

**Hong Kong Institute of Economics and Business Strategy**  
**APEC Study Centre**

**AN ECONOMIC STUDY OF  
HONG KONG'S PRODUCER SERVICE SECTOR AND  
ITS ROLE IN SUPPORTING MANUFACTURING**

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# AN ECONOMIC STUDY OF HONG KONG'S PRODUCER SERVICE SECTOR AND ITS ROLE IN SUPPORTING MANUFACTURING

## I. Introduction

### On a Widespread Misperception of Services as Being Consumption Oriented

The rapid growth of service sector employment and output in industrial economies has attracted considerable public attention in recent years. Some observers believe this growth has had a detrimental effect on workers' well-being, and are of the opinion that new industrial strategies that protect the interests of workers should be implemented. Similar concerns frequently arise whenever an economy's service sector begins to grow quickly. Bell (1973), Shelp (1981), and Bluestone and Harrison (1982) have done much to popularize the concepts of deindustrialization and a "post-industrial society" and to relate them to the growth of the service sector.

These authors' ideas are reflected in a model of historic determinism that has enjoyed wide appeal. This model, which was very popular during the 1930s, postulates the existence of development cycles that take countries through three stages. The second and third stages are initiated as productivity growth and consumer satiation in agriculture and manufacturing, respectively, push labor into the next-highest sector. The authors express concern about workers' fate in the event that the productivity growth of a country that has entered the third stage peaks, and consumer demand reaches its limit. This pessimistic view stems from the perception that the third stage is dominated by unproductive consumer services. Stigler's (1956) and Fuchs's (1968) early empirical studies of productivity growth in the U.S. service sector appeared to confirm the perception that services sectors expand more slowly than manufacturing sectors.

Bluestone and Harrison (1986) also authored a study of the income distribution effects of service sector growth. The study develops the concepts of "the vanishing middle class" and "bimodal income distribution," once more ascribing the phenomenon in large part to the growth of the service sector. Here again we have a view of most service workers as possessing few or no skills.

The more recent work of Baumol (1967) and Fuchs (1968) influenced the thinking of generations of economists. Baumol and Fuchs came up with theorems about the low productivity growth of the service sector and the resultant upward bias on the price of services. They argued that the rising share of the service economy in general and the government sector in particular are the results of the low productivity growth of such services when compared with manufacturing. As a consequence, the cost of producing services rises relative to the cost of manufacturing. Over time, services (relative to manufacturing) have to absorb an increasingly larger share of the

economy's resources. This means that the economy is increasingly dominated by the service sector, which is characterized by slow productivity growth.

Browne (1986) discussed the widespread notion that much of the service sector's growth involves "taking in each other's laundry." According to this model, women entering the labor force reduce production output in the traditional household and replace it with the same output in the market. This process leads to an overstatement of economic growth because national income accountants record the increase in market production but do not note the decrease in households' output.

All these studies have concentrated on consumer services bought in the market or supplied by the government. Adam Smith described the work of personal valets and actors as being typical of service sector activity. Baumol's widely cited model involves the unchanged productivity of quartets playing the same piece of music through the centuries. Bell (1973) and Bluestone and Harrison (1986) draw heavily on the image of modern fast food restaurants exemplified by hamburger flippers.

The government supply of education, health, and welfare services for public consumption is documented and discussed in many of these studies, which support the widely held belief in the importance of government services for the overall growth of the service sector. Here, again, the erroneous belief that public spending on education and health is a form of consumption spending rather than an investment in the productive capacity of human resources has distorted our perception of services as being dominated by low-value consumption uses.

### **Nature of Producer Services**

A service-producing activity is one in which the activity of the producer brings about an improvement in the condition of some other economic unit. The improvement may take the form of a physical transformation of some good or goods owned by the economic unit. Alternatively, the improvement may relate to the physical or mental condition of a person or group of persons. In either case, the distinguishing feature of service production is that the producer adds value not to his own goods or person but to the goods or person of some other economic unit.

There is unfortunately a widespread misperception that the production of services is distinguished from that of goods in only one way; that is, unlike goods, services do not realize themselves in any particular object. Classical economics seized upon this feature and included services in the category of unproductive labor because services perish at the very instant of production and do not endure to add value to the subject on which they are bestowed.

This view of services is fundamentally flawed because it treats them as primarily if not exclusively consumption services and ignores the fact that services are purchased by producers for use in the production process. The idea that services can be used in the production of other goods has only recently been fully appreciated. The



term “producer services” is now entering the economics and business literature. Producer services are embodied services because of their role as intermediate inputs in the production of other goods. The idea of embodied services is very important for understanding the productive nature of producer services. For example, the services of mechanics are embodied in repaired automobiles; the services of musicians are embodied in recordings; and the services of computer programmers are embodied in electronic storage disks.

The concept of embodied services is analytically important because it focuses attention on the role played by services in the production of goods and on how many useful properties of goods are directly attributable to service inputs. To the extent that service inputs are provided by highly skilled persons and represent the application of scientific, engineering, and management skills, the growth of embodied services in goods production reflects a process of capital deepening. Economists have always viewed investment as a means of enhancing future productivity. The embodiment of services in goods is similar.

The failure to recognize that services can be embodied and therefore can add value to goods production is the reason that throughout modern history, the service sector has been identified as the cause of economic troubles. Adam Smith believed that it involved the nonproductive use of resources, an idea Marx and Lenin picked up. Their belief resulted in the exclusion of personal service industry output from the national income accounts of the Soviet Union and other socialist economies. As recently as the 1960s, a British Labour government imposed a special tax to discourage service-industry growth.

Modern economics has abandoned entirely the notion that goods and services are different in any important economic sense. Services, just like goods, have both consumption and production uses. Nevertheless, old perceptions die hard and in this case are often reinforced by institutional arrangements that continue to distinguish between goods and services. The way we collect and compile our economic statistics and the way the government organizes its bureaus reflect these old notions.

The traditional distinction between manufacturing and services has become increasingly blurred as the importance of producer services has grown. A large number of Hong Kong firms are now classified as service firms even though they provide producer services for the manufacturing sector. Hence, we should take a broader view of the manufacturing production process so as to include in our definition of this process the contribution made by service firms that are related to and support manufacturing activity.

The purpose of this study is to examine the key role of producer services for manufacturing production. The results of our study are summarized in the next four sections. In Section II, we summarize our findings about Hong Kong’s service economy, focusing on producer services. By gathering relevant data and by calculating various price deflators, we account for the growth of Hong Kong’s

producer service industry in the last two decades, and estimate the real growth of value added in major sectors of the industry. In particular, we find that the growth of producer services in Hong Kong has been led by business services; transport, storage, and communications; imports and exports; and finance. Together, those four components accounted for 67 percent of Hong Kong's producer services in 1996.

Section III provides an international perspective on the growth of producer services through a comparative study of six economies. We compare and contrast Hong Kong's producer service sector with those of Singapore, Taiwan, South Korea, Japan, and the United States. We focus our discussion on the differences between Hong Kong's and Singapore's service sectors to highlight the different roles of producer services in these two economies.

Section IV contains a review of the existing literature on producer services, with an emphasis on their applications to Hong Kong. We argue that consumers' demand for more varieties of goods and services drives firms to increase their adaptability to the consumers' needs and at the same time leads firms to reduce their production costs. To achieve these objectives, a process of vertical disintegration occurs whereby firms prefer to outsource to meet the demand for specialized parts and services. This in turn spawns an increase in the number of specialized firms that provide intermediate goods and services to an enlarged supply chain. When these chains spread across national borders they create a new form of international division of labor that leads to the fragmentation of the production process. We offer explanations for this stylized fact, and also discuss reasons for the geographical concentration of producer services.

In Section V, we discuss the underlying reasons for the growth of Hong Kong's producer service sector relative to its manufacturing sector in the past two decades. We argue that the opening up of the mainland Chinese economy has speeded up Hong Kong's transformation from an industrialized city to a center of manufacturing-related services. Statistics reveal that there has been a substantial increase in import/export trade between Hong Kong and the Chinese hinterland since 1979. We trace this increase to two sources. One source is the relocation and expansion of Hong Kong's manufacturing into the Chinese hinterland (which increases the volume of intermediate goods and services that Hong Kong exports to the Chinese hinterland for further processing) and the subsequent exports of the processed goods to the world market via Hong Kong. The other source is Hong Kong's increasingly important role as an intermediary for trade and investment between the Chinese hinterland and the rest of the world. The deregulation of China's foreign trade system challenges multinationals to spot trading opportunities, find trustworthy trading partners in China, and efficiently carry out transactions in an imperfect legal environment. Being a combination of East and West, Hong Kong is in a unique position to play the role of an intermediary. The imminent accession of China to the World Trade Organization (WTO) will open up more opportunities and create new challenges for Hong Kong in its role as the management and coordination

center for offshore manufacturing production and as an intermediary for trade and investment in the Asia Pacific region.

In Section VI, we outline the policy implications for Hong Kong as it evolves from a manufacturer to a world city. The dominance and continued vibrancy of Hong Kong's producer services will be a critical factor in maintaining and improving its economic competitiveness in the future.

Overall, by elucidating the interrelationship between manufacturing and services in Hong Kong, this study can help us focus on enhancing cost-effectiveness and productivity growth in the producer services. This in turn assists in improving the growth of productivity and the international competitiveness of Hong Kong's manufacturing and nonmanufacturing industries.

## **II. The Service Economy in Hong Kong, and Policy Issues**

### **A Taxonomy of Services**

Interest in producer services is relatively new and is most apparent in recent studies by Ginzberg and Vojta (1981), Gershuny and Miles (1983), Riddle (1986), and Daniels and Lever (1996). In general, the relative importance of the service sector was first inferred from the very rapid growth of industries called "business services" and "finance." Their studies, like those of many other economists, make widespread use of the taxonomy shown in Table 2.1 below, which uses the production-based method for estimating the Hong Kong Gross Domestic Product (GDP).

Producer services are typically identified as the total production in a particular subsector of the service sector. The choice of what is to be included in the producer services category varies from study to study. Table 2.1 provides a common classification that identifies producer services with finance, insurance, business services, and real estate. The growth of these types of services has been particularly significant in many economies and has become the focus of interest of economic geographers who study globalization and its consequences for the changing international division of labor and the emergence of world cities.

**Table 2.1: A Goods and Service Industry Taxonomy Classified by Production Activity**

<b>I. Goods Producing Sector</b>
Agriculture and Fisheries
Mining and Quarrying
Manufacturing
Construction
Utilities
<b>II. Service-Producing Sector</b>
<b>1. Distributive Services</b>
Imports/exports
Wholesale and Retail Trade
Transport, Storage, and Communications
<b>2. Consumer Services</b>
Restaurants and Hotels
Community and Personal Services
<b>3. Producer Services</b>
Finance, Insurance, Business Services, and Real Estate
<b>4. Government Services</b>
Government Services

Unfortunately, such a classification scheme for services takes a very limited view of what constitutes producer services, since it associates them with a particular type of service activity rather than viewing service as being embodied in the production of other goods. In reality, almost all services are purchased by both consumers and producers. Only the share of services bought by producers can properly be considered producer services. The classification scheme illustrated in Table 2.1 is both too narrow in the sense that it excludes all the other services, and inaccurate because many of the services produced by finance, insurance, business services, and real estate companies are purchased by final consumers.

In a pioneering study, Momigliano and Siniscalco (1982) evaluated the quantitative importance of all producer services in the output of the goods sector. Using input-output tables, they measured the direct and indirect input of producer services in the Italian economy and showed that they represented a very large and growing part of the entire service sector. Their approach is theoretically sounder than the one described above, since they measured all those services that can be properly classified as producer services. Unfortunately, however, their methodology cannot be applied in Hong Kong because of the absence of detailed input-output tables for the city.

In this study, we measure the level and growth of producer services in the Hong Kong economy, using an innovative technique first developed by Grubel and Walker (1989), which avoids the use of complex input-output calculations. The technique permits us to overcome a basic problem regarding available statistics compiled by the Census and Statistics Department in Hong Kong. Detailed descriptions of how we calculate statistics for the growth of producer services are available in Appendices I and II. It is sufficient to provide a general description of the methodology adopted here with reference to Table 2.2 below, which applies the expenditure-based method for estimating GDP to the service sector. Note that the entries in the consumer services and producer services categories are identical in this classification scheme. This reflects the idea that the same type of service can be used either for final consumption or as embodied services in the production of other goods.

**Table 2.2: An Alternative Goods and Service Industry Taxonomy with Service Sector Classified by Use of Expenditure**

<b>I. Goods-Producing Sector</b>
Agriculture and Fisheries
Mining and Quarrying
Manufacturing
Construction
Utilities
<b>II. Service-Producing Sector</b>
<b><i>1. Consumer Services Output</i></b>
Imports/Exports
Wholesale and Retail Trade
Transport, Storage, and Communications
Restaurants and Hotels
Community and Personal Services
Finance, Insurance, Business Services, and Real Estate
<b><i>2. Producer Services Output</i></b>
Imports/Exports
Wholesale and Retail Trade
Transport, Storage, and Communications
Restaurants and Hotels
Community and Personal Services
Finance, Insurance, Business Services, and Real Estate
<b><i>3. Government Services Output</i></b>
Government Services

The GDP accounts of Hong Kong contain a consistent time series on the total size of the service-producing sector of the economy, as measured by its value added or GDP.

*Consumer services output* as used here (to be distinguished from consumer services as described in Table 2.1) refers to all those services used in final consumption. Data on the purchase of *consumer services* are available from consumer expenditure surveys. These data are reliable and consistent, since they serve as the raw data for the calculation of consumer price and expenditure statistics and contain very detailed records on hundreds of goods and services bought by consumers. They provide estimates of spending on such services as finance, insurance, communication, transportation, computers, and restaurants.

*Producer services output* is estimated by subtracting consumer and government services output from total service sector output. Producer services therefore contain the output of the industries producing intermediate inputs (e.g., “business services,” “wholesale services”). It is important to be aware that they also include as a residual the output of all those industries widely viewed as serving mainly consumers (e.g., restaurants, hotels, transportation). A large fraction of the output of these industries is used by business and government as input into the production of additional goods and services.

*Government services output* is definitionally identical to those values based on the production estimates of GDP provided in Table 2.1. These are Census and Statistics Department estimates and are available from published GDP estimates.

It is important to note a likely downward bias in the estimation of producer services. Many of the services produced by the government are used as inputs by business. The most obvious of these are the output of the Trade and Industry Departments in Hong Kong, but most other government departments serve both consumers and business. Unfortunately, it is not possible to determine the relative magnitude of the two. By not allocating any of the government service output to the category of producer services, our procedure biases downward the estimate of the latter.

### **Changing Patterns of Producer, Consumer, and Government Services**

In the past two decades, service industries have grown rapidly in Hong Kong. Table A1 in Appendix III shows that nominal GDP contributed by total services increased from HK\$90.7 billion in 1980 to HK\$1050.4 billion in 1997. Table 2.3 summarizes the relative contribution of various economic activities to nominal GDP in selected years drawn from Table A2 in Appendix III. The percentage share of nominal GDP contributed by services increased from 67.5 percent in 1980 to an estimated 85.2 percent in 1997, while the corresponding figure for manufacturing decreased substantially, falling from 23.7 percent in 1980 to an estimated 6.5 percent in 1997.

**Table 2.3: Percentage Share of Total Services and Manufacturing in Nominal GDP in Selected Years**

	<b>Total Services</b>	<b>Manufacturing</b>
1980	67.5	23.7
1985	69.6	22.1
1990	74.5	17.6
1995	83.8	8.3
1996	84.4	7.3
1997*	85.2	6.5

\*1997 figures are our own preliminary estimates

From Table A8 in Appendix III we find that the pattern is very similar if we measure the relative contribution in terms of real GDP. Table 2.4 summarizes the relative contribution of various economic activities to real GDP in selected years. The percentage share of real GDP contributed by services increased from 74.1 percent in 1980 to an estimated 83.6 percent in 1997, while the corresponding figure for manufacturing decreased substantially, from 17.2 percent in 1980 to 9.0 percent in 1997.

**Table 2.4: Percentage Share of Various Services and Manufacturing in Real GDP in Selected Years**

	<b>Producer Services</b>	<b>Consumer Services</b>	<b>Government Services</b>	<b>Manufacturing</b>
1980	42.7	26.8	4.6	17.2
1985	37.5	30.0	6.7	15.9
1990	40.6	28.3	5.6	17.6
1995	48.3	27.1	6.0	11.3
1996	50.0	27.0	5.9	9.4
1997*	50.0	27.8	5.8	9.0

\*1997 figures are our own preliminary estimates

Table 2.5 reveals that services grew at annual real rates of 6.9 percent in 1980–89 and 6.4 percent in 1990–97. Manufacturing grew at an annual real rate of 8.7 percent in 1980–89 and then sharply declined at an annual real rate of –4.5 percent in 1990–97. The sharp decline of manufacturing in the 1990s is the result of the massive effect of Hong Kong firms relocating their production to the Chinese hinterland (especially the Pearl River Delta), which also explains the rapid development of the service sector in the same period.

**Table 2.5: Annual Average Growth Rates of Various Services and Manufacturing in 1980–89 and 1990–97**

	<b>1980–1989</b>	<b>1990–1997</b>
Manufacturing	8.7	-4.5
Total Services	6.9	6.4
Producer Services	6.3	7.9
Consumer Services	7.6	4.4
Government Services	9.2	5.2

In the period 1980–97, the share of service sector employment in Hong Kong grew from 42.1 to 79.3 percent, while the share of manufacturing employment fell from 45.9 to 9.8 percent (see Table 2.6). This increase in the share of service sector employment, and the corresponding decrease in the share of manufacturing employment, has led to the widespread perception that manufacturing in Hong Kong has declined. These figures have created public concern that the decline of Hong Kong’s manufacturing industry relative to the service industry may erode the city’s competitiveness.

**Table 2.6: Percentage Share of Total Services and Manufacturing Employment in Selected Years**

	<b>Total Services</b>	<b>Manufacturing</b>
1980	42.1	45.9
1985	54.0	36.1
1990	62.7	27.8
1995	77.6	13.4
1996	78.8	11.2
1997	79.3	9.8

A linear extrapolation of the employment trends for this period implies that by the year 2004, all employment in Hong Kong will be in the service sector. Many observers have expressed alarm at such a prospect. They point out that deindustrialization or hollowing out will retard productivity and economic growth, increase the proportion of low-quality service jobs, and adversely affect income distribution. This disastrous scenario represents at best unfounded pessimism and at worst faulty reasoning.

In response, three views have emerged. Proponents of the first view believe that a change in public policy from the present laissez-faire approach is necessary in order to reverse the decline. Advocates of this course of action include those who believe that Hong Kong’s future economic growth and competitiveness depend on a more aggressive industrial policy than the one currently in place. The most vocal supporters include some industrialists and academics. For somewhat different reasons, many labor groups, whose primary concern is to create employment opportunities for



manufacturing workers, are also among the supporters. The union view is probably misguided because unless industrial policy is used to prop up existing sunset industries in the manufacturing sector, any jobs created in manufacturing will emerge from new industries that would be looking for workers with a totally new set of skills. Existing manufacturing workers are unlikely to possess these skills.

Proponents of a second view believe that Hong Kong's transformation into a service economy is a natural outcome of market conditions that are not unique to the city. The service sector grows in almost every economy as it matures over time. In the long run, policies designed to arrest the decline of an economy's manufacturing sector are neither desirable nor practical. Furthermore, the shift in emphasis from manufacturing to service sector jobs has not resulted in unemployment in Hong Kong; rather, it has created a higher value-added economy.

Proponents of a third view, which is to varying degrees shared by the first two groups, argue that Hong Kong has to strengthen its institutional arrangements and policy initiatives to foster innovation and enhance its technological infrastructure as a means to add value and increase its competitiveness. Since innovation and technology are sector neutral and do not necessarily favor manufacturing over services or vice versa, there is no need to adopt a sector-specific industrial policy as such. The emphasis is on creating an enabling environment and removing artificial barriers that impede the emergence of new industries through innovation, and on adopting better and appropriate technology.

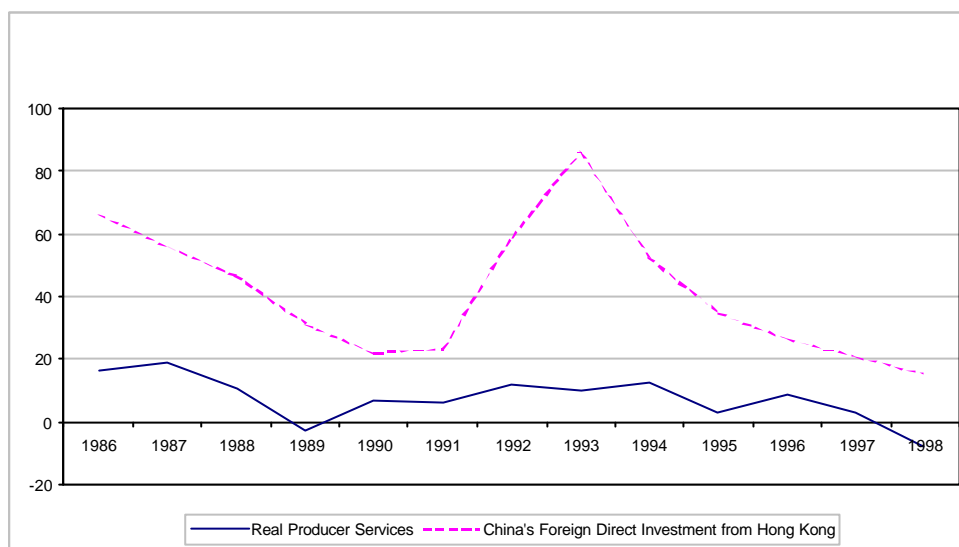
What actually happened in the past two decades is that Hong Kong transformed itself from an industrialized city into a service hub dominated by producer services. This is the result of the convergence of several factors, including the globalization of economic activity, rapid economic growth and integration of the Asia Pacific region, and the opening of China. Together they have ushered in an unprecedented and extremely rapid structural transformation of the Hong Kong economy from manufacturing into services.

In the late 1970s, when the Chinese hinterland launched its economic reform and adopted an open-door policy, many Hong Kong manufacturing firms relocated their labor-intensive production processes and lower value-added activities to the mainland to take advantage of the low production costs available there. However, higher value-added business activities related to manufacturing—producer services—continued to take place in Hong Kong. The relocation of manufacturing out of Hong Kong is, of course, not limited to the Chinese hinterland; it occurs throughout Asia. The Chinese hinterland is nevertheless home to approximately two-thirds of such manufacturing activity that has been relocated from Hong Kong. It is important to note that such relocation is often accompanied by a manifold increase in the scale of operation.

Figure 2.1 shows the close relationship between the percentage growth of real producer services and the percentage change in the value of utilized stock of foreign

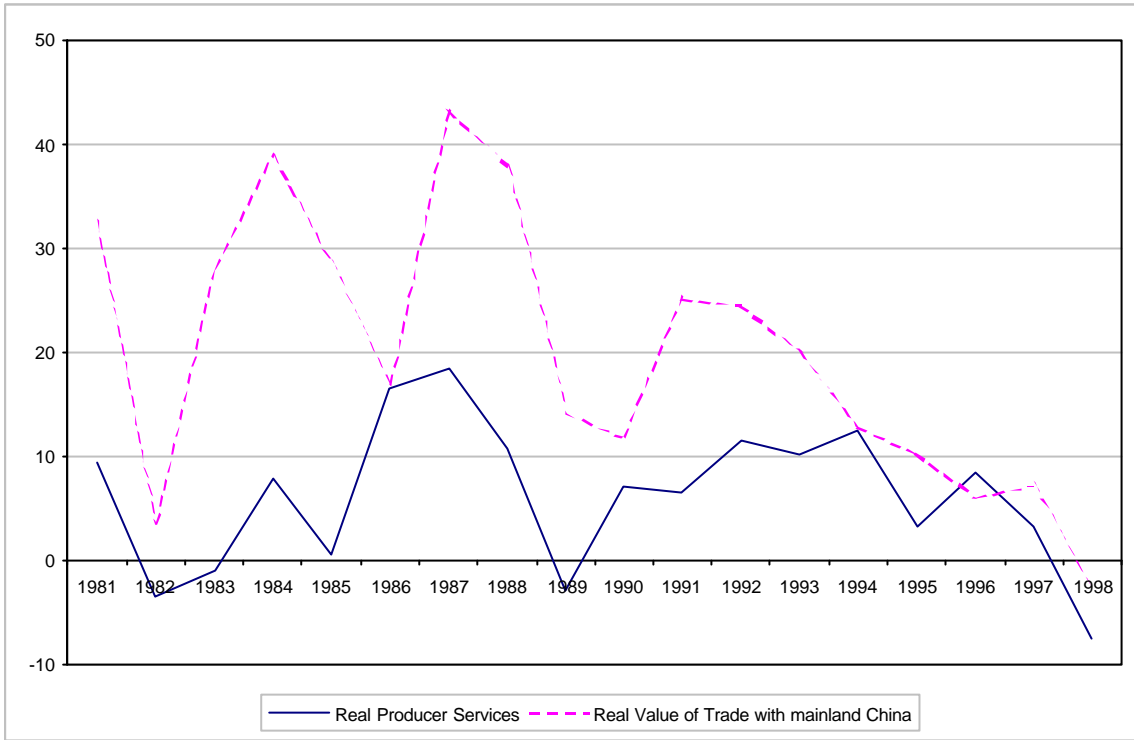
direct investments Hong Kong had made in the Chinese hinterland. These direct investments created a demand for China-related trade activities in Hong Kong and gave impetus to the growth of Hong Kong's reexport.

