and growth. In its capacity as a service provider, it earns income but can generate very little growth effect. However, it is quite possible that the technology that Hong Kong firms acquire for the firms in China may be spillovered to local firms. If this happens, technology transfer exists and Hong Kong benefits in terms of its growth.

However, such possible impact of the middleman role of Hong Kong on its growth is difficult to estimate because some of the data may not be available. As a result, we assume that the impacts are not significant and do not measure them.<sup>12</sup>

## 8.3 *Chinese Immigration*

We now turn to the effects of immigration from China. Equation (6) can be used to estimate the impacts of these immigrants on the growth of Hong Kong. We assume that equal proportion of the immigrants as the share of the labour force in the Hong Kong population went to the labour market. This means that the rate of increase in immigration as a percentage of the domestic population is a measure of the rate of growth of the labour force, i.e.,  $\hat{N}$ .

To determine the impacts of the Chinese immigrants on the growth of Hong

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<sup>12</sup> Wan and Weisman (1997) analyze the role of Hong Kong as a middleman between China and the rest of the world, and argue that after the reversion of the economy to China, this role could diminish.

Kong, we have to find out how they may affect the accumulation of physical and human capital. Unfortunately, because of the lack of sufficient studies about these immigrants, we do not have a good knowledge of how they could contribute to the stocks of physical and human capital.

In the present paper, the following assumptions are made. First, we assume that saving and investment done by the “recent immigrants” are negligible. This is due to the facts that a good proportion of the immigrants are family members (wives and children) of Hong Kong residents, and that they tend to take up less skilled jobs.<sup>13</sup>

Secondly, as Table 9 shows, recent immigrants have good education training when they enter Hong Kong. However, how their education training is compared with that of natives is not clear. Certainly, they are bringing some human capital with them, but their average human capital is expected to be less than that of the natives, partly because they have a shorter average schooling and partly because some of the educational training they received may not be applicable in the jobs in Hong Kong. As a result, we provide two extreme estimates: the lower estimate that is based on the assumption of no human capital carried by the immigrants, and the upper estimate that is based on the assumption that their average human capital is the same as that of natives.

The lower estimate of the growth impact of the immigrants is obtained by multiplying the percentage change in the work force as a result of immigration by  $-0.8$  (equation (6)). The results are presented as column 4 of Table 10. To get the upper estimate, we assume that the immigrants has the same skill as that of natives so that the immigration can be regarded as the inflow of unskilled workers while at the same time the government increases the education expenditure at the same rate. By equation (6), this means that the elasticity of immigration on the growth rate is  $-0.38 (= -0.8 + 0.42)$ . The results are shown in column 5 of Table 10.

The impacts of the Chinese immigrants in all these years were negative, as expected. In magnitude, these impacts were considerable in 1981 and 1982, causing a drop in nearly 0.8 percent (lower estimate) or 0.4 (upper estimate) of the growth rates of Hong Kong. The impacts dropped by nearly half in magnitude, starting from 1983, when the Chinese government curtailed the outflow of people to Hong Kong. These impacts remain fairly constant throughout the eighties, but starting from 1993, they were getting bigger. In 1996, the negative impact rose to 0.776 percent (lower estimate) or 0.368 (upper estimate).

We now add up the total effects of the China factor, and they are given in the last two columns of Table 10. The interesting thing to note is that in 1981 to 1984 (1983 for the upper estimate), the China factor contributed negatively to the growth of Hong Kong, partly due to the sizable inflows of Chinese immigrants. With the drop in the number of people migrating from China and with the increase in direct investment in China, the China factor turned into a positive one in 1984, and it increased steadily, reaching a peak

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<sup>13</sup> For example, the lack of appropriate degrees and professional recognition prohibit the immigrants from taking up jobs like engineers, doctors, lawyers, and accountants. Also the lack of language skills such as English and Cantonese is a handicap for many of the immigrants.

in 1988.