**Figure 2.1: Real Producer Services and China's Foreign Direct Investment from Hong Kong (Growth Rate in Percentage)**

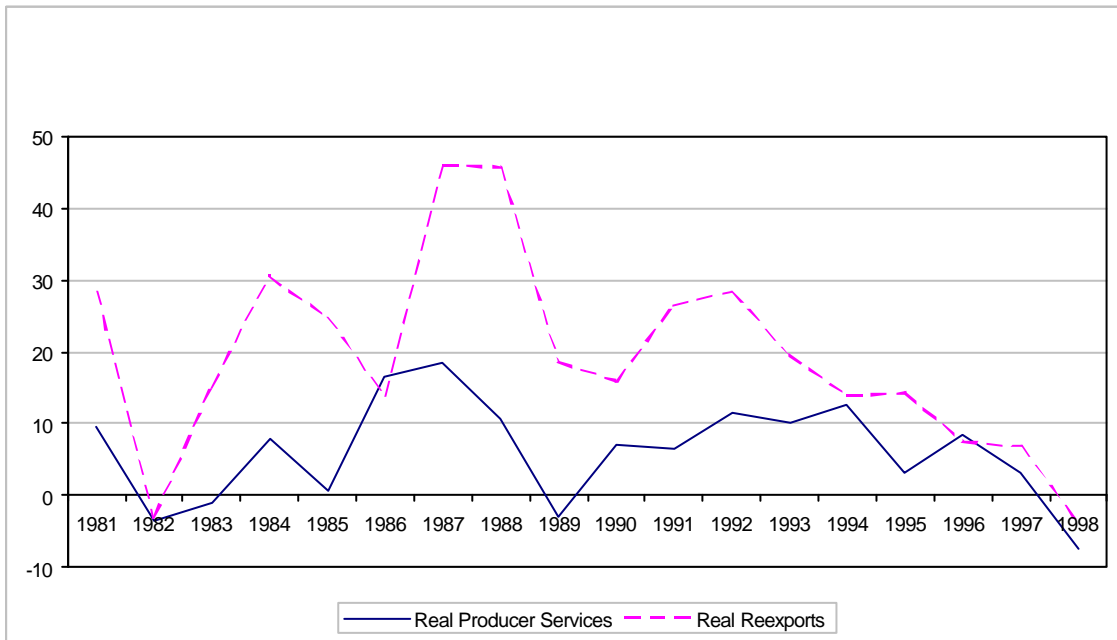


Figures 2.2 and 2.3 show clearly how the percentage growth of real producer services is closely related to (1) the percentage growth of the real value of all Hong Kong with mainland China, and (2) the percentage growth of real reexports from Hong Kong. If China gains admission into the WTO, then the process will continue to develop further, since uncertainty surrounding China's normal trade relations with the United States would be permanently resolved.

**Figure 2.2: Real Producer Services and Real Value of Trade with mainland China (Growth Rate in Percentage)**



**Figure 2.3: Real Producer Services and Real Reexports (Growth Rate in Percentage)**



## **The Size and Growth of Various Types of Service Industries**

According to government statistics, nongovernment services in Hong Kong are further classified into thirteen categories. These are

1. Wholesale trade
2. Retail trade
3. Import and export trade
4. Restaurants
5. Hotels
6. Transport, storage, and communications
7. Financing
8. Insurance
9. Real estate
10. Business services
11. Community, social, and personal services
12. Ownership of premises
13. Adjustment for financial intermediation services (residual category)

Table 2.7 selectively presents the statistics contained in Table A5 in Appendix III. These statistics show that wholesale trade, retail trade, restaurants and community, and social and personal services have declined in terms of their percentage contributions to total services. In the sample period, wholesale trade declined from an average of 2.3 percent in 1980–89 to 1.8 percent in 1990–97; retail trade declined from an average of 6.1 percent in 1980–89 to 4.3 percent in 1990–97; restaurants declined from an average of 4.6 percent in 1980–89 to 3.6 percent in 1990–97; and community, social, and personal services declined from an average of 21.2 percent in 1980–89 to 19.9 percent in 1990–97.

**Table 2.7: Percentage Share of Various Services in Total Services for Selected Years and Periods**

	1980	1997*	1980–89	1990–97
Wholesale trade	2.8	1.4	2.3	1.8
Retail trade	7.3	3.6	6.1	4.3
Import and export trade	15.8	20.7	17.8	21.1
Restaurants	4.4	2.8	4.6	3.6
Hotels	1.4	1.3	1.7	1.5
Transport, storage, and communications	10.9	10.7	11.7	11.9
Financing	9.7	11.9	9.1	11.2
Insurance	1.0	1.0	1.1	1.2
Real estate	20.1	12.8	13.2	13.0
Business services	3.4	5.1	4.3	4.8
Community, social, and personal services	17.9	21.0	21.2	19.9
Ownership of premises	13.3	16.3	14.5	14.8
Adjustment for financial intermediation services	-7.9	-8.6	-7.5	-9.0

\* 1997 figures are our own preliminary estimates

Sectors that have maintained their relative share in terms of contribution to total services between 1980–89 and 1990–97 include hotels (whose share went from an average of 1.7 to 1.5 percent); ownership of premises (whose share went from an average of 14.5 to 14.8 percent); transport, storage, and communications (whose share went from 11.7 to 11.9 percent); and real estate (whose share went from an average of 13.2 to 13.0 percent).

Sectors that have grown relatively fast between 1980–89 and 1990–97 are import and export trade (whose share rose from 17.8 to 21.1 percent); financing (whose share rose from 9.1 to 11.2 percent); insurance (whose share rose from an average of 1.1 to 1.2 percent); and business services (whose share rose from 4.3 in 1980–89 to 4.8 percent in 1990–97).

Overall, the growth of financing, import and export trade, insurance, and business services has contributed to the increasing importance of the service sector relative to the manufacturing sector in Hong Kong. These fast-growing areas of Hong Kong's service sector have characteristics that are strongly associated with producer services.

We have so far described in detail various types of services in terms of their production characteristics. We argued that services can also be divided into three categories in terms of their users: government services, consumer services, and producer services. Since the aim of this study is to understand the growth of producer services in Hong Kong, we now turn to the measurement of the size of this sector.

The Hong Kong government does not provide a direct measure of producer services. This is not surprising, because the classification of a service as a producer service or a consumer service is a function not of the service's physical attributes but of its economic purpose. The same service—for example, restaurant service—is considered a producer service when it is used by a business executive on assignment. But it is considered a consumer service when it is used by a tourist on vacation. Hence, the producer service industry is an economic construct, which at present does not exist as an official measurement statistic.

Hong Kong's producer services have to be estimated indirectly from the available data. GDP is compiled in two ways: one is expenditure based and the other is production based. The expenditure-based GDP gives the breakdown for the total government services and consumer services. The production-based GDP is the sum of the value added from the following six sectors: agriculture and fishing, mining and quarrying, manufacturing, utility, construction, and total services. By subtracting the nominal value of government services and consumer services based on the expenditure-based GDP from the nominal value of total services based on the production-based GDP, we obtain the nominal value of producer services as a residual category.

To assess the contribution of producer services to the economy, we further have to derive the real values of producer services. We first calculate the real value added of all economic activities (i.e., real GDP) and of the goods-producing sectors—agriculture and fisheries, mining and quarrying, manufacturing, utilities, and construction. We then calculate the real value added of total services by subtracting the real value added of the goods-producing sectors from the real value added of all economic activities. Finally, we obtain the real value of producer services by subtracting the real values of government services and consumer services from the real value added of total services. The price deflator of producer services is the ratio between the nominal value and real value of producer services. (For more details, see Appendices I and II.). The results of our calculations are tabulated in detail in Appendix III. In our discussions below we shall draw on these figures selectively.

In Figure 2.4 the size of the total service sector and its three components are shown as a percentage of real GDP for the years 1980–97. The top line shows the clear upward trend in the basic series. Small fluctuations around the trend are correlated with business cycles. These cycles have resulted in greater swings in producer service than in consumer service output, which explains why the 1981–82 and the 1989 recession shows that the share of producer services dipped slightly without a corresponding change in the share of consumer service output.

**Figure 2.4: Types of Services as a Share of Real GDP (%)**

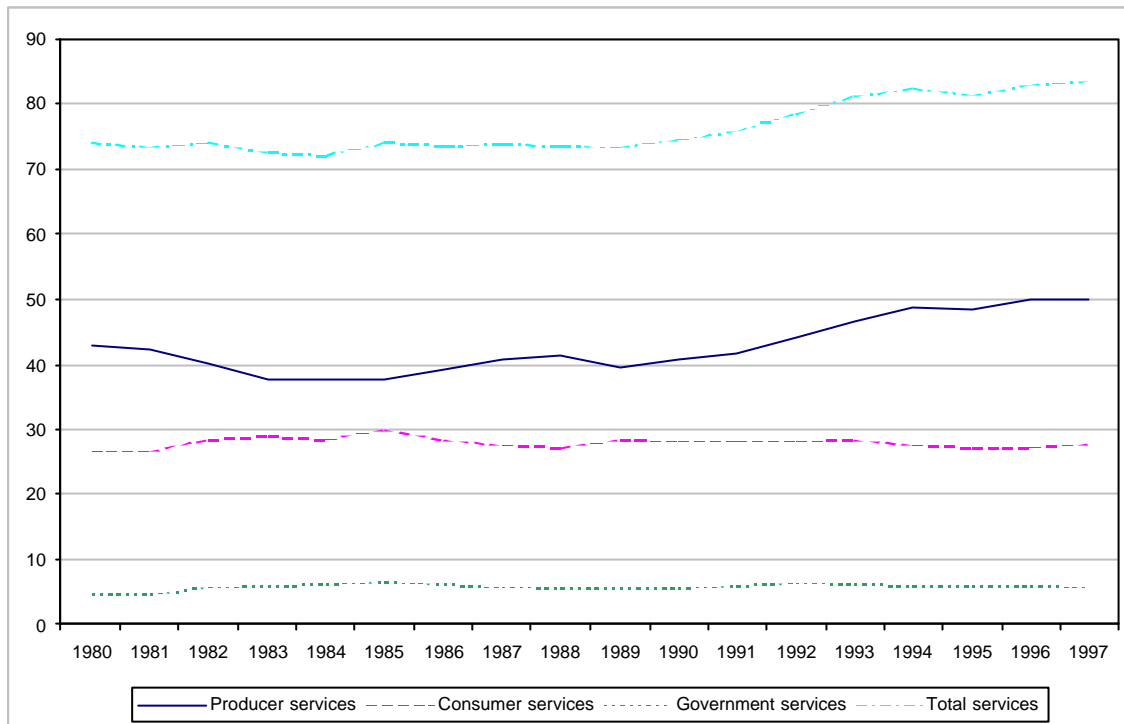


Figure 2.4 indicates that in 1980 consumer and government services represented 26.8 percent and 4.7 percent, respectively, of GDP, while producer services held the largest share at 42.7 percent. Since then, the share of government services increased to 5.8 percent in 1997. Producer services trended upward, and by the end of the period had reached 50.0 percent. Consumer services increased very modestly to 27.8 percent by 1997.

For the purposes of the present analysis, we are most interested in rates of growth rather than levels of the types of services. Relative growth rates are brought out effectively in Figure 2.5, which uses the information contained in Figure 2.4 but expresses the share of GDP of each sector in 1980 as an index of 100 and traces the development of this share through time. According to this figure, total services during this period have risen by about 12.3 percent, government services have risen by about 25.4 percent, and consumer services have risen by about 4.6 percent, all expressed as a share of GDP. The growth in the share of producer services by about 16.9 percent has been very rapid. Although government services have been growing even more rapidly, however, they are a much smaller part of total services and are far less important than producer services in terms of their overall size contribution to total GDP.

**Figure 2.5: Growth of Types of Services as a Share of Real GDP (1980=100)**

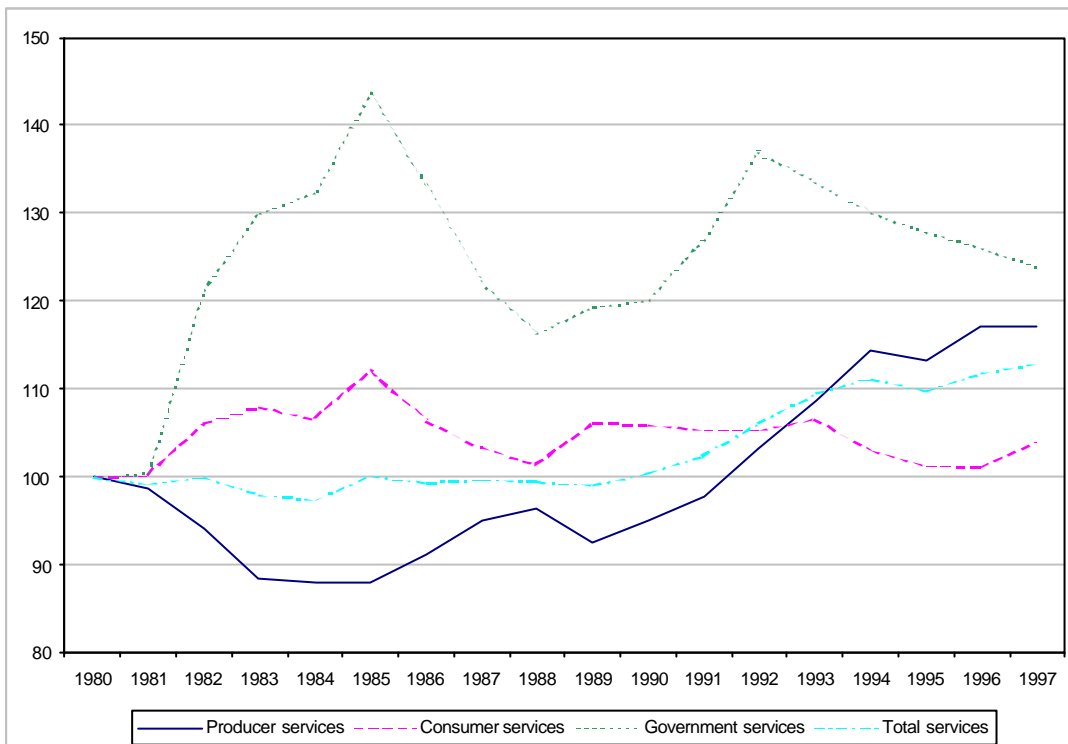
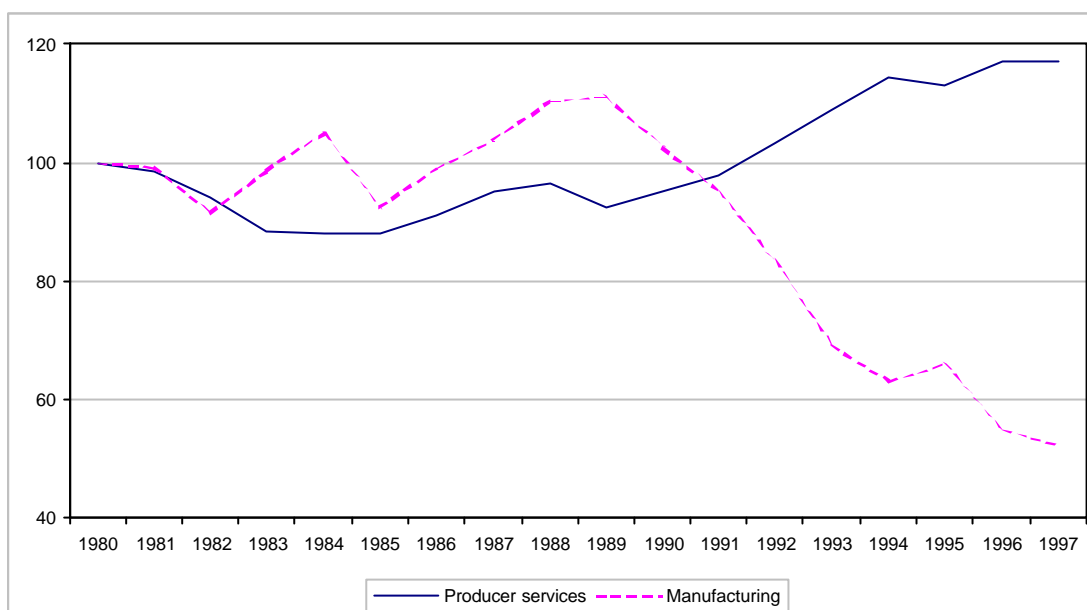


Figure 2.6 is similar to Figure 2.5 but plots the real value added of manufacturing and producer services. According to this figure, producer services grew very robustly from the late 1980s onwards. At about the same time, we witnessed the decline of the manufacturing sector. This is consistent with the hypothesis that the relocation of the manufacturing industry to the Chinese hinterland and the rest of Asia paved the way for the growth of producer services in Hong Kong. Figure 2.6 also shows that during this period, the share of manufacturing expressed as a share of GDP fell by about 57.6 percent. This decline is significantly higher than the corresponding rise in the share of producer services of about 16.9 percent. One would expect this to be the case, since the share of manufacturing in real GDP fell from 17.2 percent in 1980 to 9.0 percent in 1997, whereas the share of producer services in real GDP rose from 42.7 percent in 1980 to 50.0 percent in 1997.



**Figure 2.6: Growth of Manufacturing and Producer Services as a Share of Real GDP (1980=100)**



We now examine the percentage contribution to real producer services made by different types of producer services measured in real value added terms. Table 2.8 shows these percentages for various illustrative years. More comprehensive figures can be found in Table A11 in Appendix III.

**Table 2.8: Percentage Share of Various Services in Total Producer Services for Selected Years and Periods**

	1980	1997*	1980-89	1990-97
Wholesale trade	5.0	2.6	4.3	3.3
Retail trade	5.8	3.0	5.2	3.5
Import and export trade	28.1	37.7	34.1	37.9
Restaurants	1.2	0.8	1.3	1.0
Hotels	2.5	2.3	3.2	2.7
Transport, storage, and communications	8.7	8.8	10.1	9.7
Financing	15.4	19.4	15.7	18.2
Insurance	0.3	0.4	0.42	0.44
Real estate	17.9	11.6	11.7	11.7
Business services	6.0	9.2	8.2	8.6
Community, social, and personal services	1.6	1.9	2.0	1.8
Ownership of premises	10.6	13.4	12.5	12.0
Adjustment for financial intermediation services	-3.0	-10.9	-8.9	-10.7

\* 1997 figures are our own preliminary estimates

The contribution of wholesale and retail trade to real producer services decreased substantially in the past two decades, falling from 4.3 percent in 1980–89 to 3.3 percent in 1990–97 and from 5.2 percent in 1980–89 to 3.5 percent in 1990–97, respectively. Restaurants and hotels also decreased their contribution to real producer services from 1.3 percent in 1980–89 to 1.0 percent in 1990–97 and from 3.2 percent in 1980–89 to 2.7 percent in 1990–97, respectively.

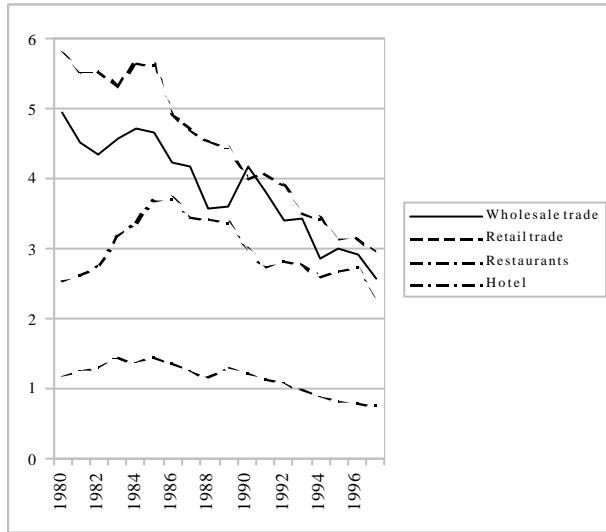
The contributions of community, social, and personal services and services derived from the ownership of premises slightly decreased their contribution to real producer services from 2.0 percent in 1980–89 to 1.8 percent in 1990–97 and from 12.5 percent in 1980–89 to 12.0 percent in 1990–97, respectively. The percentage contribution to real producer services made by real estate services was more stable, remaining at 11.7 percent in both periods. Similarly, the contributions of transport, storage, and communications services modestly decreased their contribution to real producer services from 10.1 percent in 1980–89 to 9.7 percent in 1990–97.

The contribution of insurance services and business services to producer services increased from 0.42 percent in 1980 to 0.44 percent in 1997 and from 8.2 percent in 1980–89 to 8.6 percent in 1990–97, respectively. The share of real producer services contributed by import and export trade increased substantially from 34.1 percent in 1980 to 37.9 percent in 1997. The percentage contribution made by financing to real producer services is most spectacular; it increased from 15.7 percent in 1980 to 18.2 percent in 1997.

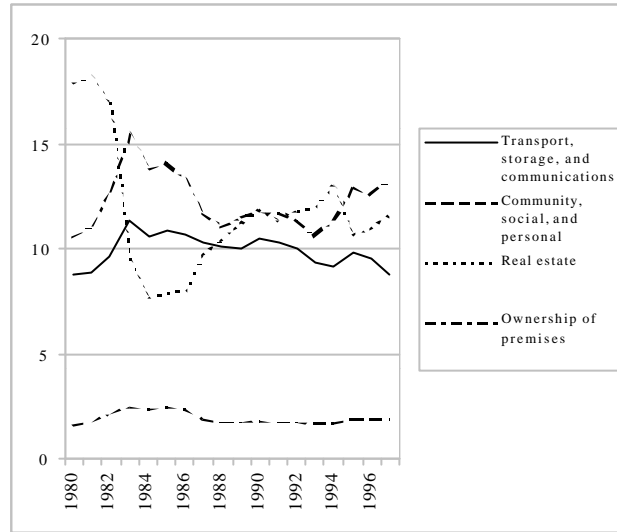
Figures 2.7a–c present visually the percentage contribution of the various types of producer service to total real producer services. They are grouped into three separate figures according to whether the sectors have tended to decline, remain stable, or rise over time.

Next we turn to rates of growth rather than levels of the various types of producer services. Relative growth rates are brought out effectively in Figures 2.8a–c, which uses the information contained in Tables 2.7 and 2.8 but expresses the share of each type of producer service in 1980 as an index of 100 and traces the development of this share through time.

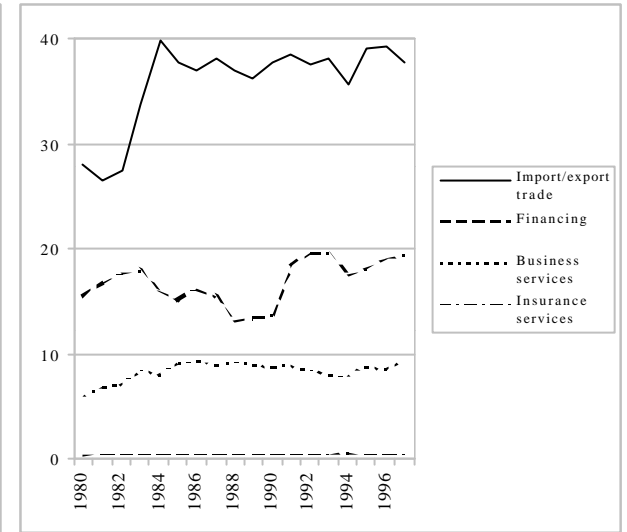
**Figure 2.7(a): Component Shares in Real Producer Services (%)**



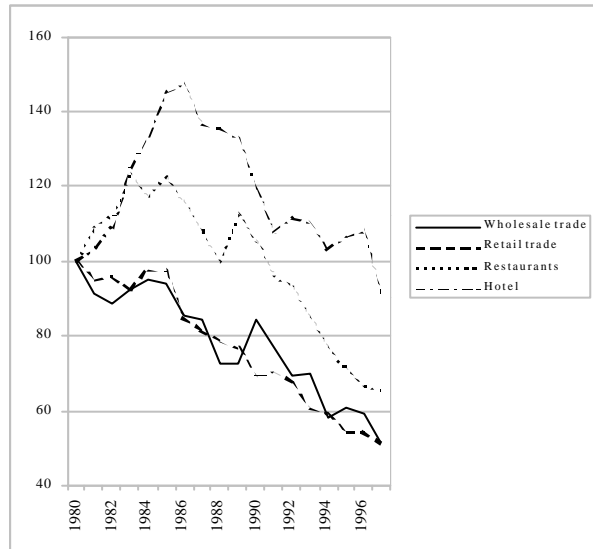
**Figure 2.7(b): Component Shares in Real Producer Services (%)**



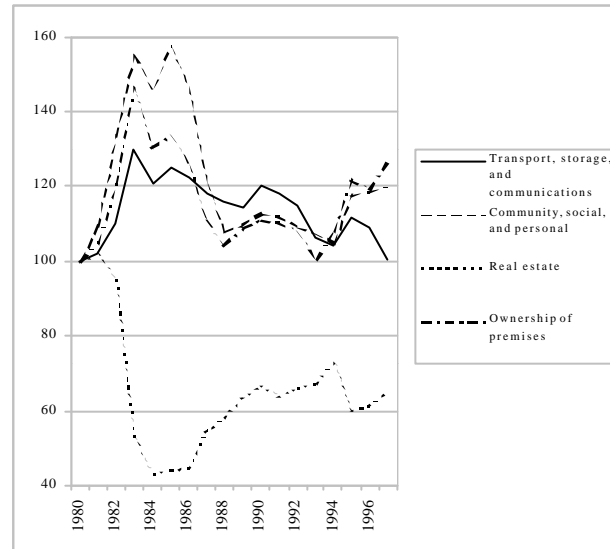
**Figure 2.7(c): Component Shares in Real Producer Services (%)**



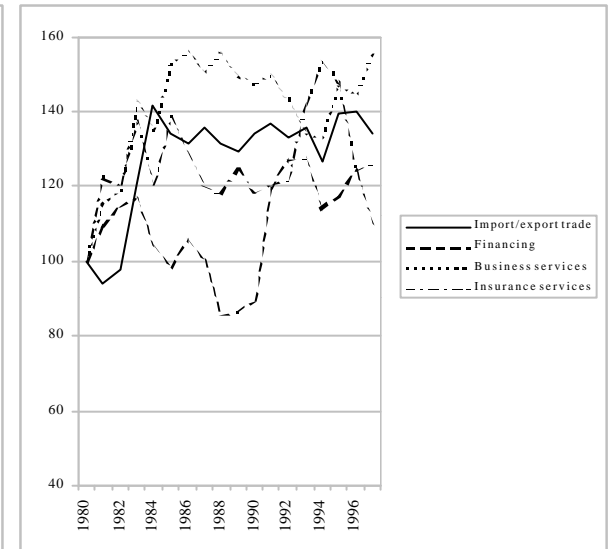
**Figure 2.8(a): Growth of Component Shares in Real Producer Services (1980=100)**



**Figure 2.8(b): Growth of Component Shares in Real Producer Services (1980=100)**



**Figure 2.8(c): Growth of Component Shares in Real Producer Services (1980=100)**



According to Figures 2.8a–c, producer services that have experienced a significant relative decline of their shares in total producer services of about 2 to 3 percent include wholesale trade and retail trade. Restaurants, hotels, transport, storage and communications, real estate, community, social and personal services, and services from ownership of premises all experienced a modest decline of about 0 to 1 percent. Insurance and business services experience a modest increase of about 0 to 1 percent. Producer services in financing showed an increase of 4.7 percent, and import and export trade showed a phenomenal increase of 7.2 percent.

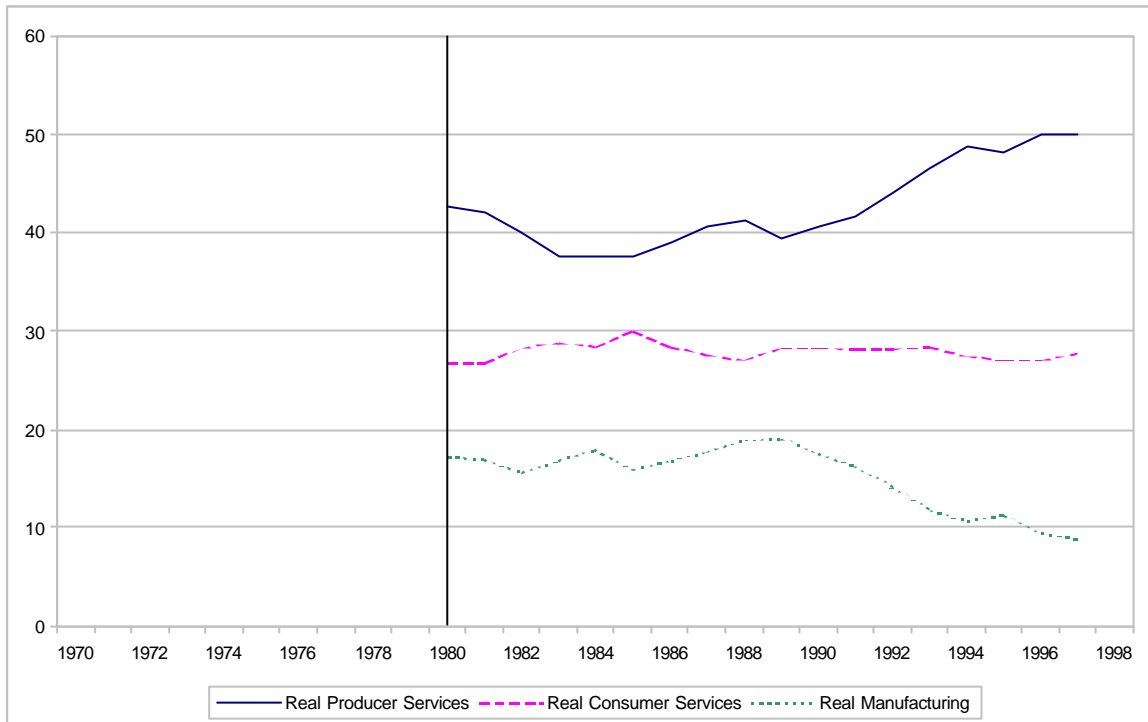
Insurance, financing, import-export trade, and business services have led the growth of total real producer services. Figures 2.8a–c reveal that the growth mainly occurred in the late 1980s and early 1990s. The rise of producer services, and especially of the above components, has transformed Hong Kong from a center of manufacturing industries into a hub for managing outsourcing and financial intermediation activities. Concurrent with this development, the share of real estate for producer services, which includes production facilitates in Hong Kong, has declined.

### **III. International Comparisons**

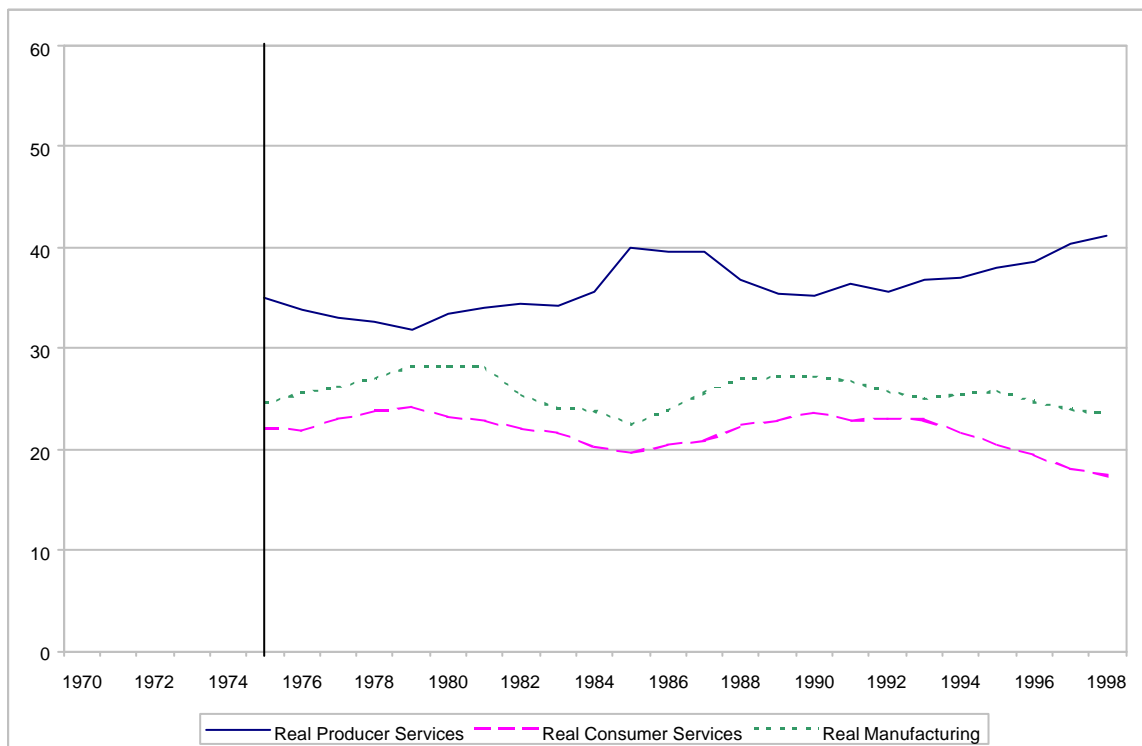
The rise of the producer service industry in Hong Kong and the relative decline of the manufacturing industry is a common pattern of economic development found in most developed economies. To gain an international perspective, we study this pattern of development in six economies at different stages of development, namely Hong Kong, Singapore, Taiwan, South Korea, Japan, and the United States.

Hong Kong and Singapore are both highly developed city economies at approximately the same stage of development measured in terms of per capita GDP. Figures 3.1 and 3.2 show that producer services are more important than consumer services in both Hong Kong and Singapore throughout the periods for which data is available. Together consumer and producer services dominate economic activity in both economies. Manufacturing is fairly small as a domestic activity in Hong Kong—even smaller than consumer services. In Singapore, manufacturing is larger than consumer services but much smaller than producer services.

**Figure 3.1: Hong Kong ¾ Selected Economic Activities as a Share of Real GDP (%)**

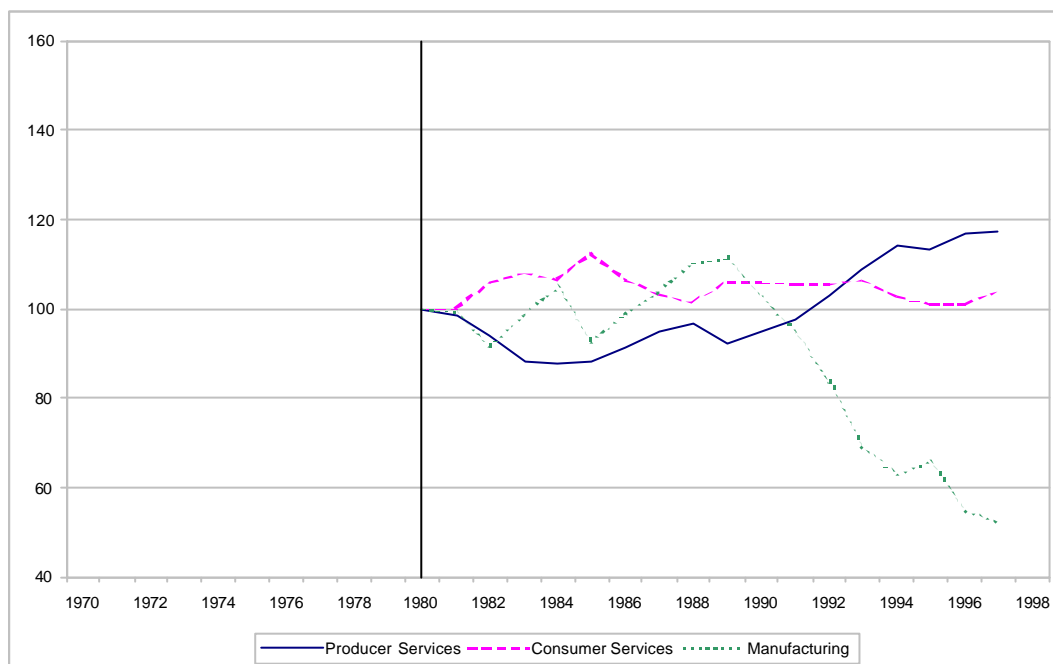


**Figure 3.2: Singapore ¾ Selected Economic Activities as a Share of Real GDP (%)**

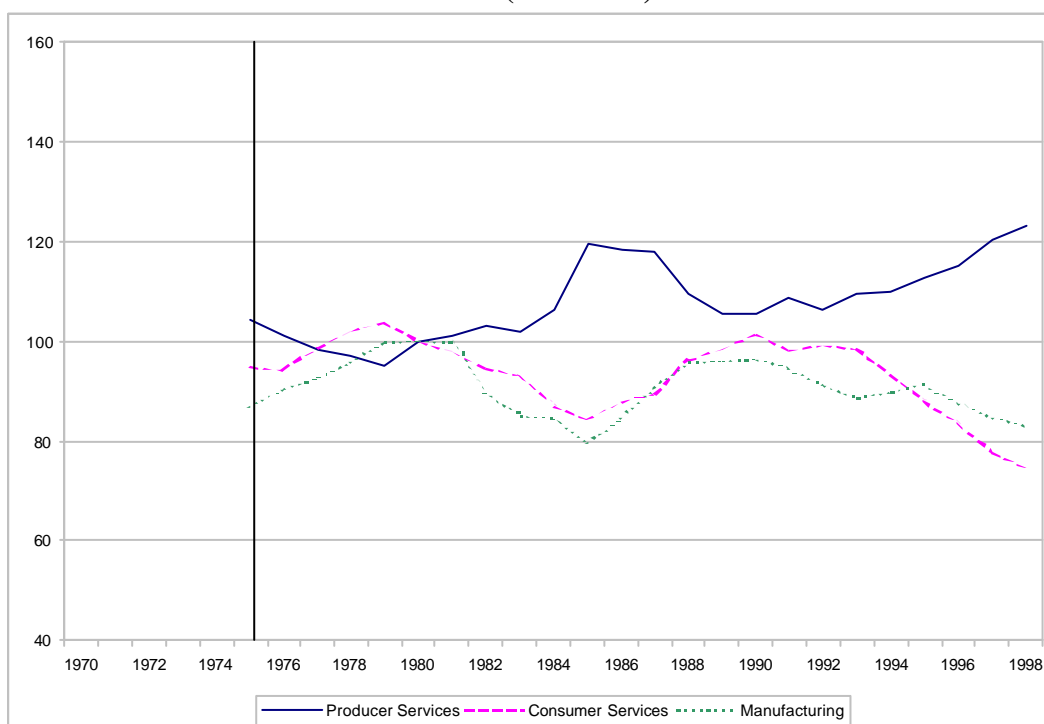


The greatest interest lies in rates of growth rather than in levels of these components of GDP. Relative growth rates are effectively illustrated in figures 3.3 and 3.4, which express the share of each component in GDP in 1980 as an index of 100 and trace the development of this share through time. It is evident that producer services have grown rapidly in both Hong Kong and Singapore. Also noteworthy is the rapid decline of the manufacturing sector in Hong Kong after the late 1980s.

**Figure 3.3: Hong Kong's Growth of Selected Economic Activities as a Share of Real GDP (1980=100)**

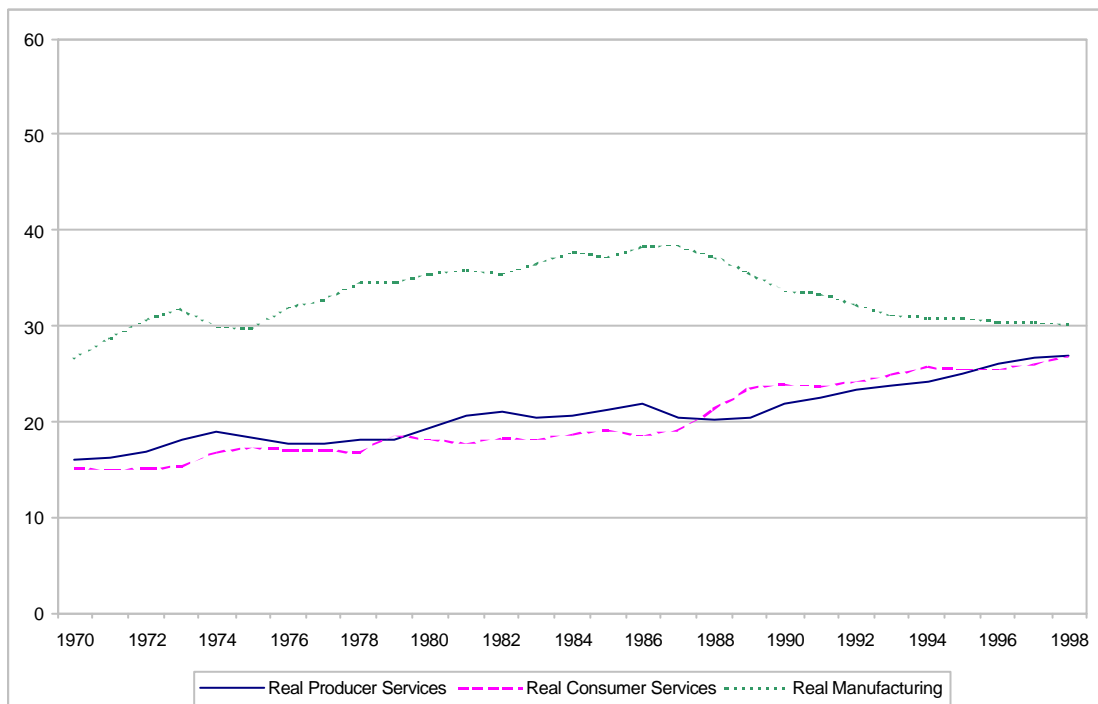


**Figure 3.4: Singapore's Growth of Selected Economic Activities as a Share of Real GDP (1980=100)**



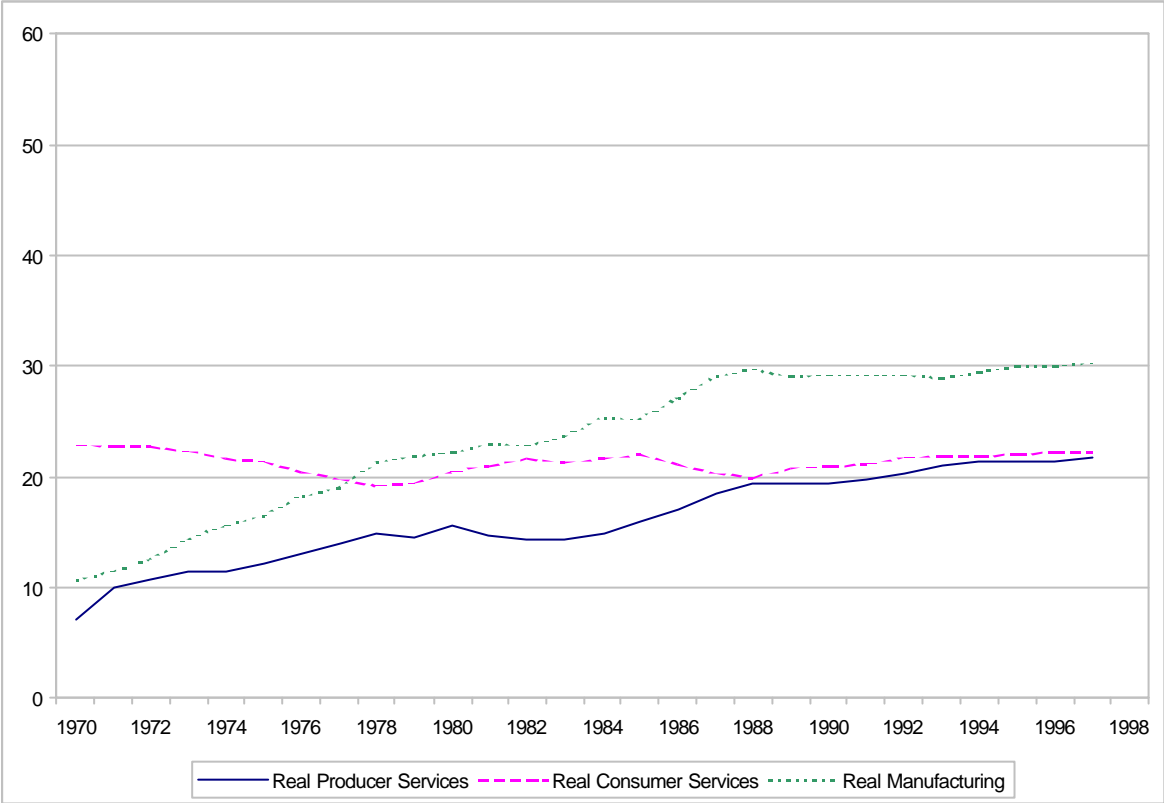
Taiwan and South Korea are newly industrialized economies whose standard of living is distinctly lower than that of Hong Kong and Singapore. The former are, however, highly successfully industrialized open economies. Figures 3.5 and 3.6 show that although producer services in both Taiwan and South Korea are rising quite rapidly, however, the producer service sector is much smaller than that in Hong Kong and Singapore. The size of the producer service sector is smaller than the manufacturing sector in both Taiwan and South Korea. Taiwan's producer service sector is about the same size as its consumer service sector, but South Korea's producer service sector has been smaller than its consumer service sector until the most recent decade. In both economies, the manufacturing sector is highly dominant; however, there is evidence that the relative size of the Taiwan manufacturing sector has begun to decline in the past decade. This contrasts strongly with the case of South Korea, where the manufacturing sector has continued to grow.

**Figure 3.5: Taiwan's Selected Economic Activities as a Share of Real GDP (%)**



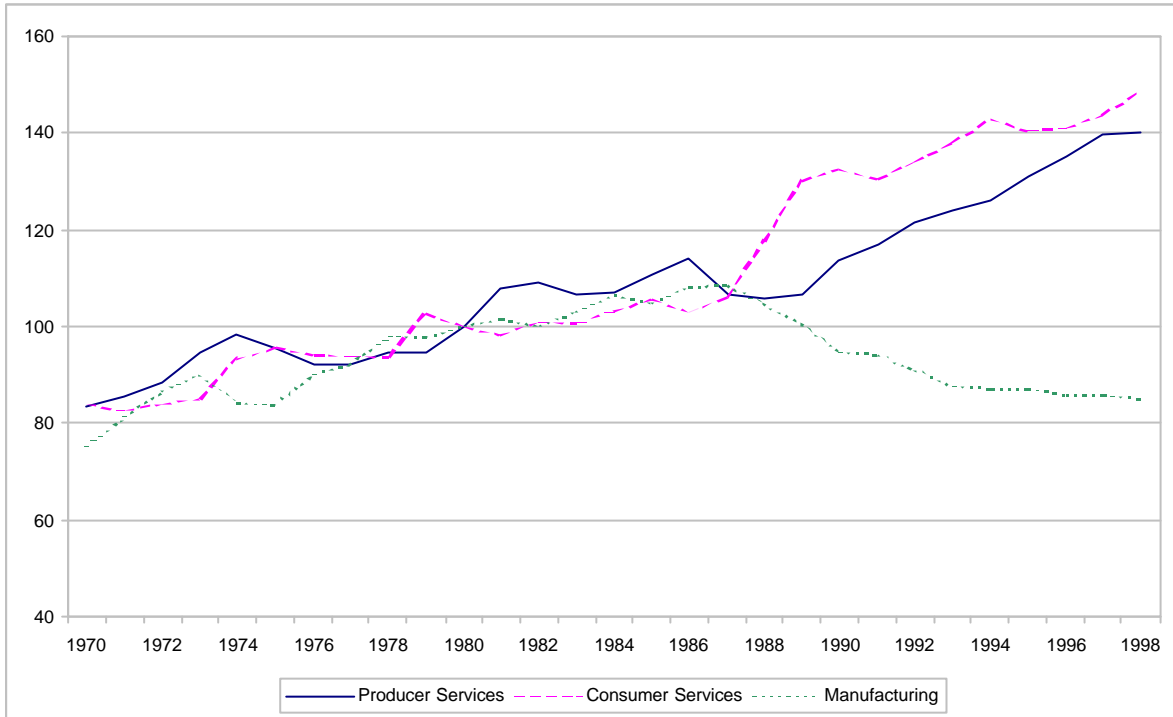


**Figure 3.6: South Korea's Selected Economic Activities as a Share of Real GDP (%)**

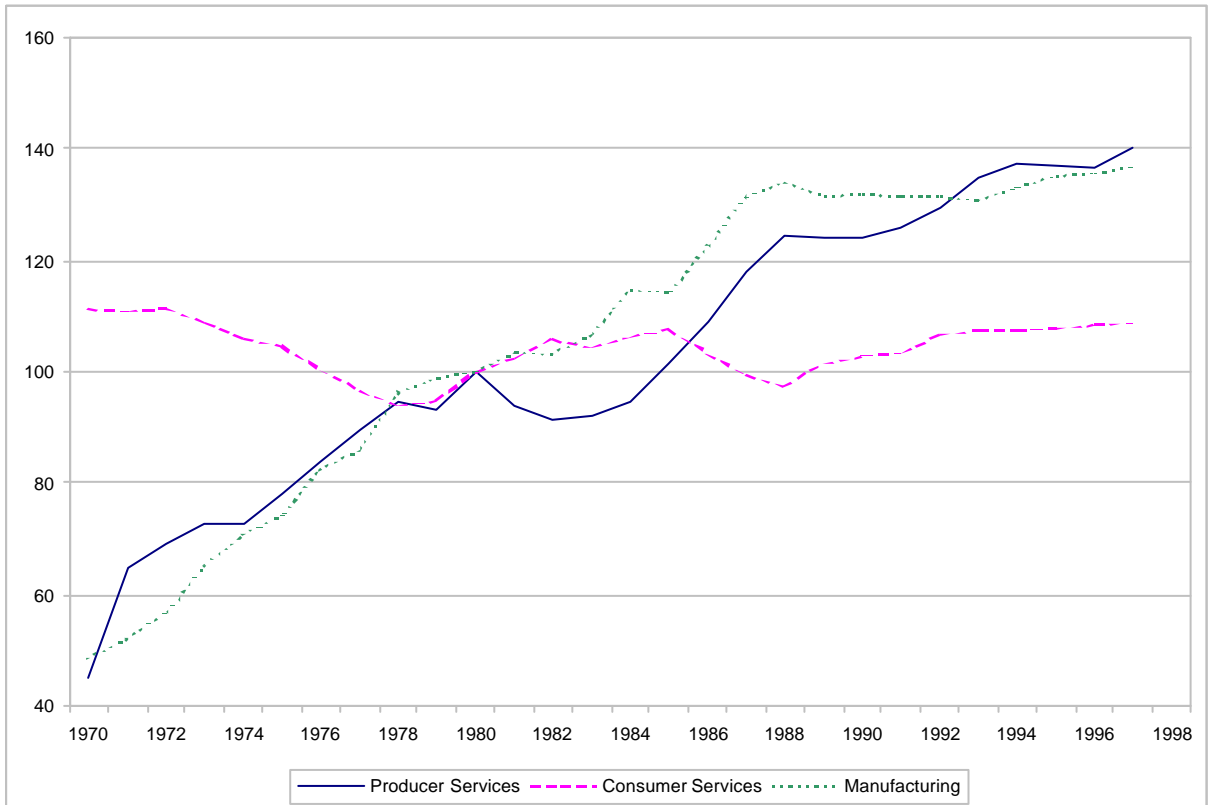


We next examine the rates of growth of these components of GDP in Taiwan and South Korea. Relative growth rates are brought out effectively in figures 3.7 and 3.8, which express the share of each component in GDP in 1980 as an index of 100, and trace the development of this share through time. As is evident, producer services have been growing very rapidly in both Taiwan and South Korea for the past thirty years. Manufacturing has grown as rapidly as producer services in South Korea, but has declined in Taiwan since the 1980s.