## **9. The China Factor After Hong Kong's Reversion**

Despite the euphoria of the handover ceremonies, the watershed for the Hong Kong economy is not 1997 but 1979, the year in which the China economy was opened to the rest of the world. Since 1979, Hong Kong and the mainland have become each other's foremost partner in trade and investment. The year 1997 will see a strengthening of the trend started in 1979 rather than a radical new departure. Another reason that 1997 is not a watershed for the Hong Kong economy is that the handover is known fourteen years in advance and the institutional arrangements of the present economy were laid down in great detail in the Sino-British Joint Declaration of 1984. According to the theory of rational expectations, expected events have no impact on the economy at the time the events occur because all adjustments have already taken place beforehand. However, not all adjustments can take place in advance due to institutional constraints, and unexpected events (or surprises) do occur. The reversion thus may have some important economic impacts.

Let us now give an evaluation of how the China factor may be different after 1997. Though we do not have a sophisticated model to predict exactly how the factor may change, we do observe some evidence that suggests how it may change.

First, let us look at the investment flows between Hong Kong and China. Reversion has little impact on investment flows because the rules on China's investment regime have been quite stable and investments from Hong Kong are still treated as external investment. As a result of changes in economic fundamentals not related to the reversion, external investments (including Hong Kong investments) in China are expected to stagnate or decline appreciably. Since Deng Xiaoping's southern tour in early 1992 in support of economic reforms, FDI in China has increased by leaps and bounds (Table 2). The rate of growth has slowed down since 1994 because the base was already very large. Though China's utilized inward FDI has kept on growing since 1994, contracted inward FDI, which is indicative of future trends, has peaked in 1993. Contracted FDI from Hong Kong also peaked in 1993 at US\$ 74 billion, and contracted FDI from Hong Kong in 1994, 1995, and 1996 were only US\$ 47 billion, US\$ 41 billion, and US\$ 28 billion, respectively. Utilized FDI from Hong Kong has stagnated at the level of US\$ 20 billion from 1994 to 1996, and will likely decrease in 1997.

As a result of China's bid to join the WTO, China has been trying to implement national treatment and is phasing out some preferences given to foreign investors, especially tariff exemptions on their imported equipment. China has also become more picky and has rejected some labour-intensive, low-technology projects and also environmentally undesirable projects. Such actions already slowed down FDI. However, China's expected entry in the WTO in the near future will stimulate inward FDI as China has to open its markets to foreign investment. On the whole, we expect Hong Kong's FDI in China to stagnate or decline in view of the severity of financial turbulence in East Asia.



East Asia currently accounts for up to 80 percent of the FDI in China.

Second, as analyzed above, the role of entrepôt may not have any significant impacts on the growth of Hong Kong, although in the case of acquiring foreign technology some spillover may occur. We would expect that this factor will continue. As a result of changing economic fundamentals not related to the reversion, we expect a stagnation in Hong Kong's China-related entrepôt trade. In recent years, China's export-oriented industrialization has spread from Guangdong to the northern coastal areas, and goods made in the north may not be exported via Hong Kong. Moreover, shipping through Hong Kong is expensive due to congestion, and some traffic has been diverted via Hong Kong to the new harbors near Hong Kong. However, the role of Hong Kong is still important as many goods are still handled by Hong Kong traders/investors even though the goods may not pass through Hong Kong (Sung 1997: 73-75).

Third, the immigration from China could be problematic in terms of the growth of Hong Kong. Even with the increase in the exit quota to 150 per day in 1995, spouses of Hong Kong residents still have to wait for ten or more years before they can enter Hong Kong due to the increase in cross-border marriages. According to a government survey in 1996, there were 432,600 direct relatives (112,000 spouses and 320,600 children) of Hong Kong residents living in China at the end of 1995 (Census and Statistics Department, Hong Kong, 1997: 1-5).

Despite the desire of Beijing and Hong Kong to continue with tight controls over the number of China residents moving to Hong Kong, the reversion of the economy to China has increased the pressure to relax the quota. According to the Basic Law of Hong Kong, which is the constitution of the Hong Kong Special Administrative Region (HKSAR), the children of Hong Kong residents born outside Hong Kong are also Hong Kong residents and they have a constitutional right to enter Hong Kong. Of the over 320,000 children of Hong Kong residents in the mainland, an estimated 66,000 (July 1997 figure) were born while their parents had already become permanent residents of Hong Kong, and they have the right to enter Hong Kong. The rest may also have the same right, depending on the interpretation of the Basic Law. Recently, the HKSAR government has passed a law limiting the rights of these children to delay their entry, but the law is being contested in court. Even if the HKSAR should win the case, the pressure to relax immigration controls will continue to build up.