**Figure 3.7: Taiwan's Growth of Selected Economic Activities as a Share of Real GDP (1980=100)**

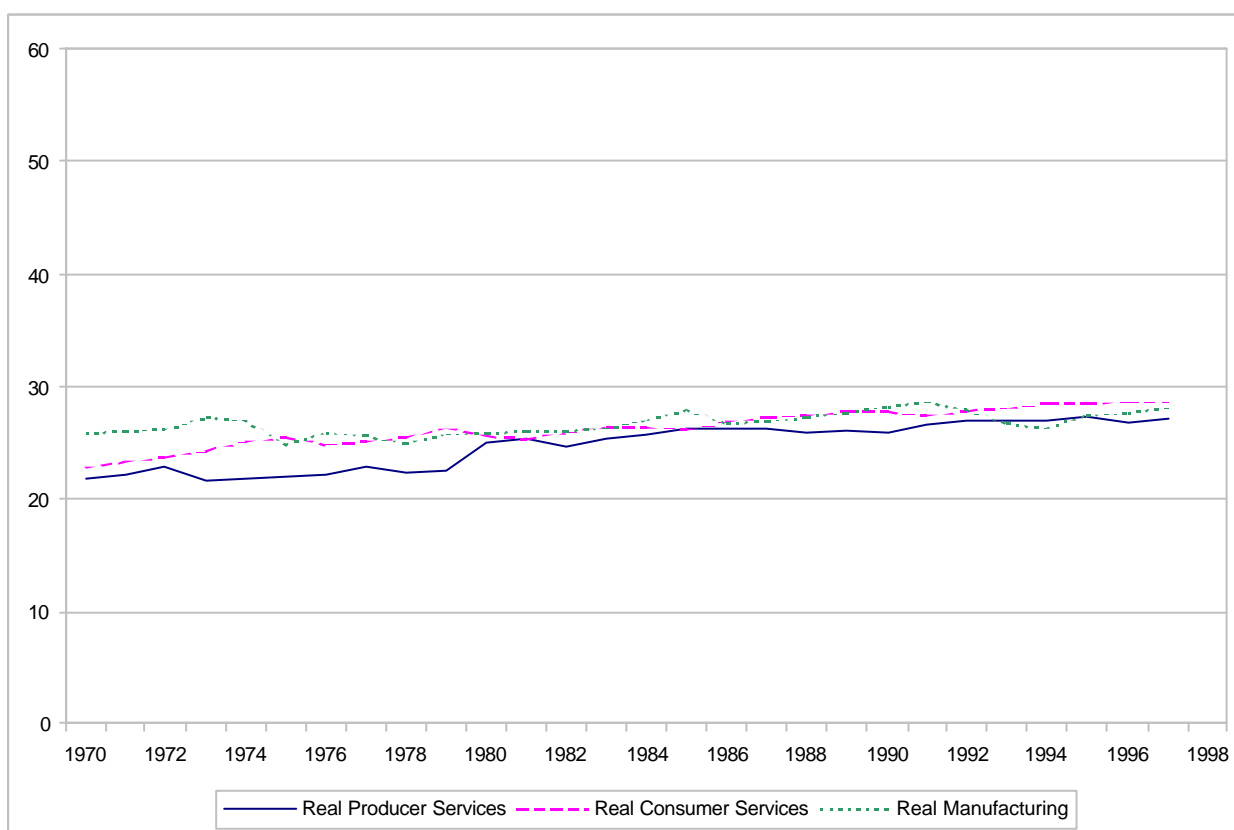


**Figure 3.8: South Korea's Growth of Selected Economic Activities as a Share of Real GDP (1980=100)**

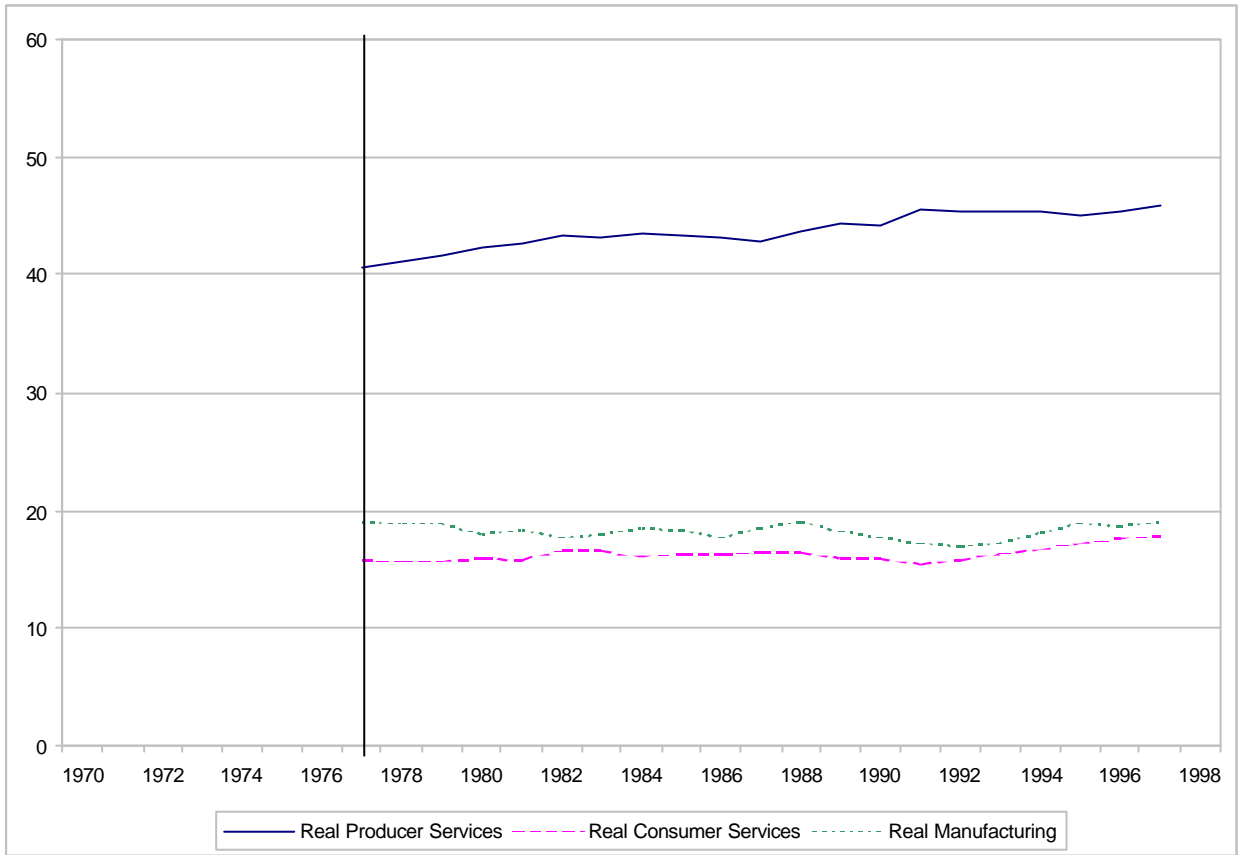


Japan and the United States are two of the most developed economies in the world and are vastly larger than all the other Asian economies considered here. Figure 3.9 shows that in Japan, all three sectors—producer services, consumer services, and manufacturing—have occupied approximately the same size share of the economy throughout the past thirty years. By contrast, Figure 3.10 shows that producer services are by far the most dominant sector in the U.S. economy. It is more than twice the size of both consumer services and manufacturing. In both economies, there has been a slight tendency for producer services to rise over time.

**Figure 3.9: Japan's Selected Economic Activities as a Share of Real GDP (%)**

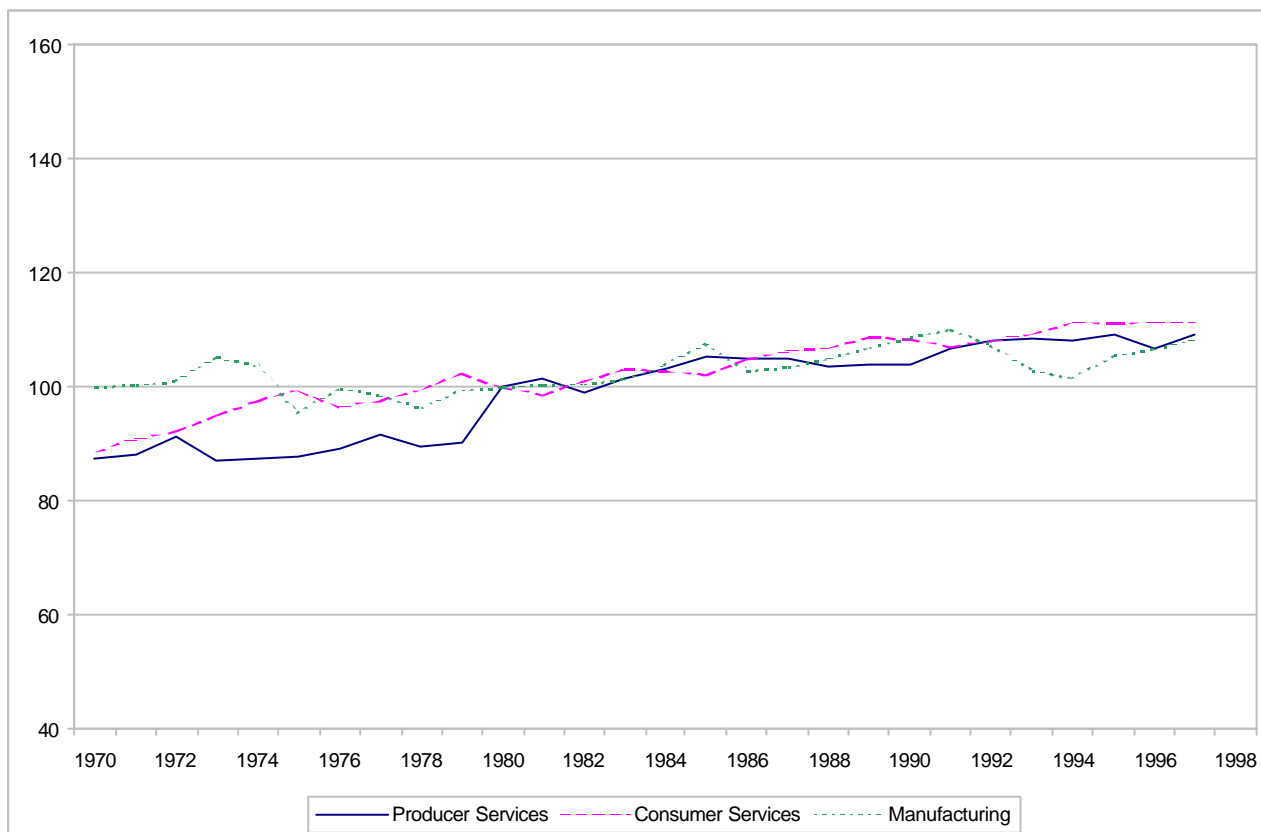


**Figure 3.10: United States Selected Economic Activities as a Share of Real GDP (%)**

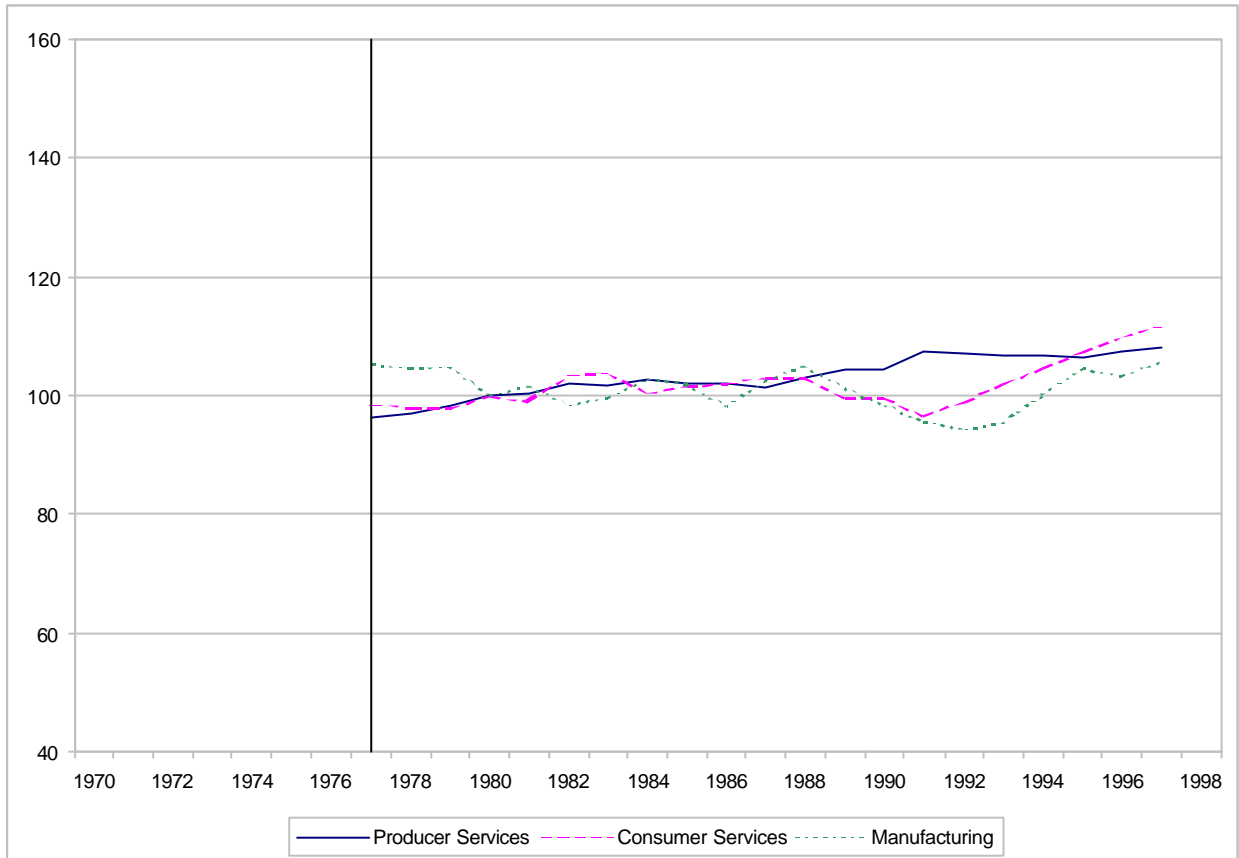


Figures 3.11 and 3.12 show the rates of growth of these components of GDP for Japan and the United States. There is a discernible pattern of modest growth in producer service over time in both economies, and a slightly weaker pattern of growth in both economies' manufacturing sectors.

**Figure 3.11: Japan's Growth of Selected Economic Activities as a Share of Real GDP (1980=100)**



**Figure 3.12: United States<sup>3/4</sup>Growth of Selected Economic Activities as a Share of Real GDP (1980=100)**



Studying these three pairs of economies is especially useful for helping us understand the pattern of growth of producer services in an economy. In the most advanced economies—those of Japan and the United States—producer services are a relatively large component of the economy and appear to be still growing, though at a modest rate. In the rapidly industrializing new economies of Taiwan and South Korea, producer services are growing at a very rapid rate, although their share in the economy is smaller relative to those found in Japan and the United States. In Hong Kong and Singapore, producer services are a dominant part of the economy and have been growing rapidly as well.

Table 3.1 shows the percentage share of manufacturing and producer services in real GDP for the years 1977, 1987, and 1997 in these six economies. More detailed figures are available in Tables A8, A19, A22, A25, A28, and A31 in Appendix III.

**Table 3.1: Share of Manufacturing and Producer Services in real GDP—A  
Comparison of Six Economies for Selected Years**

	Manufacturing			Producer Services		
	1977	1987	1997	1977	1987	1997
Hong Kong	n.a.	17.8	8.96	n.a.	40.6	50.0
Singapore	26.2	25.6	23.9	33.0	39.6	40.4
South Korea	19.1	29.1	30.3	14.0	18.4	21.9
Taiwan	32.7	38.4	30.5	17.7	20.4	26.8
Japan	25.6	26.8	28.1	22.9	26.2	27.2
United States	19.0	18.5	19.1	40.7	42.9	45.8

Table 3.1 shows that the percentage contribution by producer services to real GDP in Japan rose from 22.9 percent in 1977 to 26.2 percent in 1987, and to 27.2 percent in 1997. The percentage contribution by manufacturing rose from 25.6 percent in 1977, to 26.8 percent in 1987, and to 28.1 percent in 1997. Table 3.1 also shows that the percentage contribution to real GDP by producer services in the United States was very high and rose steadily from 40.7 percent in 1977, to 42.9 percent in 1987, to 45.8 percent in 1997. Manufacturing remained at more or less the same level during this period: it was at 19.0 percent in 1977, 18.5 percent in 1987, and 19.1 percent in 1997. The slow increases of these sets of figures reflect the fact that both the Japanese and the U.S. economies are maturing.

The fact that Japan's manufacturing sector is relatively larger than its producer service sector when compared to the United States's manufacturing and producer service sectors is noteworthy. To the extent that producer services are associated with greater "roundaboutness" (i.e., the state of encompassing more stages of production and employing an increasing number of intermediate inputs) or specialization of the production process, one would have to infer that although the U.S. economy is less industrialized than the Japanese economy, it is probably more productive. While this proposition appears to be well accepted today because of the prolonged stagnation of the Japanese economy in the past decade, it would have been controversial in the 1980s, when the world was more enamored with Japanese economic power. The underdevelopment of the producer service sector in Japan could be interpreted as a result of the highly suppressed Japanese service sector as a whole, and this may well be considered an inefficiency of the Japanese economic system.

The comparison between South Korea and Taiwan is also revealing. They are both successful new industrializing economies but are clearly less developed than either Japan or the United States. Both governments have also promoted manufacturing industries, but South Korea has been more aggressive in this regard than Taiwan. It is not surprising that the percentage contribution to real GDP is higher in both South Korea (30.3 percent in

1997) and Taiwan (30.5 percent in 1997) than in the United States (19.1 percent in 1997), but is not too different from that in Japan (28.1 percent in 1997). However, there are interesting differences between South Korea and Taiwan. The percentage contribution to real GDP by manufacturing in South Korea rose steadily from 19.1 percent in 1977 to 29.1 percent in 1987 to 30.3 percent in 1997. In contrast, the percentage contribution to real GDP by manufacturing in Taiwan increased from 32.7 percent in 1977 to 38.4 percent in 1987 and then fell to 30.5 percent in 1997. This may well suggest that Taiwan is at a more advanced state of industrialization than South Korea, and is shifting to a service economy.

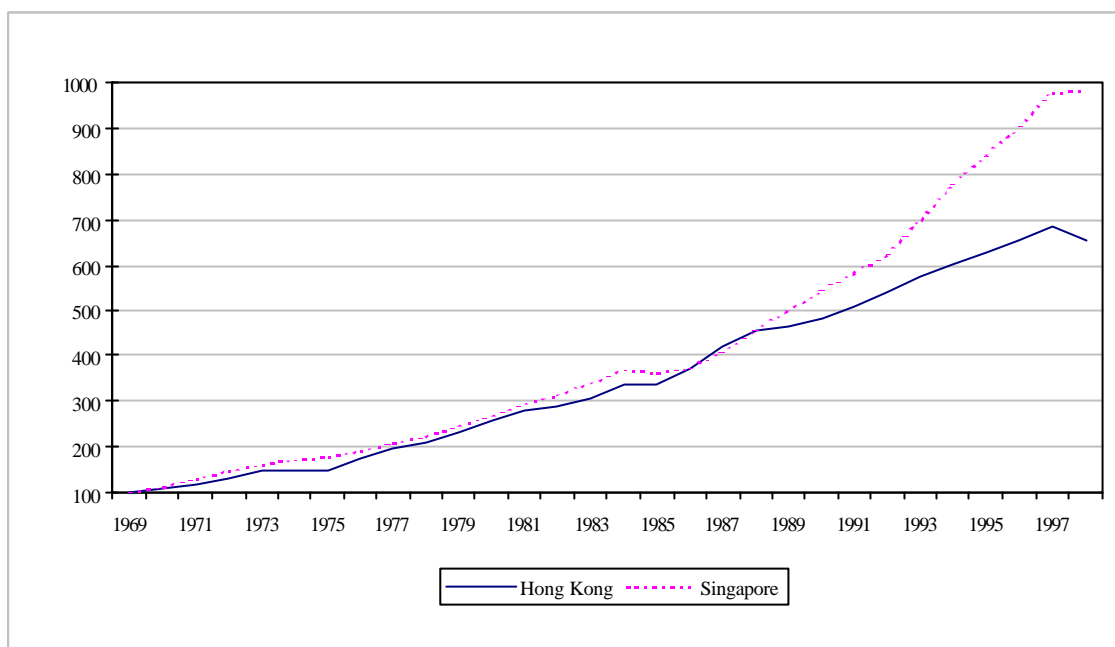
The share of producer services in real GDP has been rising rapidly in South Korea; it increased from 14.0 percent in 1977 to 18.4 percent in 1987 to 21.9 percent in 1997. The same has been happening in Taiwan, where the GDP rose from 17.7 percent in 1977 to 20.4 percent in 1987 to 26.8 percent in 1997. But it is evident that Taiwan's producer service sector is slightly more developed than South Korea's.

One possible explanation for the changing importance of manufacturing relative to producer services in Taiwan is the opening up of the mainland Chinese economy in 1979. As a result of political adversity, Taiwan firms have been lagging behind their Hong Kong counterparts in relocating their production processes to the Chinese hinterland. But by the mid-1980s Taiwan firms began to relocate and expand more rapidly to the Chinese hinterland, which explained the reversal in the trend of manufacturing's share in real GDP. It is expected that with further strengthening of economic ties between the Chinese hinterland and Taiwan, the share of manufacturing in Taiwan will further decline, while that of producer services will continue to increase. Another explanation is that the South Korean government has been far more interventionist in pursuing *dirigiste* policies to promote Korean industrialization at the expense of developing a more balanced economy as indicated by market forces.

Both Hong Kong and Singapore have experienced rapid economic growth measured in real gross domestic product per capita. They have both traversed somewhat similar growth paths. Both started as major *entrepots* in the Far East, became significant exporters of labor-intensive manufactured products, have increasingly dominant service sectors (including finance, telecommunication, and transportation), and are prepared to develop other innovative high value-added economic activities. In the past decade, Singapore's growth rate has risen slightly faster than Hong Kong's (see Figure 3.13). This probably reflects Hong Kong's much more rapid economic transformation toward a service economy during this period. It is well known that *measured* rates of productivity change in the service sector tend to be lower than corresponding rates in the manufacturing sector, and this may have negatively impacted *measured* rates of GDP growth.



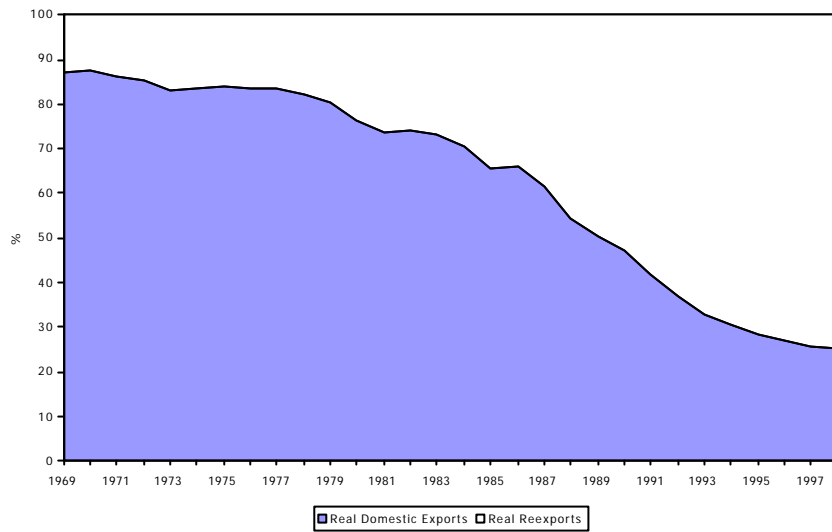
**Figure 3.13: Real GDP of Hong Kong and Singapore**



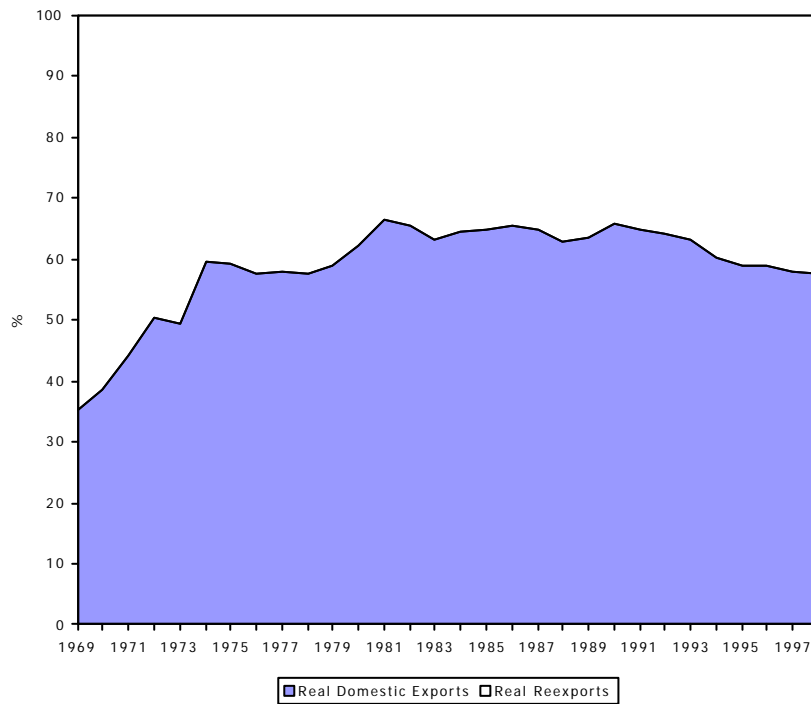
Hong Kong and Singapore are similar in that both are city economies with very large producer service sectors. In recent years, however, Hong Kong's producer service sector has grown more rapidly than Singapore's. The percentage contribution of producer services to real GDP in Hong Kong was 40.6 percent in 1987, and it increased to 50.0 percent in 1997. For Singapore, the corresponding figures were 33.0 percent in 1977 and 39.6 percent in 1987, but the growth has since leveled off, with the percentage increasing to only 40.4 percent in 1997.

The rapid growth of the producer service sector in Hong Kong in the past decade reflects the growing integration of Hong Kong's economy with the rest of the region and especially with the Chinese hinterland. These producer services primarily support the manufacturing production base that has migrated offshore. The process has taken place to a much greater extent in Hong Kong than in Singapore. The change is also reflected in the different structure of exports in the two economies. The proportion of reexports in total exports rose from 34 percent to 73 percent from 1986 to 1996 in Hong Kong. The change was much less pronounced in Singapore, where reexports only rose from 34 percent to 38 percent over the same period (see figures 3.14 and 3.15).

**Figure 3.14: Proportion of Real Domestic Exports of Goods and Services and Reexports of Hong Kong**



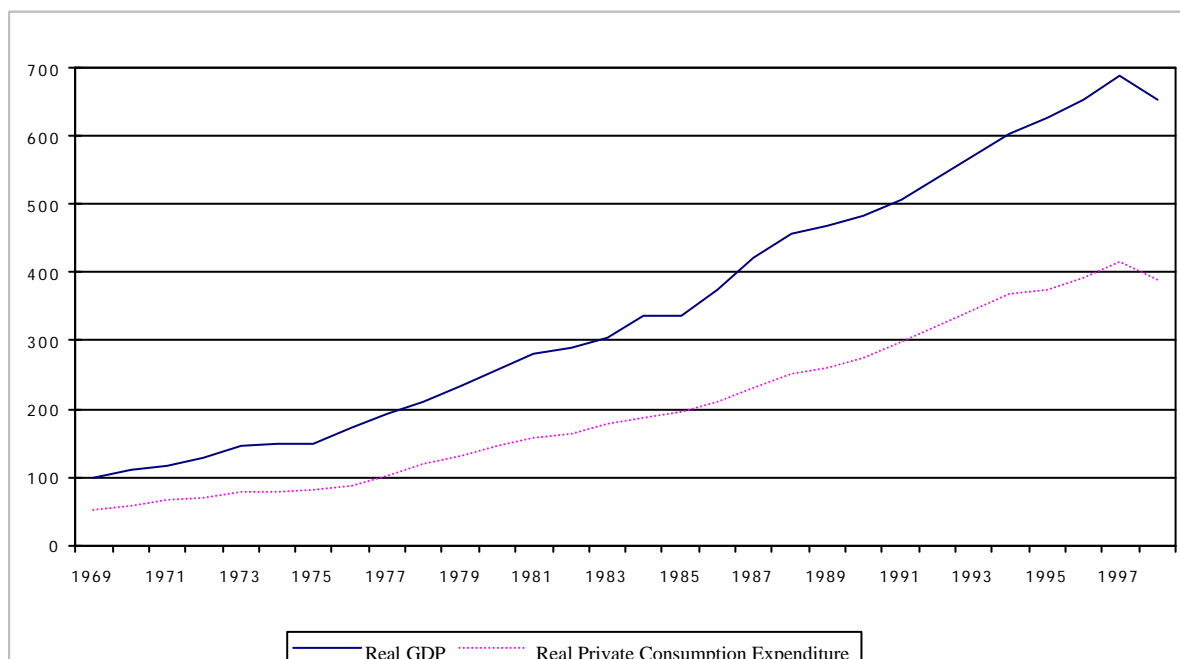
**Figure 3.15: Proportion of Real Domestic Exports and Reexports of Singapore**



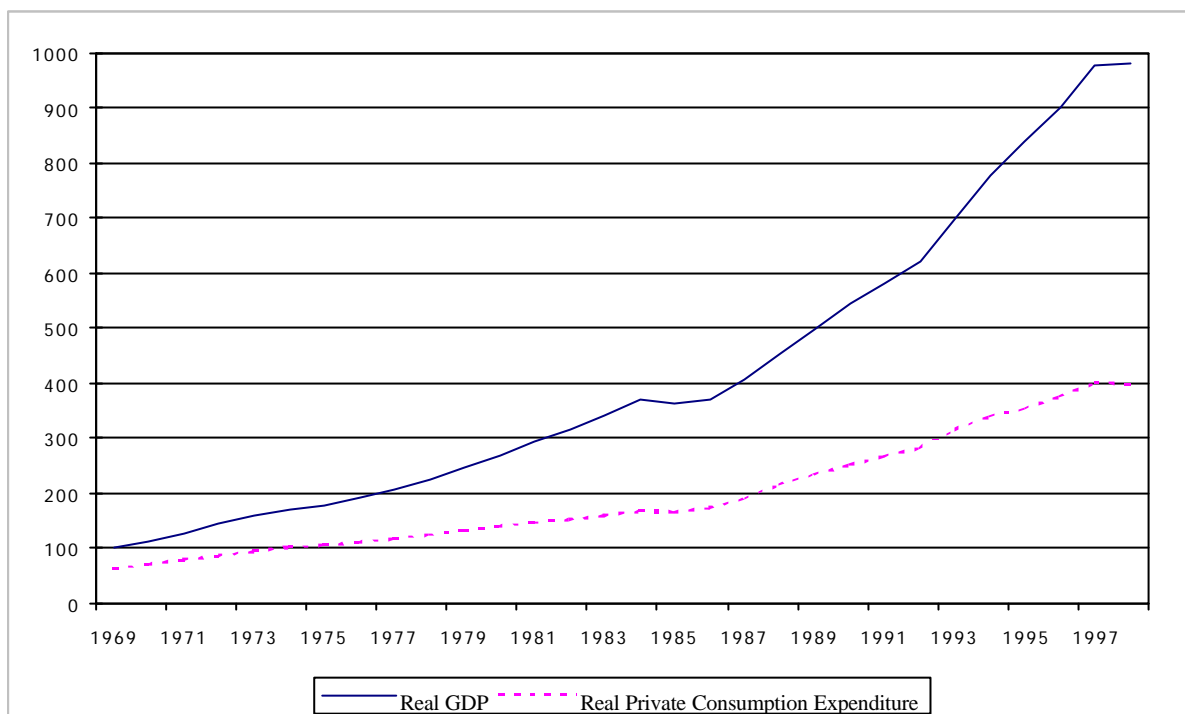
A more obvious difference between Singapore and Hong Kong is the changing importance of the role of manufacturing in the economy. The percentage contribution of manufacturing to real GDP in Singapore has been rather constant, declining slightly from 26.2 percent in 1977 to 23.9 percent in 1997. In contrast, the share of manufacturing in real GDP in Hong Kong has fallen dramatically, plummeting from 17.8 percent in 1987 to 8.96 percent in 1997.

Manufactured value added has continued to maintain its relative contribution to GDP in Singapore as a consequence of a number of factors. First, Singapore's manufacturing base has not relocated offshore to the extent that Hong Kong's has. Second, Singapore's government has more consciously sought to upgrade its manufacturing sector through policy in order to create high value-added manufacturing activities within Singapore. Singapore's experience in this area is controversial in some quarters, but it has helped the city maintain a rate of GDP growth that has been higher than Hong Kong's in recent years. It has also helped Singapore recover more speedily from the recent economic crisis. However, the findings for the growth in real private consumption expenditure for the two cities are quite the opposite of the results for GDP growth rates (see Figures 3.16 and 3.17).

**Figure 3.16: Real GDP and Private Consumption of Hong Kong**



**Figure 3.17: Real GDP and Private Consumption of Singapore**



Hong Kong and Singapore are comparable to the United States and Japan to some degree in terms of per capita income. But the contribution of producer services to the Hong Kong economy is even larger than it is in the U.S. economy. To make this statement is not to compare like with like, however, because Hong Kong is a city economy and the United States is a continental economy. Hong Kong therefore has more room for vertical disintegration than does the United States as a whole. A more useful comparison can be made between Hong Kong and New York, for example. This comparison is undertaken in the next section.

#### **IV. Causes and Effects of Changes by Sectors' Output Share**

What are these trends' causes and effects in terms of the three sectors' output share?

##### **Government services**

The government service sector's rise in value added appears to be consistent with the widely accepted view that the government's share in the economy has been growing. There are several explanations for this. The Baumol view is that government services are

usually less efficiently supplied than private-sector services. The costs of the former therefore rise over time. As a consequence, for the government to supply the same level of service as the private sector requires a greater expenditure of resources. According to this interpretation, the contracting out of government services at all levels can increase the efficiency of production and reduce public expenditure. Privatization would achieve the same result.

Another explanation of the growth in public expenditure is found in the fact that transfer payments have increased over time. This development is consistent with the modern theory of government spending associated with the publications of James Buchanan, the 1986 winner of the Nobel Prize in economics. This theory argues that it is much easier to target transfer payments, rather than exhaustive expenditures, to benefit interest groups that repay politicians by voter loyalty and financial contributions. Moreover, existing laws determine transfer payments, while much exhaustive expenditure requires new and politically difficult legislative initiatives.

### **Consumer services**

Two opposing forces are traditionally thought to influence the demand for consumer services. On the one hand, the demand for such services is an increasing function of family income. The well-to-do spend larger proportions of their incomes on entertainment, dining out, recreation, education, health care, and similar services.

On the other hand, increases in average income over time have not generated increases in demand for many of these services. One reason for this is found in the so-called Baumol effect. According to this model, many types of services (e.g., live entertainment, bus and taxi transportation, hairstyling, private education, health care) by their nature require personal contact, and therefore technology cannot significantly increase their productivity of supply. The result is that the cost of these services has been rising, because the labor needed has to be paid wages that are competitive with those paid in industries in which the application of technology has increased productivity of labor and resulted in increasing wage rates. The increases in the relative prices of these services have a negative influence on demand, while the development of new products has made possible the consumption of substitutes for these services. For example, TV and musical recordings are substitutes for live entertainment, and vacuum cleaners and washing machines are used in lieu of domestic help.

By this view, the relatively low growth rate of the share of consumer service demand shown in the figures represents the net influences of the growth in average incomes, the rise in relative prices of services, and the development of substitutes.

The future of the demand for consumer services will be determined by developments that are difficult to predict, such as the introduction of technological substitutes. However, if the past is any indication of the future, the growth of the demand for consumer services will remain constrained. We may be reasonably confident that its growth will not embrace an overwhelmingly large proportion of Hong Kong's productive capacity. The Hong Kong economy will not become deindustrialized and face the problems that many have predicted will arise in the wake of such a development.

### **Producer services**

It is apparent that the growth of the producer service sector in Hong Kong is closely linked to the expansion of the goods-producing activities of Hong Kong manufacturing firms offshore, especially across the border in South China. The rise in offshore goods production has increased the demand for certain types of intermediate services that are supplied from Hong Kong. The emergence of certain types of producer services is distinctly tied to the information economy and the reduction in the transaction cost of using the market. The emergence of the global economy and the increasing integration of the Asia Pacific region have played an important role not only in changing the nature of economic production but also in reshaping consumer preferences and demand patterns. These developments set in motion several different effects.

First, the role of intermediate services can be considered as a dynamic force driving the production of goods. According to this perspective, intermediate service industries are the vehicle by which new technology is introduced into the goods-production process. This new technology can lead to the lowering of production costs, the development of improved and new products, and the creation of new and more efficient methods for distributing goods. These are service inputs that respond to greater demand for goods and in turn contribute to and change the mix of demand for goods. This second effect accounts for the enormous growth of labor productivity in the manufacturing sector.

Producer services take many forms. They are sometimes used as direct inputs by firms producing goods; the services of bankers, accountants, engineers, and scientists are good examples. There are other kinds of services, like transportation and distribution services, without which there could only be self-sufficiency in production and consumption. A large and rapidly growing proportion of producer services (e.g., finance, accounting, law, advertising, science, engineering, architecture, computers, communications, training of personnel) are sold by firms that employ highly skilled individuals. There are also business services requiring low skills, like janitorial, personnel, wholesale, retail, and personnel services. All of these producer service industries draw on a growing stock of knowledge in the natural, engineering, social, and managerial sciences. Knowledge capital is all the scientific and engineering knowledge

that permits the design of more efficient machinery and products. It also includes knowledge that makes for the efficient organization of firms and of society in general.

The production of education and medical services can also be interpreted as inputs for the creation and maintenance of society's stock of human and health capital. This is another form of producer service. In the absence of this expenditure, the productivity of any population would fall quickly. Human capital is enhanced not only through investments in education and on-the-job training but also through investment in health care, nutrition, and even the kind of moral and ethical standards that make for an honest, reliable, and hard-working labor force.

It is through the increased use of human and knowledge capital, along with physical capital, that economic development and increasing productivity are achieved. Therefore, even if the measured rates of productivity growth in these producer service industries are not high, they are the reason firms in the goods-producing sector can achieve high rates of productivity growth. The overwhelming importance of human and knowledge capital in this process was discovered in the 1960s by Theodore W. Schultz, Robert Solow, and Gary Becker, who were each awarded separate Nobel Prizes for their work in 1979, 1987, and 1992, respectively. Their findings are confirmed and strengthened in recent work by Jorgensen and Fraumeni (1987) who claim that as much as 80 percent of U.S. wealth consists of human and knowledge capital. The knowledge economy is not a product of information technology or of the Internet revolution alone. Young (1995), in a separate study of four Asian economies including Hong Kong, Singapore, South Korea, and Taiwan, concluded that such sources of productivity growth are much less significant than in the United States or Europe. Young (1992), however, found that Hong Kong appears to be doing much better than Singapore in enhancing productivity growth.

In free-market economies, consumer satisfaction is continuously increased through better and cheaper products. Entrepreneurial firms draw heavily on highly educated workers, develop and apply new technological and scientific knowledge, and sell advice and deliver innovative services to other firms. These firms in the service industries are the main vehicles through which the human and knowledge capital of society is produced and introduced into the production process. Evidence of service-sector workers' higher educational attainment when compared with workers in the goods-producing sector supports this view.

How are these forms of capital introduced into the production process? Why has the accumulation of this capital not resulted simply in an increase in the number of highly skilled workers employed by manufacturing firms, where they would be counted as working in the goods-producing sector? The answer to these questions may be found in the ideas of the Austrian School of Economics. Economists of the Austrian School have

long recognized that labor productivity is enhanced when the production process is reorganized and becomes more roundabout. Labor and capital become more specialized as a result of roundaboutness. This school made much of the proposition that increases in the quantity of physical capital per worker are associated with increased specialization of the production process, which they labeled increased roundaboutness. We now postulate that this same process of specialization accompanies increases in the stock of human and knowledge capital per worker.

Experts in finance, advertising, entertainment, law, science, engineering, and similar fields are becoming increasingly specialized. Their expertise tends to be so specialized that it is not needed full time by even the largest manufacturing concerns. However, they can be employed fully by a firm catering to customers throughout a region, a country, or even the world. Also important is the development of specialized firms with producer-service expertise that cater primarily to smaller firms in more localized markets that previously tended to do without them. It is clear that such specialization has been encouraged by technological improvements in communications and travel. The main point here is that the human and knowledge capital deepening and the accompanying patterns of specialization have resulted in an increased demand for the services of such firms by the goods-producing sector, governments, and other producers of services.

To understand the phenomenon of producer service growth, it may help to consider the idea that these services end up embodied in goods, where they constitute an ever-increasing fraction of the final price of a product. For example, Iacocca (1985) notes in his biography that workers' medical expenses are responsible for a larger part of the cost of a Chrysler than is the cost of steel. In addition, of course, all the material inputs (e.g., the many electronic devices they employ) used by automobile manufacturers embody growing amounts of producer services. The phenomenon is general. Its manifestation in the extreme is found in the case of computer disks that hold sophisticated programs. This product is counted as the output of the goods industry, but the value of the services such a disk represents may account for easily 99 percent of the good's market price. At the same extreme end of goods with high quantities of embodied services we find modern drugs and complicated machinery like computers, which are assembled in fully automated factories.

The growth of the service sector goes hand in hand with the appearance of more specialized firms producing a greater diversity of intermediate services. In Hong Kong, the average number of persons engaged per establishment in the producer service sector (defined in this instance according to Table 2.1) declined from 9.9 in 1981 to 7.2 in 1997; a decline of almost 27.3 percent (see Table 4.1). By contrast, the decline in the average establishment size in the service sector was about 10.8 percent during this period. The more pronounced decline in the average establishment size found in the producer service



sector in Hong Kong reflects the process of increasing roundaboutness and is a sign of enhanced economic efficiency and dynamism.

**Table 4.1: Average Number of Persons Engaged per Establishment by Sector for Selected Years**

	1981	1990	1997
<b>I. Good Producing Sector</b>			
Mining and quarrying	48.0	73.0	84.6
Manufacturing	18.9	14.5	11.2
Electricity and gas	2640.5	3874.7	3226.0
Construction sites	68.1	53.8	75.3
<b>II. Service-Producing Sector</b>			
Wholesale, retail and restaurants, and hotels	6.5	6.2	6.4
Community, social, and personal services	11.3	10.7	12.3
Producer Services*	9.9	7.6	7.2
Imports and exports	6.0	5.5	5.3
Transport, storage, and communications	25.7	21.9	18.6
Financing, insurance, real estate, and business services	12.0	9.2	8.6
All Services	8.3	7.4	7.4
<b>III. All Sectors</b>	12.1	9.1	8.1

\* Producer services here are defined to include imports and exports; transport, storage, and communications; financing; insurance; real estate; and business services.

Specialization through the market has variously been called the process of “dehiving,” “unbundling,” “vertical and horizontal disintegration,” and “contracting out.” The process is facilitated when the size of the market grows and the transaction costs of doing business through the market fall. Coase (1927), who pioneered the concept of transaction cost and was awarded the Nobel Prize in 1991, showed that economic activity would be organized within firms if the transaction cost of using the market mechanism was too high, leading to “vertical and horizontal integration.” On the other hand, if the cost of using market exchanges was too low, then economic activity would not be organized within the firm, and a process of “vertical and horizontal disintegration” would occur.

The increasing complexity of business operations, the rising cost of monitoring the performance of employees in large organizations, the rapid rates of technological change in increasingly specialized activities, and the falling cost of information and communication in the marketplace have all contributed to this process.

The emergence of a global economy has also added to this process of increasing specialization through the market. Consumption patterns are becoming more

heterogeneous. The demand for varieties of goods and services is ever rising. These changes in demand patterns in turn challenge the traditional modes of production. Producers are compelled to innovate by increasing their ability to utilize specialized parts and services as intermediate inputs and to adopt new organizational structures.

To meet demand for a greater variety of goods and services, firms have reorganized their production processes by further increasing the stages of specialized production. While firms appreciate the value of specialization, it has become increasingly costly to coordinate the division of production processes and the specialization of each stage of production where demand patterns are heterogeneous and volatile. Traditionally, firms have preferred to supply many parts and services in-house. Vertical and horizontal integration was considered an efficient ideal for business organizations.

However, in-house specialization in the supply of parts and services has become more difficult to sustain. This is because specialization has worked against scale economies. Any form of specialization involves substantial initial investment, but the scale of production for parts and services within a single firm may not be large enough to justify such large investments. In addition, specialization of parts and services within a firm creates a problem of internal monopolies. As the parts and services subsidiaries are assured of demand within the firm, they lack the incentive to improve the quality of intermediate goods and services. These two problems can be overcome when the specialization of intermediate goods and services are provided on the market rather than within the firms.

Independent firms specializing in the production of parts and services can sell their products to a large number of downstream firms, thereby enjoying economies of scale and justifying substantial specialized investments. One may ask, however, why a subsidiary within a firm cannot sell its products to other downstream firms, in principle achieving the same level of economies of scale. Consider for example a subsidiary of General Motors (GM) that specializes in the production of engines. Why cannot this engine subsidiary sell its products to Ford, so that it has the same level of economies of scale as an independent engine producer? As GM competes with Ford in the final product market, it may set the prices of the engines for Ford so as to enhance GM's competitiveness. It would be difficult to write a comprehensive contract specifying all possible contingencies in order to prevent GM from taking advantage of Ford. Thus, Ford is reluctant to purchase specialized parts and services from GM. As a result, it may be that neither GM nor Ford has sufficient scale economies to justify producing specialized parts and services in-house.

Furthermore, compared with subsidiaries of big corporations, independent firms have a stronger incentive to innovate and improve the production of parts and services, and to develop new parts and services. This is confirmed by empirical studies in various

industries and countries. Recent developments in the theory of the firm by Grossman and Hart (1986) and others have elucidated the benefits and costs of vertical integration versus separate ownership. In contrast to the earlier literature (see Williamson, 1978) that emphasizes the effects of governance structures on transaction costs, the new theory of the firm (Hart, 1995) examines how changes in ownership structures affect the incentives for making relationship-specific investments. Consider again the example of GM. When GM owns a subsidiary producing engines, it has considerable bargaining power against the subsidiary. In particular, the parent company may appropriate a large part of the gains achieved by the subsidiary through innovation, which would adversely affect the subsidiary's incentive to invest in future innovation. By contrast, when spun off from GM, the engine company can threaten not to supply its products to GM in scenarios that are unforeseen *ex ante* and are not covered in the original contract between the two parties. This ability to hold up GM preserves the autonomy of the engine company and thereby an incentive to improve its production and develop new products. A recent example of vertical disintegration is GM's spin-off, Delphi.