There have been attempts to allow skilled mainland professionals to migrate to Hong Kong. Since 1990, Hong Kong employers are permitted to employ mainland professionals from overseas as long as they have stayed overseas for more than two years. In April 1994, the Hong Kong government started a trail scheme to import 1,000 mainland graduates. Presently, there are proposals that Hong Kong should allow more skilled mainlanders to enter.

## **10. Concluding Remarks**

Our analysis shows that Hong Kong-China connections are not an unmixed blessing for Hong Kong's growth. It shows that both the immigration from China and the shrinkage of the local manufacturing sector have negative effects on Hong Kong's growth. Hong Kong's outward FDI in China has a large positive effect on growth, but that is most likely overstated because we make the strong assumption that external and internal investments are strictly complementary. The slow growth of Hong Kong in the 1990s (Table 1) is consistent with our analysis.

This paper analyzes the following three linkages between the Hong Kong economy and the China economy. In particular, it examines how these linkages may affect the growth of the Hong Kong economy. Using some observed data and some simplifying assumptions, we provide some numerical estimates of the impacts of these factors. Some of the results are intuitive, and some are less obvious. For example, our results support the common belief that investment of Hong Kong capital to China is good for growth. This is not due to the usual static gains from capital movement, as such gains have no growth effects.<sup>14</sup> What we emphasize here is how such capital outflow may encourage domestic saving and investment, thus helping domestic growth getting sustained in the long run.

One important point raised in this paper is the impact of capital outflow on the size of domestic manufacturing sector. We estimated the impact directly, and examined how it may affect the growth of the Hong Kong economy. Due to its negative effect on human capital accumulation, it has a negative growth effect. However, if we add up the positive direct effect (through the encouragement of domestic investment) and the negative indirect effect (through human capital decumulation), capital outflow still has a positive net effect on the growth of Hong Kong economy.

Another important point investigated in this paper is the growth effect of immigrants from China. Because they tend to possess less skills and experiences as compared as local workers, and because they tend to save less, immigrants from China could have negative impacts on the growth of Hong Kong. However, we do not have enough of information about the characteristics of these immigrants such as the quality of human capital they possess and their saving propensities, we could only suggest two possible estimates of their growth effects, depending on different assumptions of their human capital content.

Another linkage between Hong Kong and China is the former's role as a middleman. Although this linkage has important effects on both economies, its growth effect may be very small, and is not included as one of the China factor.

Summing up the effects of these three linkages, our results conclude that they did have positive impacts of Hong Kong's growth in most of these years after the China economy was opened up in 1979.

Of course, our estimation, like many others, are based on some strong

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<sup>14</sup> For a recent discussion of these static gains, see Wong (1995).

assumptions and should be taken with extreme caution. In fact, these numbers are not what we want to emphasize in this paper. The important insight we want to provide is that the Hong Kong and China economies are linked in many ways and these linkages should be investigated in detail when the China factor in Hong Kong's growth is studied.

According to the analysis provided in this paper, Hong Kong may be able to promote growth by upgrading its industrial technology. Hong Kong's reversion may make a difference here. The HKSAR government is trying to upgrade Hong Kong manufacturing, and it is more interventionist in comparison with the laissez-faire Colonial government. This is because, unlike the Colonial era where the governor was appointed by a foreign polity and was immune to local political pressure, the Chief Executive of the HKSAR was elected by a Committee composed of 400 local people. Though the membership of the Committee may be quite selective, the Chief Executive cannot be immune to local political pressure.

There are also influential people in China who favor a more active technology policy in Hong Kong. The labour intensive processing industries in Guangdong need upgrading. There have been talks of a synergy of China's capability in basic research and engineering with Hong Kong's skills in marketing, finance, and product design. Upgrading Hong Kong's technology is perceived to be in the interest of Guangdong and the Mainland. Such proposals may eventually lead to the increased migration of Chinese skills to Hong Kong and also have a significant positive impact on Hong Kong's growth.