Subcontracting has long been known to be an efficiency-enhancing practice that has been adopted by many organizations. The setting up of separate and independent firms to compete with one's own subsidiary is another well-known strategy for benchmarking performance and can be considered a limited form of horizontal disintegration. The arrival of the Internet age and the e-commerce revolution has provided an even greater opportunity for reorganizing global supply chains and has enlarged the scope of operation for specialized and niche players.

A recent study by McLaren (1998) shows that international openness facilitates vertical disintegration and the growth of specialized parts and services companies. With a higher degree of international openness, a specialized and niche firm has more downstream firms and buyers from different regions and countries, and hence it has a greater incentive to make specialized investments. This point is especially relevant to Hong Kong, as its transformation from an industrialized city to a center of producer services coincides with the opening up of the Chinese hinterland's economy and the increasing integration of the Asia Pacific region. This is, of course, none other than Adam Smith's proposition that the division of labor is limited by the extent of the market.

Stigler (1951) developed a theory based on this proposition that vertical disintegration is a consequence of market growth and vertical integration is a consequence of market decline. The global mergers and acquisitions, as well as strategic partnerships in the banking, airline, automobile, and other industries that we observe today can be viewed in part as some form of vertical-cum-horizontal integration responding in part to a globalized market where there are too many similar producers—the equivalent of a declining market. On the other hand, the fact that the same process of globalization has led to the emergence of many small and specialized firms supplying

intermediate inputs to a global supply chain is evidence of vertical disintegration. Viewed from this perspective, globalization leads to growing markets for some operators and contracting markets for others. In the case of Hong Kong, the dominance of small and medium-sized enterprises suggests that a huge opportunity exists for those who can harness the skill and technology needed to become an effective niche and specialized player in this growing market.

### **Geographic Concentration of Producer Services and the Rise of the Metropolitan Economy**

There is growing evidence that producer services are highly concentrated in central locations and outside less central locations. One important explanation for the geographical concentration of producer services is that agglomeration effects are deemed essential for small, specialized firms to thrive. A critical ingredient of such agglomeration effects is the importance of information and knowledge in the operation of producer services. Information is considered *central* in the sense that it is easy to gather information and exchange information with others in locations where the population is concentrated. As a result, we expect producer services to be highly concentrated in cities such as New York, London, and Tokyo.

The arrival of the digital information age may lead one to wonder whether the advances of electronic communication will make this explanation irrelevant in the future. However, it is likely that face-to-face communications will still be extremely important for the gathering and exchange of highly complex information, for example, the initiation of new projects. Furthermore, electronic communications could well become complements to rather than substitutes for face-to-face communication, much as heavy telephone communication complements face-to-face interaction in cities where in-person communication is most easily arranged.

Cities also offer amenities for the high-income personnel employed in the producer service sector. In addition, the presence of a large number of producer services insulates the high-skilled personnel from firm-specific or even industry-specific business fluctuations and shocks, and thereby makes it easy for producer firms in metropolitan areas to recruit such high-skilled workers.

A complementary explanation for the geographical concentration of producer services is related to the characteristics of the production of producer services. Producer services, unlike other types of services, are generally not as dependent on being close to the buyers as consumer services are. Thus, it is possible to locate producer services in the most suitable places from the supply-side perspective and to have the services exported to other regions or countries where there is demand. Meanwhile, as the production of producer services involves substantial investments, such concentration of producer services in metropolitan cities also allows for the realization of economies of scale.

An important component of economies of scale that gives rise to the agglomeration effect is information. A firm considering entering the Chinese market, but not knowing which product line to launch and in which city to locate its operation, may well choose to come to Hong Kong first because it has a high concentration of people and businesses with knowledge about and information on the Chinese market (see Sung, 1995). As an information hub, Hong Kong attracts firms, which in turn enhance Hong Kong's status as an information hub because they bring information with them. The "first-in" advantage of an information hub is not easily eroded, because of such economies-of-scale effects of information exchange.

Producer services are knowledge-intensive. A knowledge-intensive economy is anchored in activities, not industries. The producer service industry's key activities are management and coordination; what is managed and coordinated doesn't really matter. Management skills are to a large measure transferable: the chairman of a beverage company can be the chairman of a media company. The primary jobs within the industry are management, coordination, finance, strategy formulation, product development, advanced marketing, and the generation of vital information that will allow managers to manage their enterprises effectively.

Any close examination of the service sector in Hong Kong reveals that it is a highly heterogeneous industry. The rapid expansion of this sector reflects a positive dynamic market process requiring little government intervention. Fears of low productivity following the relocation of our manufacturing operations appear unfounded, because the rise of our service sector has primarily supported the growth of goods-producing industries based offshore.

Hong Kong's competitiveness is a particularly interesting issue to explore. The competitiveness of a metropolitan and knowledge-based economy is based on its dynamic private sector, its clean and supportive government, strong local firms, and a significant presence of overseas firms. Part of this competitiveness comes from smaller entrepreneurial firms that hustle every single deal. There are some 200,000 of these firms in Hong Kong, and their presence makes possible a quick response and rapid adjustment to the changing business environment. These competitive advantages are Hong Kong's strengths.

In allowing market forces to drive its economy, Hong Kong is assuming characteristics similar to those of other metropolitan economies like New York, London, and Tokyo. Both Hong Kong and New York have a preponderance of producer services. The growing importance of producer services in Hong Kong and New York reflects an economic process at work that is crowding out lower value-added activities, such as the physical production stages of manufacturing, to offshore areas. Over time, manufacturing

gradually plays a less important role in the city's GDP and employment, even though it continues to function as the management and coordination center for a manufacturing base that has been decentralized to other places (see tables 4.2 and 4.3 below).

**Table 4.2: Percentage Contribution to GDP in Hong Kong and New York City in 1993**

	<b>Hong Kong</b>	<b>New York City</b>
All services	81.2	77.8
Consumption services	28.5	26.1
Producer services	46.5	40.8
Government services	6.2	10.8

Note: Figures for New York City are from Enright, Scott, and Leung (1999), p.24.

As a metropolitan economy, Hong Kong is subject to the same economic dynamics faced by other cities like New York, London, and Tokyo. Such an economy is much less prone than a manufacturing economy to change in the fortunes of any particular industry or sector. But it is economically vulnerable to a general business downturn such as the financial and economic contraction that hit East Asia recently.

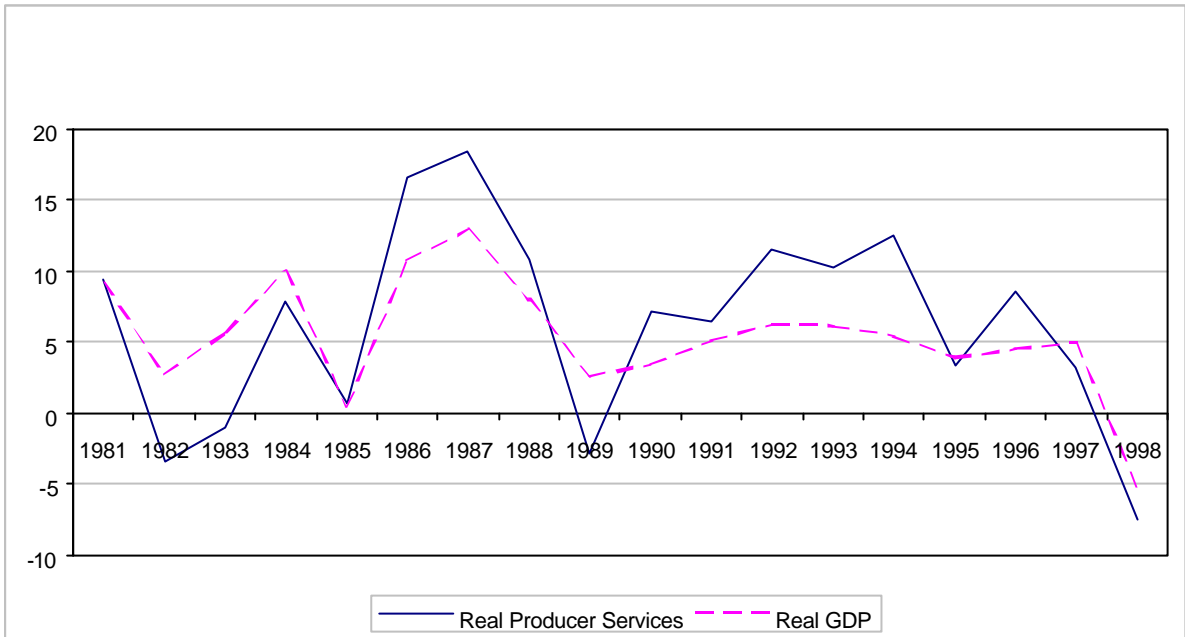
**Table 4.3: Percentage Contribution to Employment in Hong Kong and New York City in 1993**

	<b>Hong Kong</b>	<b>New York City</b>
Agriculture and mining	0.6	0.1
Manufacturing	21.3	9.6
Construction	7.9	1.4
Transport, communication, and public utilities	12.0	5.6
Wholesale and retail trade; restaurants and hotels	28.4	19.3
Financing, insurance, real estate, and business services	9.6	32.7
Community, social, and personal services	20.2	31.1

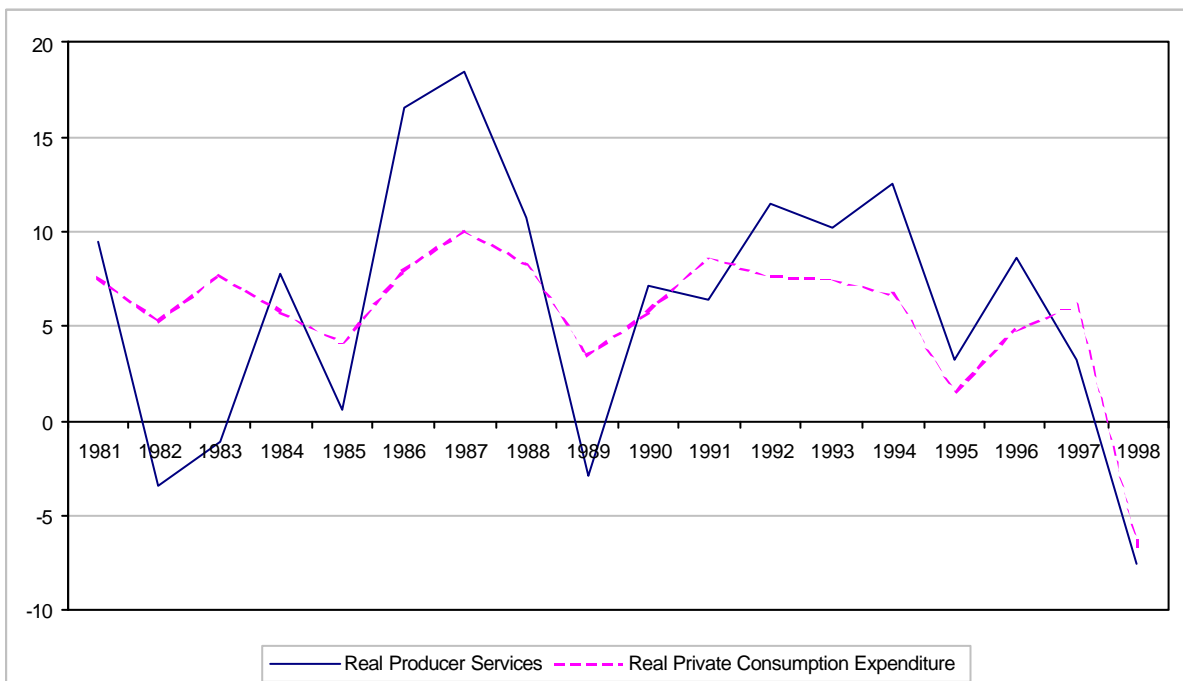
Note: Figures for New York City are from Suen and Chan (1997), p.32.

Figures 4.1 and 4.2 show the percentage change of real producer services and its relationship with the percentage changes of real GDP and real private consumption expenditures. It is apparent that producer services are more volatile than either GDP or private consumption over the business cycle.

**Figure 4.1: Real Producer Services and Real GDP (Growth Rate in Percentage)**



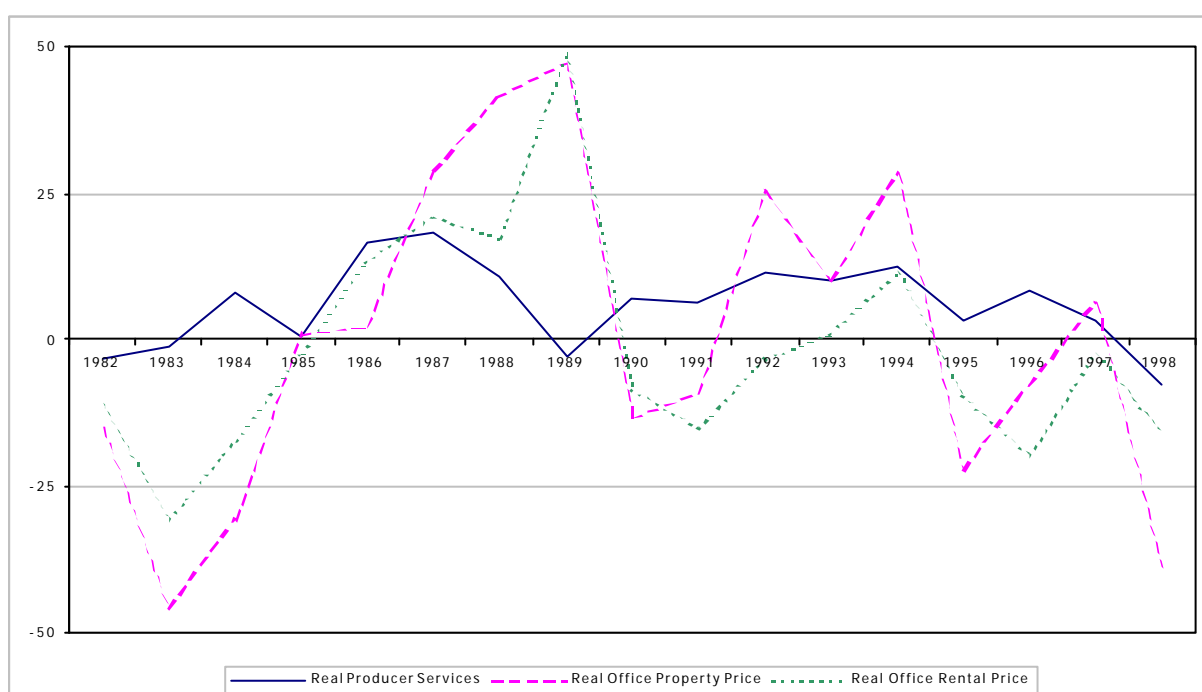
**Figure 4.2: Real Producer Services and Real Private Consumer Expenditure (Growth Rate in Percentage)**



For this reason, the economic recession in Hong Kong following the Asian financial and economic crises was particularly drawn out. As a consequence of having shifted from a manufacturing to a service economy, this time Hong Kong was not the first economy to recover from an economic downturn, as it had been in the past. By contrast, Singapore, with its greater presence of export-oriented manufacturing industries, was able to recover faster.

As economic activity in Hong Kong shifted toward producer services, the demand for industrial real estate relative to office space fell. Figure 4.3 shows the close correlation between percentage changes in real producer services and percentage changes in real office rentals and property values.

**Figure 4.3: Real Producer Services, Real Office Property Price, and Real Office Rental Price (Growth Rate in Percentage)**



However, as soon as the Asian economy was on the road to recovery, Hong Kong, as Asia's service center, also rebounded robustly. The very rapid growth of Hong Kong's reexports in late 1999 and early 2000 clearly demonstrates this prominent feature of the city's economy. There is reason to believe that Hong Kong has even become stronger vis-a-vis the rest of the region in the wake of this crisis, because Hong Kong did not experience a financial meltdown like some of its neighbors. As a consequence, the vast majority of Hong Kong firms have survived and are continuing to operate. The destruction of valuable entrepreneurial and organizational capital has been kept to a minimum. This is very important for a producer-service centered economy.



## **V. Producer Services and the Metropolitan Economy**

Since the early 1980s, Hong Kong's economic structure has been shifting dramatically. Increasingly, Hong Kong has been adding value through servicing offshore manufacturing activities rather than by engaging in direct production. However, rather than signaling the decline of Hong Kong manufacturing, this shift has resulted in the transformation of Hong Kong into a management center for manufacturing production based in the Chinese hinterland and elsewhere in the Asia Pacific region. The growth of Hong Kong's service sector is the direct result of the expansion of producer services that support offshore manufacturing.

In our view, Hong Kong's economic transformation since the 1980s is best characterized not as simply a shift from manufacturing to services (although this is the usual way of looking at it) but as a transformation from what may be called an "enclave" economy toward a "metropolitan" economy. An "enclave" economy is an economy that operates more or less in isolation from its immediate environment or neighbors but often has economic ties to distant markets. An obvious example is the export processing zones established in many highly regulated developing economies. Before the 1980s and the opening of China, Hong Kong's economy depended heavily on the export of domestically produced light manufacturing goods. These activities were carried out with very limited interaction with the Chinese hinterland, or even with other economies in the region. Hong Kong was an "enclave" economy that existed apart from even its immediate hinterland. But today Hong Kong is more like a "metropolitan" economy, which has close links with the region and with the Chinese hinterland. This shift not only implies the change from an "enclave" to a "metropolitan" economy, but also a transformation to a knowledge-based economy. This shift has come about because Hong Kong's producer services primarily serve an offshore manufacturing base.

In 1980, 100 percent of Hong Kong's manufacturing was carried out in Hong Kong. By 1997, 10 percent of the production was carried out in Hong Kong, 60 percent was carried out in the Chinese mainland, and 30 percent was carried out elsewhere in the world. The economic integration that has taken place is obviously not limited to Hong Kong's relationship with the Chinese hinterland. Nevertheless, there are good reasons for the Hong Kong economy's close link to the Chinese hinterland: it is nearby geographically, transportation links are convenient, and there are language and other ties. The shift from an "enclave" to a "metropolitan" economy has enabled Hong Kong industries and the economy to remain competitive without having to upgrade production technology in manufacturing. It has, however, provided an ideal opportunity for Hong Kong to develop its producer services.

In this respect, Hong Kong's economic structure today is closer to New York's, London's, and Tokyo's than to a typical national economy. Thus, Hong Kong has emerged as an economic center that serves the region in which it is located, where producer services are the dominant form of economic activity. Hong Kong today

concentrates on management and coordination, and on financial and other professional services, not on the actual production of goods.

Many other metropolitan economies have undergone a similar transformation from a manufacturing to a producer service-based economy. Indeed, there is overwhelming evidence showing that the growth of such producer services is vital to the growth of cities. The growth performance of cities more specialized in producer services is far superior to that of cities that are specialized in manufacturing activities (see, for example, Jacobs, 1969, 1984).

What makes Hong Kong different from the other metropolitan economies is that in Hong Kong this transformation process took place in just a decade—far less time than is usually required. In New York, the process occurred over a forty-year period. By comparison, the adjustment in Hong Kong was dramatic and rapid.

The change is most obviously reflected in the altering composition of the labor force. In 1981, managers and administrators constituted 3 percent of employees. In 1996, they constituted 12 percent. Professional and related workers constituted 6 percent of employees in 1981; in 1996, they constituted 17 percent. These figures show that at the higher end of this managerial coordination function the transformation is dramatic. At the clerical end, change has also occurred, but it is less dramatic. In 1981, 11 percent of the Hong Kong labor force performed clerical functions. In 1996, the figure had risen to 17 percent. If we look at the totals for all these managerial service functions, we can see that in Hong Kong, the percentage of the labor force that work in these functions increased from 21 percent in 1981 to about 46 percent in 1996. Obviously, the changes are essential to the performance of business services and headquarters functions.

These changes show how the nature of work has changed as the economy has been transformed. Hong Kong is now providing managerial, coordination, professional, financial, and other business-related services. These services are knowledge intensive. Being knowledge intensive does not necessarily require the mastery of any specific specialized body of knowledge, such as physics or sociology. Rather, it entails the ability to think, organize, plan, handle people, and operate new business tools. General education and training therefore become the key to future competitiveness.

### **Future of Manufacturing**

The opening of China provided Hong Kong manufacturers with the ideal circumstances in which to expand across the border. Tens of thousands of entrepreneurs have gained invaluable experience in managing and coordinating a vast offshore manufacturing operation in South China's developing economy. This experience will serve as a reservoir of knowledge and market information for future ventures.

Moreover, the cost differential between most metropolitan economies and their hinterland is about 20 to 30 percent, whereas the cost differential between Hong Kong and the Chinese hinterland is several hundred percent. The economic gap between these two economies in terms of their institutional arrangements, stages of development, and standards of living is enormous. This obviously is a huge advantage for Hong Kong. Hong Kong companies have access to a nearby production base whose cost structure is many times lower than Hong Kong's.

However, the future prospects of Hong Kong's low-value-added manufacturers will not be assured by this alone. In a highly competitive global market where cheap labor is everywhere abundant, manufacturers have to continue to add value to stay ahead of the competition. This is in fact quite a challenging problem that continues to plague manufacturers in Hong Kong. For most of the 1980s and 1990s, manufacturers hoping to develop higher value-added products and processes were faced with a prohibitive cost structure that made it almost impossible for them to support a scientific and technological talent pool in Hong Kong. High labor costs and living expenses made many manufacturers reluctant to bear the cost and risk of investing in new products and processes. Unlike the textile and garment manufacturers in the 1960s and 1970s, they did not have cozy quota rents to cushion the costs and risks of innovation.

Another critical issue is that Hong Kong, unlike other producer service-based cities, is separated from virtually the entire manufacturing base it services by well-defined borders. The border between Hong Kong and the Chinese hinterland imposes severe restrictions on the flow of people into Hong Kong. This feature defines and determines to a large extent what kind of economic activities can take place in Hong Kong and what kind will be located across the border. Production activities located elsewhere in the Asia Pacific region or beyond face problems that are both similar and dissimilar in this respect.

Well-recognized problems stand in the way of increased economic integration between Hong Kong and the Chinese mainland, and the higher value-added economy that could result. For example, while manufacturing processes have moved to the Chinese hinterland, it has been more difficult to transfer research and development (R&D) activities across the border. Notably, the difficulty of protecting intellectual property rights in China, and concerns over the reliability of the legal system, as well as poor infrastructure, have discouraged investment in R&D and adoption of more sophisticated manufacturing processes across the border. Problems in managing and retaining key management, as well as technical and skilled staff, and in controlling complex production processes have increased the risk of developing knowledge-intensive production in Southern China. As a result, many vital functions in management coordination, finance, strategy formulation, research, and product development and marketing that cannot be easily relocated across the border have remained in Hong Kong, where the cost structure is high.

Manufacturers and universities have pressed the government to set up industrial estates, incubation centers, and science parks; provide more funding for applied R&D; and develop supportive applied R&D infrastructure. The government has taken a more proactive approach to focus attention and channel resources to build up the technological infrastructure and to make more funding available for applied R&D purposes. But by far the most critical element on which the success of any Hong Kong industry or technology policy depends is the city's ability to attract and concentrate a critical mass of scientific and technological talent pool through new institutional arrangements and more relaxed immigration rules.

The role of the Hong Kong government is vital here because the advantages of Hong Kong and the Chinese mainland are mismatched in terms of the location of a large number of factors, especially human resources. The movement of many factors between the two areas cannot take place freely across a semipermeable border. While Hong Kong residents can freely enter the mainland, the reverse flow is strictly controlled. The prospect of tapping highly skilled human resources and knowledge pools across the border depends on government initiative. These are important policy matters that have to be resolved and handled by the government directly. On the other hand, simply opening up the border will have many undesirable consequences for Hong Kong. It remains to be seen whether the newly implemented Admission of Talents Scheme to attract highly skilled professionals from the mainland will be successful.

The opening of China has created a semipermeable border that has allowed the two sides to integrate economically, for the benefit of both. Further economic integration can be achieved if Hong Kong is able to facilitate and manage greater selective permeability of its border with the Chinese hinterland. This will require the setting up of new institutions and the development of plans to manage the way economic integration will take place.

Despite these difficulties, the vast economic gap between Hong Kong and the Chinese mainland is the primary reason behind the huge gains that Hong Kong can reap by integrating with the mainland. The vision of Hong Kong as a leading high-value-added regional manufacturing center, where management, coordination, financial, and other professional functions are concentrated, can be realized with joint effort. Few cities in the region can seriously rival Hong Kong's ability to serve as a center for offshore manufacturing production, performing headquarter and R&D functions. Hong Kong's prowess as a business, financial, and information center; its geographic location; its cultural affinity with the mainland; and its entrepreneurial spirit, combined with the mainland's abundance of skilled and unskilled human resources, its vast land mass, and its huge market potential, is clearly a winning formula.