**Table 1**  
**Growth Rates of Four Asian Economies, 1961-1996**

Year	Hong Kong	Taiwan	South Korea	Singapore
1961-66	7.80	5.05	3.60	2.76
1966-71	4.17	6.54	8.23	10.72
1971-76	6.17	6.78	6.93	7.67
1976-81	6.86	8.12	5.89	7.53
1981-86	4.48	6.42	7.47	7.47
1986-91	5.48	7.24	8.61	7.46
1991-96	3.51	5.52	6.22	6.60

Sources: Hong Kong data: Hong Kong Census and Statistics Department, *Estimates of Gross Domestic Product, 1961-1996*;  
 Taiwan data up to 1981: *Statistics Yearbook for Republic of China*, various issues;  
 Singapore and South Korea data up to 1981: United Nations, *Statistical Yearbook for Asia and Pacific*, various issues;  
 Taiwan, Singapore and South Korea Data after 1981: Asian Development Bank, *Asian Development Outlook*, various issues.

**Table 2**  
**Hong Kong Direct Investment in China, 1980-1995**

Year	Nominal Direct Investment, US\$ billion	Real Direct Investment, US\$ billion	Local Capital Stock, US\$ billion	Real Direct Invest- ment/local capital stock, %
1980	87*	132	28.70	0.347
1981	131*	175	30.26	0.472
1982	175*	210	32.85	0.562
1983	218*	233	34.32	0.617
1984	647	645	36.40	1.681
1985	778	778	39.45	1.972
1986	1115	965	40.62	2.388
1987	1588	1286	43.05	3.102
1988	2068	1581	46.47	3.640
1989	2037	1484	51.57	3.247
1990	1880	1342	55.60	2.834
1991	2405	1690	n.a.	n.a.
1992	7507	5152	n.a.	n.a.
1993	17275	11272	n.a.	n.a.
1994	19665	12528	n.a.	n.a.
1995	20060	11711	n.a.	n.a.

Note: The capital stock and real foreign direct investment are at 1985 international prices.

n.a. = not available.

\*The amounts of nominal investment in 1980 to 1983 are our own estimates. See the text for explanation.

Source: Nominal direct investment: *Almanac of China's Foreign Relations and Trade*, various issues;

Other data: calculated from the data provided by the Penn World Table (version 5.6) of Robert Summers and Alan Heston.

**Table 3**  
**Hong Kong's External Factor Income Flows, 1995 (US\$mn)**

	All Countries			China		
	Inflow	Outflow	Net Inflow	Inflow	Outflow	Net Inflow
Total	50,006 (35.7)	48,285 (34.4)	1,720 (1.2)	3,342 (2.4)	3,600 (2.6)	-258 (-0.18)
Direct Investment Income	13,825 (9.9)	23,011 (16.4)	-9,186 (-6.6)	1,178 (0.84)	1,830 (1.31)	-652 (-0.47)
Portfolio Investment Income	10,084 (7.2)	3,137 (2.2)	6,947 (5.0)	224 (0.16)	7 (0.005)	217 (0.15)
Other Investment Income	26,058 (18.6)	22,098 (15.8)	3,960 (2.8)	1,937 (1.4)	1,759 (1.3)	178 (0.13)
Compensation of Employees	39 (0.028)	39 (0.028)	0 (0)	3 (0.002)	4 (0.003)	-1 (-0.001)

Note: Figures in brackets represent percentage share of Hong Kong's GDP.

Source: From Hong Kong Census and Statistics Department.

**Table 4**  
**Size of the Hong Kong Manufacturing Sector, 1977-1996**

Year	Employment		Value added of Manufacturing	
	Number of workers, '000	As percentage of labour force	Real Value Added	As percentage of GDP
1977	755	47.3	n.a.	n.a.
1978	817	47.8	n.a.	n.a.
1979	871	46.6	n.a.	n.a.
1980	892	46.6	69.6	22.4
1981	905	46.7	74.6	22.0
1982	856	42.1	68.9	19.8
1983	855	41.0	80.1	21.7
1984	899	41.0	92.1	22.7
1985	848	38.8	84.1	20.7
1986	866	38.5	96.3	21.4
1987	868	37.3	106.8	21.0
1988	837	34.9	108.7	19.8
1989	792	32.3	103.4	18.4
1990	716	28.9	98.4	16.9
1991	629	25.6	89.0	14.5
1992	565	22.9	83.2	12.8
1993	484	19.7	71.2	10.3
1994	423	16.7	62.9	8.6
1995	376	15.0	59.6	7.8
1996	325	12.7	53.5	6.7

Note: n.a. = not available.

Source: Manufacturing employment and labour force: Hong Kong Census and Statistics Department, *Hong Kong Monthly Digest of Statistics*, various issues;  
Value added and GDP: Hong Kong Census and Statistics Department, *Estimates of Gross Domestic Product, 1961 - 1996*.

**Table 5**  
**Effects of FDI to China on the Manufacturing Sector, 1984 – 1995**

Year	Estimated Value-added With FDI, HK\$bn	Estimated Value-added Without FDI, HK\$bn	Retained Imports of Capital good, HK\$bn	Change in learning by doing, %
1984	96.2	98.5	133.9	--
1985	96.5	99.3	130.3	- 0.25
1986	96.7	100.1	149.3	- 0.30
1987	96.3	100.9	185.8	- 0.37
1988	96.0	101.7	213.3	- 0.47
1989	97.2	102.5	208.3	- 0.58
1990	98.5	103.3	235.6	- 0.54
1991	98.1	104.1	267.2	- 0.47
1992	86.5	104.9	313.9	- 0.59
1993	65.6	105.7	335.5	- 1.85
1994	61.8	106.5	378.4	- 4.56
1995	65.5	107.3	428.8	- 5.13

Note: For the calculation of the numbers in columns 2, 3, and 5, see the paper.

Source: Hong Kong Census and Statistics Department, *Hong Kong Monthly Digest of Statistics*, various issues.



**Table 6**  
**Rate of Re-export Margin of Hong Kong's Re-exports (%)**

Year	Chinese Goods	Non-Chinese Goods
1989	11.5	10.3
1990	17.4	11.3
1991	20.5	9.3
1992	22.9	9.3
1993	26.1	7.8
1994	24.9	5.7
1995	24.7	5.6

Source: Hong Kong Census and Statistics Department, *Hong Kong Monthly Digest of Statistics*, May 1997, P. FA12.

**Table 7**  
**Income Generated by China-Related Trade and Investment (US\$mn)\***

Year	Total value added of China related entrepôt trade						Hong Kong's GDP
	Re- export of China origin	Re- exports to China	Sub-total	Domestic exports to China	Services exports to China	Total	
1977	61 (0.39)	4 (0.026)	65 (0.42)	3 (0.022)	202 (1.3)	270 (1.7)	15,599 (100)
1979	130 (0.58)	27 (0.12)	157 (0.70)	59 (0.27)	340 (1.5)	556 (2.5)	22,337 (100)
1981	264 (0.86)	152 (0.50)	416 (1.4)	261 (0.85)	628 (2.1)	1,305 (4.3)	30,529 (100)
1983	311 (1.1)	173 (0.59)	484 (1.7)	419 (1.4)	742 (2.5)	1,646 (5.6)	29,241 (100)
1985	511 (1.5)	608 (1.7)	1,119 (3.2)	956 (2.7)	1,292 (3.7)	3,366 (9.6)	34,868 (100)
1987	1,243 (2.5)	795 (1.6)	2,038 (4.1)	1,751 (3.6)	2,058 (4.2)	5,847 (11.9)	49,306 (100)
1989	2,776 (4.1)	1,367 (2.0)	4,143 (6.1)	2,719 (4.1)	3,162 (4.7)	10,023 (14.9)	67,162 (100)
1990	5,371 (7.2)	1,607 (218)	6,978 (9.3)	2,982 (4.0)	3,598 (4.8)	13,558 (18.1)	74,791 (100)
1991	8,328 (9.7)	1,828 (2.1)	10,156 (11.8)	3,418 (4.0)	4,303 (5.0)	17,877 (20.8)	86,027 (100)
1992	11,945 (11.9)	2,529 (2.5)	14,474 (14.4)	3,892 (3.9)	5,232 (5.2)	23,598 (23.5)	100,676 (100)
1993	15,992 (13.8)	2,768 (2.4)	18,760 (16.2)	4,014 (3.4)	6,230 (5.4)	29,003 (25.0)	116,011 (100)
1994	17,587 (13.5)	2,381 (1.8)	19,968 (15.3)	3,869 (2.9)	7,037 (5.4)	30,874 (23.6)	130,808 (100)
1995	20,319 (14.5)	2,782 (2.0)	23,101 (16.5)	4,029 (2.9)	8,044 (5.7)	35,174 (25.1)	140,198 (100)
1996	21,829 (14.1)	3,025 (2.0)	24,854 (16.1)	3,904 (2.5)	8,969 (5.8)	37,727 (24.4)	154,553 (100)