If the trend toward greater economic integration between Hong Kong and the mainland continues (and there is little doubt that it will), the importance of Hong Kong as a management and coordination center for an offshore manufacturing base

can only increase. Indeed, a recent survey of manufacturing and trading firms conducted by the Hong Kong Trade and Development Council showed that 95 percent of these firms want to retain their controlling headquarters in Hong Kong and that 90 percent of them intend to increase or maintain their headquarter management functions in Hong Kong. However, all the firms surveyed wish to decentralize other production functions out of Hong Kong.

The continued importance of the headquarters role of Hong Kong can be seen from the fact that multinationals continue to put their regional headquarters and regional offices in Hong Kong and that the concentration of these headquarters and regional offices in Hong Kong is several times that of any other center in the region.

Combining the relative strengths of Hong Kong and the Chinese hinterland will require effort, ingenuity, and government initiative. It is true that the large autonomous movements of direct capital investment across the border in the past decade took place in the absence of any active policy on the part of the Hong Kong government. However, further integration of Hong Kong with its hinterland to sustain higher value-added development to the advantage of both parties will require government initiatives in the areas of cross-border traffic management, technological infrastructure development, and the movement of human resources.

### **China's Accession to the World Trade Organization**

The rise of Hong Kong's producer service economy is inextricably linked to its transformation from a manufacturing-based economy to a service center for managing offshore production. However, now that it is in place, the producer service-based economy can perform many more roles. Indeed China's imminent accession to the WTO will bring many challenging opportunities to Hong Kong.

China's accession to the WTO will create a favorable environment for Hong Kong's economic future. The further opening up of the mainland economy means that, in addition to acting as a production base for Hong Kong manufacturers, China has the potential to become a large domestic market for Hong Kong's goods and services. Hong Kong factories on the mainland can distribute and sell their goods there with fewer restrictions than they have in Hong Kong. Service companies in Hong Kong can also begin to invest in the mainland and sell services to customers there.

The expansion of China's trade and investment activities with the rest of the world should benefit Hong Kong as a service hub. Hong Kong's excellent skills in trading, transportation, financial services, and professional and business services will play a bigger role in providing more value-added and specialized services. Hong Kong will become a more advantageous base from which multinational corporations (MNCs) can manage their mainland and other regional business.

In addition to serving foreign companies with an interest in the mainland market, Hong Kong can also assist mainland companies in reaching out to the rest of the world. Through providing capital, market intelligence, and management skills, Hong Kong will be attractive to more mainland companies who will use it to prepare themselves for the competitive environment that will emerge after China's entry into the WTO.

Clearly, the benefits that would emerge from China's entry into the WTO will have implications far beyond the manufacturing sector. But manufacturers are likely to capture the most immediate benefits. First of all, China's WTO membership will provide manufacturers with operations on the mainland with more secure access to overseas markets. Second, the membership will open up to Hong Kong manufacturers a vast domestic market, which many Hong Kong manufacturers are already familiar with after 20 years of operation in China.

Meanwhile, competition from local Chinese enterprises and foreign companies will intensify in an increasingly liberalized market. To capitalize on the opportunities and cope with the challenges, Hong Kong manufacturers with primarily "original equipment manufacturing" operations will have to focus more on product design, quality enhancement, and value creation. Creating value by adopting a branding strategy that differentiates one's products from others is one option. This strategy will require a strong commitment to product development and marketing. Good management of distribution channels, product mixes, and sales programs will become critical for success. Manufacturers will have to acquire additional marketing capability with a focus on the Chinese market. Some firms could consider forming strategic alliances with other companies to strengthen their position in this respect.

China's accession to the WTO and the possibility of direct contact across the straits could mean growing direct business contact between overseas and mainland companies. Hong Kong trading firms will have to add value to their services in the supply chain to sustain Hong Kong's trading hub and premier intermediary position. Given the unprecedented liberalization of distribution and trading rights, Hong Kong trading firms will be able to enter areas like logistics, after-sale services, and export agents in the mainland.

Trading companies involved in sales and distribution in the mainland could strengthen their logistic and marketing support capabilities. Hong Kong companies are strong in management, marketing know-how, and access to capital. Mainland companies have local experience and knowledge about distribution across different localities in the country. These complementary strengths could provide an opportunity for cooperation between companies in the two locations and for Hong Kong companies to form strategic alliances with trading companies and logistics companies in the mainland to increase the latter's distribution capability and expand their service networks.

To stay competitive, trading companies may have to expand their sourcing network to cover larger regions. They would have to take a more active role in managing their supply chains and would need to upgrade their e-commerce capabilities so as to enhance their role in integrating and coordinating increasingly global production and distribution activities.

While some large and experienced foreign companies will eventually form direct business links with mainland companies, many smaller companies and newcomers will continue to utilize Hong Kong traders who are reliable and who are experienced in China trade. On balance, the expected rise in imports and exports resulting from China's WTO accession will bring more business to Hong Kong trading companies.

Hong Kong's trading hub position will be maintained because Guangdong will continue to thrive as a major manufacturing and distribution center. According to estimates cited in a 1999 Hong Kong Trade Development Council study, if China gains entry into the WTO, Hong Kong's reexports to and from the mainland will be 4 to 6 percent higher by the year 2005 than they would if it does not. Although more reexports will be diverted to ports in Shenzhen, it is estimated that Hong Kong will continue to handle about 30 to 35 percent of the mainland's total foreign trade.

Hong Kong will continue to be a preferred location for MNCs' regional operations following further liberalization of the Chinese economy associated with its accession to the WTO. Some established MNCs might relocate their regional operations in Hong Kong to the mainland because they will no longer need Hong Kong as a "gateway." However, China's accession to the WTO will attract more MNCs to the China market and will cause others to expand their existing business. These MNCs, many with initially small new operations, will find it preferable to run their mainland business from Hong Kong, where they can find a large concentration of professional, financial, management consultancy, and business services companies that will be indispensable to their operations.

In addition, for a long time many companies have been setting up offices in Hong Kong to manage their regionwide businesses. For example, the majority of regional headquarters of MNCs in Hong Kong have regional responsibilities beyond Hong Kong and the mainland. Hong Kong's advantages as a regional headquarters have been its geographical location in the heart of Asia, its banking and financial facilities, its transport and telecommunications infrastructure, its access to information, and its liberal tax regime. The costs of doing business (staff and office rental) have been the number one disadvantage of using Hong Kong as a base. Property price adjustments and deflation over the past two years following the Asian crises have improved Hong Kong's competitiveness in these respects.

In summary, the concentration of producer services built up in the past two decades because of China's opening, economic integration in the Asia Pacific region, and the globalization of the world's economic activities has prepared Hong Kong to

take advantage of China's accession to the WTO. Hong Kong's ability to add value to manufacturing, trading, and other business pursuits depends critically on the support of these producer services, which, fortunately, has already been established.

### **Summary and Implications**

The growth in the share of producer services in the Hong Kong economy is to the result of the process of human and knowledge capital accumulation and of increased specialization in the producer service industries. It has resulted in ever-increasing shares of embodied services in the market value of goods produced in the offshore manufacturing base managed and coordinated from Hong Kong.

The implications are important for the following public policy issues:

- The growth of the service sector does not imply the deindustrialization of Hong Kong in the sense that the production of goods will cease or even decrease dramatically. The number of people employed by the goods-producing sector may continue to fall, but there is no theoretical limit, short of 100 percent, of the proportion of market value of goods accounted for by producer service sector workers.
- While producer service industries typically do not show rapid increases in productivity, they are one of the main sources of productivity gains in the goods-producing sector.
- Goods serve as an effective vehicle for international trade in embodied services. They will permit continued exploitation of the sources of comparative advantage among nations, and there is no need to worry that Hong Kong goods producers will be wiped out by competition from cheap labor in newly industrializing countries.
- There will be no problem with a bimodal income distribution and the vanishing of the middle class. The future middle class is likely to be made up of workers employed in the producer service sector. This sector will grow more rapidly and will offer jobs that pay more and that require more advanced technical skills than jobs in the consumer service sector.
- Unemployment levels will not be high because of productivity gains in the service sector and the satiation of consumer demand for services.

Hong Kong's producer services have in the past been focused on supporting an offshore manufacturing base. In the future they will be increasingly called upon to support the growing demands of an economy with aspirations of becoming Asia's leading metropolis, in addition to being a regional management and coordination center for offshore manufacturing production.



## **VI. From Manufacturer to World City: Future Challenges**

The transformation of Hong Kong from a small trading post to one of the world's top metropolitan economies over the past four decades has been inextricably linked with the globalization of the world economy. Hong Kong has successfully exploited emerging opportunities that have arisen as a result of liberalization in international markets. Taking advantage of the liberal trade regime ushered in by the postwar era, Hong Kong became a leading exporter in a wide range of consumer products. With the emergence of a global international capital market in the 1970s onwards, Hong Kong developed into a major international financial center. With the opening of the mainland economy twenty years ago, Hong Kong evolved into an all-around producer services center, managing and coordinating a large share of the world's trading and manufacturing activities.

Hong Kong today aspires to become the leading economic center for South China and a world city in Pacific Asia. This is quite an ambitious goal that few cities in North America or Europe are aiming for in their own continent. To achieve this goal would put Hong Kong several steps ahead of where it was as the export-oriented manufacturer center that made it one of Asia's newly industrialized economies known as the little dragons or little tigers. The role of manufacturing in a world city is still an important one, but it becomes one of several important clusters of economic activity. Hong Kong must maintain its competitiveness in all of them.

Manufacturing in Hong Kong will not and cannot play the same dominant economic role that it did in the 1960s and 1970s, when domestic exports dominated total exports. But Hong Kong still has a critical role to perform as the headquarters of the region's vast offshore manufacturing industry—a role that can continue to grow as economic integration with South China and Pacific Asia deepens and broadens further. To enable this to happen, Hong Kong must also support and upgrade its offshore manufacturing operations and embark on new ventures.

In the foreseeable future, the role of reexports will continue to bear heavily on Hong Kong's prosperity and economic competitiveness as a service hub. In order to enhance Hong Kong's trading hub efficiency and attractiveness, the government will have to maintain the superb standards of its overall infrastructure—especially its information technology infrastructure—to facilitate business-to-business e-commerce. In addition, to enhance the efficiency and to lower the costs of cargo movement between Hong Kong and the mainland, the government will have to coordinate with mainland authorities to develop a more efficient and extensive transportation network and to improve the efficiency of customs clearing at the border. Hong Kong will also need to attract more competitive mainland buyers and sellers to establish their presence in the city to increase the efficiency of trade intermediation.

The effects of the Asian crisis have prompted the Hong Kong government to reexamine its policies and to plan strategically for the future. To be a successful world city, Hong Kong has to be more than a service center for offshore manufacturing and reexport activities. It must provide service exports to the region in other areas like finance, business services, tourism, communication, and so forth. To do so it has to maintain and enhance its seamless economic integration with the world economy. This will require conscious government actions in a number of distinct areas.

As a city economy, Hong Kong has unique problems and challenges in securing its economic future. It long ago reached the limits of its economic size and now seeks to serve economies beyond its borders. Hence, its ability to reach out and integrate with the global economy is the single most important factor determining its future economic prosperity. Putting in place the requisite policies and institutions is an enormously challenging task, especially in the face of global competition in the information age.

Learning has large economies of scale. It takes place both internally, within one's borders, and externally, from the experiences of other cities. The size of the city economy is important because it provides a larger stock of experience and the presence of an adequate critical mass. Cities should be allowed to grow and to manage and sustain their growth. City economies must also learn from the successes and failures of other cities to reduce the cost of policy and institutional innovations and to avoid reinventing the wheel.

The relocation of Hong Kong's manufacturing base offshore is part of the restructuring of production that is taking place worldwide. In this process, we are witnessing a major shift of selected parts of the production systems of advanced economies to the emerging economies of the developing world. We are also finding that core production activities, including R&D, high value-added products and services, or technology-intensive activities remain anchored in the developed economies, where high-skilled individuals, especially those who contribute to the production of advanced services, are now one of the most important factor inputs. Innovation and knowledge-based products of service development that embody proprietary, state-of-the-art knowledge that can be replicated by competitors in a way that can confer competitive advantage are unlikely to be transferred offshore. They remain highly concentrated in cities where a critical core of related producer services are maintained.

The growing economic dominance of services requires that the government take an active role in extensively and intensively reviewing general and specific policy and regulatory regimes in numerous service sectors to enhance innovation, competition, and global competitiveness. Hong Kong's future as a metropolitan economy depends to a great extent on the efficiency of its producer services and its ability to transform nontraded services into traded services.

City economies rely heavily on their human resources to support their economic future as knowledge-based economies. Human resource talent is important at all levels. Given Hong Kong's limited population size, therefore, augmenting the size and quality of Hong Kong's human resource talent pool will have an important bearing on the city's economic future.

Hong Kong's major long-run constraint is its human resources. The appropriate education and training required to extend its role as a management, coordination, and financial center is a major issue. The central aim should be to foster the creation of a knowledge-based economy through continuous investment in education and training, including the implementation of necessary reforms to foster a culture emphasizing innovation and not merely the augmentation of skills.

Aside from the question of education and training, in order for human resources to equal Hong Kong's needs, immigration is essential. Only an influx of immigrants can replenish Hong Kong's entrepreneurial and risk-taking spirit and provide the skills that Hong Kong itself cannot supply. It is inconceivable that New York would be New York if all New Yorkers were born in New York. Similarly, it would be inconceivable that Hong Kong would be the Hong Kong we know if all Hong Kongers were born there. It is thus vital to its future economic success that Hong Kong adopt an attitude of openness toward immigration.

There are other factors that impact Hong Kong's competitiveness. For example, making the city more attractive to knowledge workers will become more important in the future. Workers who are knowledge intensive can pack their bags and go somewhere else if they find their working and living conditions uncongenial. They are not the traditional blue-collar workers who have limited skills and little mobility.

As we ponder Hong Kong's economic future, we must therefore not lose sight of its existing competitive advantages in its producer service-centered economy. Hong Kong should not be benchmarked against national economies but against other metropolitan centers. Its ability to marshal the necessary education and training systems; to invest in the necessary technological infrastructure; to enhance the competitiveness of traded services; to liberalize nontraded service; to maintain the friendliness of the overall business environment; to improve quality of life; and to make the necessary social adjustments will be critical to its economic future. If Hong Kong can comprehensively organize itself for learning and innovation, it will excel.

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## Appendix I: Estimating the Value of Producer Services

The main focus of our study is on Hong Kong producer services. Since the government does not directly measure the values of these services, we have had to estimate them indirectly from available data. The following will explain how the results are derived.

The GDP is compiled in two ways: one is production based and the other is expenditure based.

For the production-based approach, the nominal GDP is the value-added sum of the following sector components: agriculture and fishing, mining and quarrying, manufacturing, utilities (electricity, gas, water), construction, and total services. The nominal GDP for total services is not compiled in terms of their users (i.e., consumer, government, and producer services), but the nominal values of the total consumer services can be found in GDP estimates via the expenditure-based approach. Thus, by subtracting the nominal values of consumer and government services from the nominal value added of total services, the nominal values of producer services may be derived.

In assessing the contribution of producer services to the economy, we also have to obtain the real values of the producer services for analysis. Since the production-based approach only provides the nominal values of the GDP and its components, we have to construct the appropriate deflators of the GDP components to get the real value of the producer services. The main steps are as follows:

(a) From what we have described above, the nominal values of producer services ( $Y_{ps}$ ) is obtained by subtracting the nominal values of consumer services ( $Y_{cs}$ ) and government services ( $Y_{gs}$ ) from the nominal value added of total services ( $Y_{ts}$ ).

$$Y_{ps} = Y_{ts} - Y_{cs} - Y_{gs}$$

(b) We then calculate the real values of producer services by using the “residual method.” First, we calculate the real value added for all economic activities in each of the following sectors: agriculture and fishing, mining and quarrying, manufacturing, utilities (electricity, gas, water) and construction. We get the real value added of services ( $Q_{ts}$ ) by subtracting the real value added for the sectors: agriculture and fishing ( $Q_{af}$ ), mining and quarrying ( $Q_{mq}$ ), manufacturing ( $Q_{mf}$ ), utilities (electricity, gas, water) ( $Q_{ut}$ ), and construction ( $Q_{co}$ ) from the value added for all economic activities ( $Q_{ta}$ ). Finally, we get the real values of producer services ( $Q_{ps}$ ) by subtracting the real values of consumer services ( $Q_{cs}$ ) from the real value added of services ( $Q_{ts}$ ).

$$Q_{ta} = Q_{af} + Q_{mq} + Q_{mf} + Q_{ut} + Q_{co} + Q_{ts}$$
$$Q_{ps} = Q_{ts} - Q_{cs} - Q_{gs}$$

(Detailed calculations of the real value of each sector are provided in Appendix II.)

(c) We get the price deflator of producer services ( $P_{ps}$ ) by dividing  $Y_{ps}$  by  $Q_{ps}$ .

$$P_{ps} = Y_{ps}/Q_{ps}$$

Once we have the real values and price deflator of total producer services, we can proceed to calculate the value of the producer services of the various components of the service sector. Similar to total services, the components of the service sector are not compiled in term of their users (i.e., consumer and producer services). Thus, we also have to estimate the proportion of producer services in each component.

According to government classification, the service sector can be divided into the following economic activities:

1. wholesale trade
2. retail trade
3. import/export trade
4. restaurants
5. hotels
6. transport, storage, and communications
7. financing
8. insurance services
9. real estate
10. business services
11. community, social, and personal services
12. ownership of premises
13. adjustment for financial intermediation services (residual category)

All these economic activities may include both consumer and producer services. The following will explain how we estimate the nominal values of producer services from each economic activity.

(a) For wholesale trade, we take the proportion of the value added of producer services to be 100%.

(b) For retail trade, we assume that producer services are services provided to tourists. From survey data provided by the Hong Kong Tourist Association, we take figures under the category of “shopping” as an estimate of the amount of gross output value attributable to retail trade activity associated with the provision of producer services. These account for about 40 to 50 percent of the total gross output attributable to retail trade over the period 1980–97. Accordingly, we take 45 percent across the board to be the proportion of the value added of producer services.

(c) For import/export trade, we take the proportion of the valued added of producer services to be 100 percent.



(d) For the restaurant industry, we assume that the producer services are mainly for tourists. From data provided by the Hong Kong Tourist Association, we take figures under the category of “meals out” as an estimate of the gross output value attributable to the restaurant industry associated with the provision of producer services. These account for about 10 to 20 percent of the total gross output attributable to the restaurant industry over the period 1980–96. Accordingly, we take 15 percent across the board to be the proportion of the value added of producer services.

(e) For the hotel industry, we assume that producer services are for tourists, and we take the proportion of the value added of producer services to be 100%.

(f) For the transport, storage, and communications service sector, figures under the category of “transport and communication” are available in the expenditure account for consumption. We take these as the estimated value added of consumer services. Accordingly, we take these as the estimated value added of consumer services, which account for about 50 to 60 percent of the total value added. We take an average 45 percent across the board to be the proportion of value added of producer services.

(g) For the finance industry, we take the value added of consumer services to be the profit earned by the banks and deposit-taking companies from professional and private individual loans. We assume that the banks and deposit-taking companies earn about 2 to 2.5 percent on loans, which accounts for about 8 to 12 percent of the total value added. We take an average of 90 percent across the board to be the proportion of the value added of producer services.

(h) For insurance services, according to the information from the Office of the Commissioner of Insurance, the proportion of insurance related to business activities is about 20 percent. We take 20 percent across the board to be the proportion of the value added of producer services.

(i) For the real estate industry, we assume that the proportion of producer services is directly related to the proportion of the value accrued in the nonresidential building activity. The proportion of the value of nonresidential building activity in total activity was about 40 to 50 percent in the period 1980–97. We assume that the value added from the nonresidential buildings should be lower during the recession period of the construction industry. Thus, we take the proportion of the value added of producer services to be 50 percent, except in the period 1983–86, when the construction industry was in recession. For those years, we take the proportion to be 40 percent.

(j) For business services, we take the proportion of the value added of producer services to be 100 percent.

(k) For community, social, and personal services, figures under the categories of “medical care and health expenses,” “recreation and entertainment,” “education,” and

“other services” are available in the expenditure account on consumption. Accordingly, we take these as the estimated value added of consumer services, which account for about 50 to 60 percent of the total value added. Also under this category are “government services.” The value of this part accounts for about 35 to 45 percent of the total value added. Hence, we take an average 5 percent across the board to be the proportion of value added of producer services.

(l) For ownership of premises, according to the information from the Rating and Valuation Department, the proportion of rates from nonresidential premises was about 45 percent. Accordingly, we take 45 percent across the board to be the proportion of the value added of producer services.

(m) For the adjustment of indirectly measured financial intermediation services, we take the residual between the sum of the figures from (a) to (l) and the total value added of the services industry to be the valued added of these services. As both producers and consumers use the services, the resulting adjustment for producer services should be negative and cannot be greater than the total adjustment in absolute terms.

Similar to total services, the production-based approach only provides the nominal values of the sector components. Since a great margin of error may be created in the process of constructing price deflators for each component, it is more appropriate to use the price deflator of producer services across the board. This allows for the real values of producer services in each service subsector to be derived by dividing the nominal values of producer services obtained above by the price deflator of total producer services.

The method we have used to estimate the value added of real producer services and its components is crude, and the figures we obtain should only be used as revealing the approximate trend movement of producer services over the period 1980–97. The estimates for the various components of producer services are particularly subject to error.

## Appendix II: Calculating the Real Value Added of Each Sector

(a) For the nominal valued added ( $Y_{gs}$ ) and real value added ( $Q_{gs}$ ) of government services, we take the nominal and real values in the category “compensation of employee” under the government consumption expenditure account as estimates of the value added of government services.

(b) For the real value added of the agriculture and fishing industry ( $Q_{af}$ ), we deflate the nominal value added of the agriculture and fishing industry ( $Y_{af}$ ) by the consumer price index (A) of food, excluding meals bought away from home ( $P_{fo}$ ).

$$Q_{af} = Y_{af}/P_{fo}$$

(c) For the real value added of the mining and quarrying industry ( $Q_{mq}$ ), we first construct an index ( $I_{qp}$ ) for the outputs of cement production (in tons). We then take the growth rates of the index as the real growth rates of the value added of mining and quarrying industry.