Notes: Figures in brackets represent percentage shares of Hong Kong's GDP.  
The value-added of re-exports of China origin and re-exports to China are obtained by multiplying the re-export flows by the respective re-export margins in Table 6. The re-export margins before 1989 are taken to be the same as those in 1989.  
The ratios of total value added for domestic exports and services exports are taken to be 0.49 and 0.64 respectively. Both ratios are taken from Sung (1984), which is the latest available input-output study of the Hong Kong economy.

Source: Re-exports and domestic exports: Hong Kong Census and Statistics Department, *Review of Overseas Trade*.  
Service exports and GDP: Hong Kong Census and Statistics Department, *Estimates of Gross Domestic Product, 1961 - 1996*.

**Table 8**  
**Immigration from China to Hong Kong, 1981-1997**

Year	Immigrants from China, '000	Hong Kong Population, '000	Immigration per population, %
1981	51.6	5183.4	0.995
1982	50.9	5264.6	0.967
1983	25.1	5345.2	0.470
1984	27.2	5397.9	0.504
1985	26.7	5456.2	0.489
1986	26.7	5524.6	0.483
1987	27.0	5580.5	0.484
1988	27.9	5627.6	0.496
1989	26.5	5686.2	0.466
1990	27.4	5704.5	0.480
1991	26.4	5752.0	0.459
1992	28.1	5800.5	0.484
1993	32.8	5901.0	0.556
1994	38.1	6035.4	0.631
1995	45.7	6156.1	0.742
1996	61.2	6311.0	0.970
1997*	54.8	6488.0	0.845

Note: \* denotes a projected figure.

Source: Hong Kong Census and Statistics Department, *Hong Kong Population Projections, 1997-2016*.

**Table 9**  
**Social and Educational Characteristics of Chinese Immigrants**

	Natives			Recent Immigrants		
	1981	1991	1996	1981	1991	1996
Male	50.6	51.0	51.8	58.4	39.1	41.9
Female	49.4	49.0	48.2	41.6	60.9	58.1
Average Age (yrs)	19.2	23.8	27.4	25.3	27.7	27.9
Average Schooling (yrs)	6.5	7.6	8.3	6.6	7.2	7.4

Source: 1981, 1991, and 1996 Census and By-Census, Hong Kong Census and Statistics Department

**Table 10**  
**Contribution of the China Factor to Hong Kong's Growth**

Year	Direct Investment in China	Shrinkage of the Manufacturing Sector	Immigration from China		Total	
			lower estimate	upper estimate	lower estimate	upper estimate
1980	0.118	insig.	n.a.	n.a.	n.a.	n.a.
1981	0.161	insig.	-0.796	-0.378	-0.635	-0.217
1982	0.191	insig.	-0.773	-0.367	-0.582	-0.176
1983	0.210	insig.	-0.376	-0.178	-0.166	0.032
1984	0.571	insig.	-0.403	-0.191	0.168	0.380
1985	0.671	-0.023	-0.391	-0.186	0.257	0.462
1986	0.812	-0.027	-0.387	-0.184	0.398	0.601
1987	1.055	-0.033	-0.387	-0.184	0.635	0.838
1988	1.237	-0.043	-0.397	-0.188	0.797	1.006
1989	1.104	-0.052	-0.373	-0.177	0.679	0.875
1990	0.963	-0.048	-0.384	-0.183	0.531	0.732
1991	n.a.	-0.043	-0.367	-0.174	n.a.	n.a.
1992	n.a.	-0.053	-0.388	-0.184	n.a.	n.a.
1993	n.a.	-0.167	-0.445	-0.211	n.a.	n.a.
1994	n.a.	-0.411	-0.505	-0.240	n.a.	n.a.
1995	n.a.	-0.462	-0.594	-0.282	n.a.	n.a.
1996	n.a.	n.a.	-0.776	-0.368	n.a.	n.a.

Notes: insig. = insignificant;  
n.a. = not available.

Source: For the calculation of these numbers, see the paper.

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