(d) We get the real value added of the manufacturing industry ( $Q_{mf}$ ) by subtracting the real intermediate consumption ( $Q_{mf,ic}$ ) from the real gross output ( $Q_{mf,go}$ ) of the manufacturing industry.  $Q_{mf,go}$  is obtained by deflating the nominal gross output of the manufacturing industry ( $Y_{mf,go}$ ) with the implicit price deflator of domestic exports ( $P_{de}$ ).  $Q_{mf,ic}$  is obtained by deflating the nominal intermediate consumption of the manufacturing industry ( $Y_{mf,ic}$ ) with the unit value index of the import of raw materials and semi-manufactures ( $P_{mm}$ ).

$$\begin{aligned} Q_{mf,go} &= Y_{mf,go}/P_{de} \\ Q_{mf,ic} &= Y_{mf,ic}/P_{mm} \\ Q_{mf} &= Q_{mf,go} - Q_{mf,ic} \end{aligned}$$

(e) Similar to  $Q_{mf}$ , we get the real value added of the utilities industry, including electricity, gas, and water ( $Q_{ut}$ ) by subtracting the real intermediate consumption ( $Q_{ut,ic}$ ) from the real gross output ( $Q_{ut,go}$ ) of the industry. Furthermore,  $Q_{ut,go}$  is obtained by deflating the nominal gross output ( $Y_{ut,go}$ ) of the industry with the consumer price index (A) of fuel and light ( $P_{ul}$ ), and  $Q_{ut,ic}$  is obtained by deflating the nominal intermediate consumption ( $Y_{ut,ic}$ ) of the industry with the unit value index of fuel imports ( $P_{mu}$ ).

$$\begin{aligned} Q_{ut,go} &= Y_{ut,go}/P_{ul} \\ Q_{ut,ic} &= Y_{ut,ic}/P_{mu} \\ Q_{ut} &= Q_{ut,go} - Q_{ut,ic} \end{aligned}$$

(f) For the real value added of the construction industry ( $Q_{co}$ ), we deflate the nominal value added of the construction industry ( $Y_{co}$ ) by the implicit price deflator of the gross domestic fixed capital formation of construction, transfer costs of land and buildings and real estate developers' margin ( $P_{co}$ ).

$$Q_{co} = Y_{co}/P_{co}$$

(g) For the real value added of all economic activities ( $Q_{ta}$ ), we deflate the nominal value added of all economic activities ( $Y_{ta}$ ) by the implicit price deflator of the GDP ( $P_{ta}$ ).

$$Q_{ta} = Y_{ta}/P_{ta}$$

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**Table A1: Production-based Nominal GDP by Economic Activity**

Year	Primary	Industry				Services	GDP at factor cost	
	Agriculture and fishing	Total	Mining and quarrying	Manufacturing	Electricity, gas and water	Construction		
1980	1,102	42,652	213	31,806	1,703	8,929	90,698	134,451
1981	1,128	52,424	253	37,557	2,229	12,385	111,159	164,711
1982	1,240	54,992	308	38,070	3,243	13,371	126,974	183,205
1983	1,225	64,183	316	46,242	4,739	12,885	136,107	201,515
1984	1,245	77,232	299	58,329	5,687	12,917	161,312	239,789
1985	1,211	75,891	356	56,192	6,665	12,679	176,771	253,873
1986	1,308	89,820	346	66,836	8,385	14,253	204,880	296,008
1987	1,334	107,685	257	80,713	9,691	17,024	257,776	366,795
1988	1,417	121,121	229	90,035	10,199	20,658	315,717	438,255
1989	1,386	132,992	224	96,170	10,860	25,738	364,557	498,935
1990	1,432	141,394	210	98,352	12,612	30,220	416,620	559,446
1991	1,441	145,625	222	97,223	13,521	34,659	484,448	631,514
1992	1,468	152,943	205	99,764	15,637	37,337	577,709	732,120
1993	1,612	153,459	197	92,582	17,591	43,089	675,098	830,169
1994	1,596	156,103	249	87,354	22,175	46,325	792,472	950,172
1995	1,453	163,426	317	84,770	23,578	54,761	851,235	1,016,115
1996	1,444	175,127	311	82,769	26,989	65,058	953,642	1,130,212
1997	1,464	181,184	272	80,049	29,212	71,650	1,050,386	1,233,034

**Table A2: Contribution of Economic Activity to Nominal GDP at Factor Cost (%)**

	<b>Primary</b>	<b>Industry</b>					<b>Services</b>	<b>GDP at factor cost</b>
<b>Year</b>	<b>Agriculture and fishing</b>	<b>Total</b>	<b>Mining and quarrying</b>	<b>Manufacturing</b>	<b>Electricity, gas and water</b>	<b>Construction</b>		
1980	0.82	31.72	0.16	23.66	1.27	6.64	67.46	100.00
1981	0.68	31.83	0.15	22.80	1.35	7.52	67.49	100.00
1982	0.68	30.02	0.17	20.78	1.77	7.30	69.31	100.00
1983	0.61	31.85	0.16	22.95	2.35	6.39	67.54	100.00
1984	0.52	32.21	0.12	24.33	2.37	5.39	67.27	100.00
1985	0.48	29.89	0.14	22.13	2.63	4.99	69.63	100.00
1986	0.44	30.34	0.12	22.58	2.83	4.82	69.21	100.00
1987	0.36	29.36	0.07	22.00	2.64	4.64	70.28	100.00
1988	0.32	27.64	0.05	20.54	2.33	4.71	72.04	100.00
1989	0.28	26.66	0.04	19.28	2.18	5.16	73.07	100.00
1990	0.26	25.27	0.04	17.58	2.25	5.40	74.47	100.00
1991	0.23	23.06	0.04	15.40	2.14	5.49	76.71	100.00
1992	0.20	20.89	0.03	13.63	2.14	5.10	78.91	100.00
1993	0.19	18.49	0.02	11.15	2.12	5.19	81.32	100.00
1994	0.17	16.43	0.03	9.19	2.33	4.88	83.40	100.00
1995	0.14	16.08	0.03	8.34	2.32	5.39	83.77	100.00
1996	0.13	15.50	0.03	7.32	2.39	5.76	84.38	100.00
1997	0.12	14.69	0.02	6.49	2.37	5.81	85.19	100.00
<b>Average</b>								
1980-1989	0.52	30.15	0.12	22.10	2.17	5.76	69.33	100.00
1990-1997	0.18	18.80	0.03	11.14	2.26	5.38	81.02	100.00

**Table A3: Growth Rate of Economic Activity (%)**

Year	Primary	Industry					Services	GDP at factor cost
	Agriculture and fishing	Total	Mining and quarrying	Manufacturing	Electricity, gas and water	Construction		
1981	2.36	22.91	18.78	18.08	30.89	38.71	22.56	22.51
1982	9.93	4.90	21.74	1.37	45.49	7.96	14.23	11.23
1983	-1.21	16.71	2.60	21.47	46.13	-3.63	7.19	9.99
1984	1.63	20.33	-5.38	26.14	20.00	0.25	18.52	18.99
1985	-2.73	-1.74	19.06	-3.66	17.20	-1.84	9.58	5.87
1986	8.01	18.35	-2.81	18.94	25.81	12.41	15.90	16.60
1987	1.99	19.89	-25.72	20.76	15.58	19.44	25.82	23.91
1988	6.22	12.48	-10.89	11.55	5.24	21.35	22.48	19.48
1989	-2.19	9.80	-2.18	6.81	6.48	24.59	15.47	13.85
1990	3.32	6.32	-6.25	2.27	16.13	17.41	14.28	12.13
1991	0.63	2.99	5.71	-1.15	7.21	14.69	16.28	12.88
1992	1.87	5.03	-7.66	2.61	15.65	7.73	19.25	15.93
1993	9.81	0.34	-3.90	-7.20	12.50	15.41	16.86	13.39
1994	-0.99	1.72	26.40	-5.65	26.06	7.51	17.39	14.46
1995	-8.96	4.69	27.31	-2.96	6.33	18.21	7.42	6.94
1996	-0.62	7.16	-1.89	-2.36	14.47	18.80	12.03	11.23
1997	1.39	3.46	-12.54	-3.29	8.24	10.13	10.14	9.10
<b>Average</b>								
1981-1989	2.67	13.74	1.69	13.50	23.65	13.25	16.86	15.83
1990-1997	0.81	3.96	3.40	-2.21	13.32	13.74	14.21	12.01



**Table A4: Nominal Value Added of Components in Service Sector**

Year	Total services	Wholesale trade	Retail trade	Import/export trade	Restaurants	Hotel	Transport, storage and communications	Financing	Insurance services	Real estate	Business services	Community, social and personal services	Ownership of premises	Adjustment for financial intermediation services
1980	90,698	2,528	6,576	14,357	4,007	1,295	9,922	8,760	869	18,269	3,040	16,248	12,028	-7,200
1981	111,159	2,777	7,540	16,262	5,257	1,613	12,202	11,487	1,280	22,370	4,224	21,320	15,152	-10,325
1982	126,974	2,875	8,098	18,040	5,779	1,810	14,069	12,926	1,349	22,272	4,650	27,880	18,631	-11,405
1983	136,107	2,992	7,758	22,070	6,313	2,071	16,529	13,103	1,527	15,387	5,546	32,163	22,496	-11,848
1984	161,312	3,747	10,004	31,748	7,311	2,693	18,680	14,177	1,631	15,249	6,397	37,003	24,396	-11,725
1985	176,771	3,963	10,660	32,045	8,149	3,126	20,629	14,278	2,005	16,750	7,706	42,511	26,671	-11,722
1986	204,880	4,299	11,127	37,563	9,236	3,796	24,192	18,362	2,226	20,271	9,448	47,406	30,034	-13,079
1987	257,776	5,758	14,454	52,600	11,652	4,784	31,693	23,767	2,827	26,733	12,379	53,011	35,859	-17,743
1988	315,717	6,349	17,912	65,606	13,840	6,087	40,005	26,057	3,560	36,815	16,381	61,002	43,416	-21,313
1989	364,557	7,246	19,895	73,065	17,750	6,793	44,654	29,781	4,269	45,354	17,892	70,124	51,534	-23,800
1990	416,620	9,458	20,156	85,593	18,689	6,826	52,927	34,600	4,555	54,068	19,903	81,328	59,257	-30,741
1991	484,448	10,046	24,052	101,999	19,959	7,229	60,604	54,142	5,418	60,181	23,555	94,293	68,873	-45,902
1992	577,709	10,884	27,731	119,806	23,293	9,046	71,227	69,602	6,609	75,558	27,154	110,703	80,941	-54,846
1993	675,098	13,148	29,655	145,646	25,354	10,659	78,993	83,272	9,201	91,581	30,495	130,408	89,862	-63,177
1994	792,472	13,069	34,731	162,124	27,370	11,872	92,109	88,785	11,868	117,698	35,996	151,293	115,659	-70,101
1995	851,235	14,098	32,884	184,571	26,244	12,723	102,199	94,487	11,824	100,480	41,194	175,956	134,933	-80,358
1996	953,642	15,397	36,871	207,128	27,446	14,434	111,087	112,300	11,104	115,326	45,388	198,967	147,547	-89,356
1997	1,050,386	14,815	37,826	217,712	29,587	13,330	112,829	124,505	10,764	134,186	53,163	220,451	171,383	-90,164

**Table A5: Share of Nominal Value Added of Components in Service Sector (%)**

Year	Total services	Wholesale trade	Retail trade	Import/export trade	Restaurants	Hotel	Transport, storage and communications	Financing	Insurance services	Real estate	Business services	Community, social and personal services	Ownership of premises	Adjustment for financial intermediation services
1980	100.00	2.79	7.25	15.83	4.42	1.43	10.94	9.66	0.96	20.14	3.35	17.91	13.26	-7.94
1981	100.00	2.50	6.78	14.63	4.73	1.45	10.98	10.33	1.15	20.12	3.80	19.18	13.63	-9.29
1982	100.00	2.26	6.38	14.21	4.55	1.43	11.08	10.18	1.06	17.54	3.66	21.96	14.67	-8.98
1983	100.00	2.20	5.70	16.22	4.64	1.52	12.14	9.63	1.12	11.31	4.07	23.63	16.53	-8.70
1984	100.00	2.32	6.20	19.68	4.53	1.67	11.58	8.79	1.01	9.45	3.97	22.94	15.12	-7.27
1985	100.00	2.24	6.03	18.13	4.61	1.77	11.67	8.08	1.13	9.48	4.36	24.05	15.09	-6.63
1986	100.00	2.10	5.43	18.33	4.51	1.85	11.81	8.96	1.09	9.89	4.61	23.14	14.66	-6.38
1987	100.00	2.23	5.61	20.41	4.52	1.86	12.29	9.22	1.10	10.37	4.80	20.56	13.91	-6.88
1988	100.00	2.01	5.67	20.78	4.38	1.93	12.67	8.25	1.13	11.66	5.19	19.32	13.75	-6.75
1989	100.00	1.99	5.46	20.04	4.87	1.86	12.25	8.17	1.17	12.44	4.91	19.24	14.14	-6.53
1990	100.00	2.27	4.84	20.54	4.49	1.64	12.70	8.30	1.09	12.98	4.78	19.52	14.22	-7.38
1991	100.00	2.07	4.96	21.05	4.12	1.49	12.51	11.18	1.12	12.42	4.86	19.46	14.22	-9.48
1992	100.00	1.88	4.80	20.74	4.03	1.57	12.33	12.05	1.14	13.08	4.70	19.16	14.01	-9.49
1993	100.00	1.95	4.39	21.57	3.76	1.58	11.70	12.33	1.36	13.57	4.52	19.32	13.31	-9.36
1994	100.00	1.65	4.38	20.46	3.45	1.50	11.62	11.20	1.50	14.85	4.54	19.09	14.59	-8.85
1995	100.00	1.66	3.86	21.68	3.08	1.49	12.01	11.10	1.39	11.80	4.84	20.67	15.85	-9.44
1996	100.00	1.61	3.87	21.72	2.88	1.51	11.65	11.78	1.16	12.09	4.76	20.86	15.47	-9.37
1997	100.00	1.41	3.60	20.73	2.82	1.27	10.74	11.85	1.02	12.77	5.06	20.99	16.32	-8.58
<b>Average</b>														
1980-1989	100.00	2.26	6.05	17.83	4.58	1.68	11.74	9.13	1.09	13.24	4.27	21.19	14.48	-7.54
1990-1997	100.00	1.81	4.34	21.06	3.58	1.51	11.91	11.22	1.22	12.95	4.76	19.88	14.75	-8.99

**Table A6: Growth Rate of Nominal Value Added of Components in Service Sector (%)**

Year	Total services	Wholesale trade	Retail trade	Import/export trade	Restaurants	Hotel	Transport, storage and communications	Financing	Insurance services	Real estate	Business services	Community, social and personal services	Ownership of premises	Adjustment for financial intermediation services
1981	22.56	9.85	14.66	13.27	31.20	24.56	22.98	31.13	47.30	22.45	38.95	31.22	25.97	43.40
1982	14.23	3.53	7.40	10.93	9.93	12.21	15.30	12.53	5.39	-0.44	10.09	30.77	22.96	10.46
1983	7.19	4.07	-4.20	22.34	9.24	14.42	17.49	1.37	13.19	-30.91	19.27	15.36	20.74	3.88
1984	18.52	25.23	28.95	43.85	15.81	30.03	13.01	8.20	6.81	-0.90	15.34	15.05	8.45	-1.04
1985	9.58	5.76	6.56	0.94	11.46	16.08	10.43	0.71	22.93	9.84	20.46	14.89	9.33	-0.03
1986	15.90	8.48	4.38	17.22	13.34	21.43	17.27	28.60	11.02	21.02	22.61	11.51	12.61	11.58
1987	25.82	33.94	29.90	40.03	26.16	26.03	31.01	29.44	27.00	31.88	31.02	11.82	19.39	35.66
1988	22.48	10.26	23.92	24.73	18.78	27.24	26.23	9.64	25.93	37.71	32.33	15.07	21.07	20.12
1989	15.47	14.13	11.07	11.37	28.25	11.60	11.62	14.29	19.92	23.19	9.22	14.95	18.70	11.67
1990	14.28	30.53	1.31	17.15	5.29	0.49	18.53	16.18	6.70	19.21	11.24	15.98	14.99	29.16
1991	16.28	6.22	19.33	19.17	6.80	5.90	14.50	56.48	18.95	11.31	18.35	15.94	16.23	49.32
1992	19.25	8.34	15.30	17.46	16.70	25.13	17.53	28.55	21.98	25.55	15.28	17.40	17.52	19.48
1993	16.86	20.80	6.94	21.57	8.85	17.83	10.90	19.64	39.22	21.21	12.30	17.80	11.02	15.19
1994	17.39	-0.60	17.12	11.31	7.95	11.38	16.60	6.62	28.99	28.52	18.04	16.02	28.71	10.96
1995	7.42	7.87	-5.32	13.85	-4.11	7.17	10.95	6.42	-0.37	-14.63	14.44	16.30	16.66	14.63
1996	12.03	9.21	12.12	12.22	4.58	13.45	8.70	18.85	-6.09	14.78	10.18	13.08	9.35	11.20
1997	10.14	-3.78	2.59	5.11	7.80	-7.65	1.57	10.87	-3.06	16.35	17.13	10.80	16.15	0.90
<b>Average</b>														
1981-1989	16.86	12.81	13.63	20.52	18.24	20.40	18.37	15.10	19.94	12.65	22.14	17.85	17.69	15.08
1990-1997	14.21	9.82	8.67	14.73	6.73	9.21	12.41	20.45	13.29	15.29	14.62	15.41	16.33	18.86

**Table A7: Real Value Added of Selected Economic Activity**

	All economic activities	Manufacturing	Services			Other economic activities	
			Total	Producer services	Consumer services		Government services
1980	294,204	50,457	218,050	125,674	78,686	13,690	25,697
1981	326,808	55,647	240,295	137,539	87,491	15,265	30,865
1982	331,293	51,942	245,546	132,882	93,990	18,674	33,805
1983	348,642	58,857	253,221	131,463	100,687	21,070	36,565
1984	378,216	67,971	272,859	141,782	107,780	23,297	37,386
1985	380,049	60,232	282,036	142,636	114,001	25,399	37,782
1986	426,524	72,309	314,076	166,216	121,450	26,410	40,140
1987	485,179	86,205	358,554	196,841	134,130	27,583	40,419
1988	529,293	100,149	390,218	218,049	143,541	28,628	38,926
1989	536,489	102,259	393,762	211,685	152,286	29,791	40,469
1990	559,446	98,352	416,620	226,840	158,539	31,241	44,474
1991	578,310	94,098	438,476	241,403	162,938	34,135	45,736
1992	611,119	87,348	480,392	269,213	172,231	38,948	43,379
1993	638,592	75,674	518,440	296,736	181,997	39,707	44,478
1994	683,577	73,762	563,481	333,806	188,289	41,386	46,334
1995	713,063	80,463	580,075	344,717	192,931	42,427	52,525
1996	748,981	70,572	620,547	374,207	202,422	43,918	57,862
1997	772,094	69,208	645,351	386,222	214,597	44,532	57,535

**Table A8: Share of Real Value Added of Selected Economic Activity (%)**

	All economic activities	Manufacturing	Services			Other economic activities	
			Total	Producer services	Consumer services		Government services
1980	100.00	17.15	74.12	42.72	26.75	4.65	8.73
1981	100.00	17.03	73.53	42.09	26.77	4.67	9.44
1982	100.00	15.68	74.12	40.11	28.37	5.64	10.20
1983	100.00	16.88	72.63	37.71	28.88	6.04	10.49
1984	100.00	17.97	72.14	37.49	28.50	6.16	9.88
1985	100.00	15.85	74.21	37.53	30.00	6.68	9.94
1986	100.00	16.95	73.64	38.97	28.47	6.19	9.41
1987	100.00	17.77	73.90	40.57	27.65	5.69	8.33
1988	100.00	18.92	73.72	41.20	27.12	5.41	7.35
1989	100.00	19.06	73.40	39.46	28.39	5.55	7.54
1990	100.00	17.58	74.47	40.55	28.34	5.58	7.95
1991	100.00	16.27	75.82	41.74	28.17	5.90	7.91
1992	100.00	14.29	78.61	44.05	28.18	6.37	7.10
1993	100.00	11.85	81.18	46.47	28.50	6.22	6.96
1994	100.00	10.79	82.43	48.83	27.54	6.05	6.78
1995	100.00	11.28	81.35	48.34	27.06	5.95	7.37
1996	100.00	9.42	82.85	49.96	27.03	5.86	7.73
1997	100.00	8.96	83.58	50.02	27.79	5.77	7.45
<b>Average</b>							
1980-1989	100.00	17.33	73.54	39.78	28.09	5.67	9.13
1990-1997	100.00	12.56	80.04	46.25	27.83	5.96	7.41

**Table A9: Growth Rate of Real Value Added of Selected Economic Activity (%)**

	All economic activities	Manufacturing	Services			Other economic activities	
			Total	Producer services	Consumer services		Government services
1981	11.08	10.29	10.20	9.44	11.19	11.50	20.11
1982	1.37	-6.66	2.18	-3.39	7.43	22.33	9.52
1983	5.24	13.31	3.13	-1.07	7.13	12.83	8.16
1984	8.48	15.49	7.76	7.85	7.04	10.57	2.25
1985	0.48	-11.39	3.36	0.60	5.77	9.02	1.06
1986	12.23	20.05	11.36	16.53	6.53	3.98	6.24
1987	13.75	19.22	14.16	18.43	10.44	4.44	0.70
1988	9.09	16.18	8.83	10.77	7.02	3.79	-3.69
1989	1.36	2.11	0.91	-2.92	6.09	4.06	3.96
1990	4.28	-3.82	5.81	7.16	4.11	4.87	9.90
1991	3.37	-4.33	5.25	6.42	2.77	9.26	2.84
1992	5.67	-7.17	9.56	11.52	5.70	14.10	-5.15
1993	4.50	-13.36	7.92	10.22	5.67	1.95	2.53
1994	7.04	-2.53	8.69	12.49	3.46	4.23	4.17
1995	4.31	9.08	2.94	3.27	2.47	2.52	13.36
1996	5.04	-12.29	6.98	8.56	4.92	3.51	10.16
1997	3.09	-1.93	4.00	3.21	6.01	1.40	-0.57
<b>Average</b>							
1981-1989	7.01	8.73	6.88	6.25	7.63	9.17	5.37
1990-1997	4.66	-4.54	6.39	7.86	4.39	5.23	4.66

**Table A10: Real Value Added of Producer Services by Components**

Year	Total	Wholesale trade	Retail trade	Import/export trade	Restaurants	Hotel	Transport, storage and communications	Financing	Insurance services	Real estate	Business services	Community, social and personal	Ownership of premises	Adjustment for financial intermediation
1980	125,674	6,216	7,276	35,300	1,478	3,184	10,978	19,385	427	22,459	7,475	1,997	13,308	-3,810
1981	137,539	6,201	7,576	36,311	1,761	3,602	12,260	23,084	572	24,974	9,432	2,380	15,224	-5,837
1982	132,882	5,804	7,356	36,417	1,750	3,654	12,780	23,484	545	22,480	9,387	2,814	16,924	-10,511
1983	131,463	6,003	7,004	44,281	1,900	4,155	14,923	23,661	613	12,349	11,127	3,227	20,311	-18,090
1984	141,782	6,666	8,009	56,480	1,951	4,791	14,954	22,699	580	10,851	11,380	3,291	19,530	-19,402
1985	142,636	6,640	8,037	53,690	2,048	5,237	15,553	21,530	672	11,226	12,911	3,561	20,109	-18,579
1986	166,216	7,017	8,172	61,309	2,261	6,196	17,768	26,973	727	13,234	15,421	3,869	22,059	-18,789
1987	196,841	8,203	9,266	74,933	2,490	6,815	20,317	30,472	805	19,042	17,635	3,776	22,988	-19,900
1988	218,049	7,794	9,895	80,540	2,549	7,473	22,100	28,790	874	22,598	20,110	3,744	23,985	-12,403
1989	211,685	7,608	9,400	76,714	2,795	7,132	21,098	28,141	896	23,809	18,786	3,681	24,348	-12,725
1990	226,840	9,458	9,070	85,593	2,803	6,826	23,817	31,140	911	27,034	19,903	4,066	26,666	-20,448
1991	241,403	9,146	9,854	92,865	2,726	6,582	24,829	44,364	987	27,396	21,446	4,292	28,217	-31,301
1992	269,213	9,163	10,506	100,867	2,942	7,616	26,985	52,739	1,113	31,807	22,861	4,660	30,665	-32,712
1993	296,736	10,219	10,371	113,196	2,956	8,284	27,627	58,247	1,430	35,588	23,701	5,068	31,428	-31,378
1994	333,806	9,574	11,449	118,768	3,008	8,697	30,364	58,537	1,739	43,111	26,370	5,542	38,128	-21,480
1995	344,717	10,313	10,825	135,013	2,880	9,307	33,641	62,205	1,730	36,750	30,133	6,436	44,416	-38,931
1996	374,207	10,922	11,770	146,933	2,920	10,239	35,461	71,697	1,575	40,905	32,197	7,057	47,100	-44,571
1997	385,741	9,890	11,363	145,334	2,963	8,898	33,894	74,802	1,437	44,788	35,489	7,358	51,483	-41,958

**Table A11: Share of Real Value Added of Producer Services by Components (%)**

Year	Total producer services	Wholesale trade	Retail trade	Import/export trade	Restaurants	Hotel	Transport, storage and communications	Financing	Insurance services	Real estate	Business services	Community, social and personal	Ownership of premises	Adjustment for financial intermediation
1980	100.00	4.95	5.79	28.09	1.18	2.53	8.74	15.42	0.34	17.87	5.95	1.59	10.59	-3.03
1981	100.00	4.51	5.51	26.40	1.28	2.62	8.91	16.78	0.42	18.16	6.86	1.73	11.07	-4.24
1982	100.00	4.37	5.54	27.41	1.32	2.75	9.62	17.67	0.41	16.92	7.06	2.12	12.74	-7.91
1983	100.00	4.57	5.33	33.68	1.45	3.16	11.35	18.00	0.47	9.39	8.46	2.45	15.45	-13.76
1984	100.00	4.70	5.65	39.84	1.38	3.38	10.55	16.01	0.41	7.65	8.03	2.32	13.77	-13.68
1985	100.00	4.66	5.63	37.64	1.44	3.67	10.90	15.09	0.47	7.87	9.05	2.50	14.10	-13.03
1986	100.00	4.22	4.92	36.89	1.36	3.73	10.69	16.23	0.44	7.96	9.28	2.33	13.27	-11.30
1987	100.00	4.17	4.71	38.07	1.26	3.46	10.32	15.48	0.41	9.67	8.96	1.92	11.68	-10.11
1988	100.00	3.57	4.54	36.94	1.17	3.43	10.14	13.20	0.40	10.36	9.22	1.72	11.00	-5.69
1989	100.00	3.59	4.44	36.24	1.32	3.37	9.97	13.29	0.42	11.25	8.87	1.74	11.50	-6.01
1990	100.00	4.17	4.00	37.73	1.24	3.01	10.50	13.73	0.40	11.92	8.77	1.79	11.76	-9.01
1991	100.00	3.79	4.08	38.47	1.13	2.73	10.29	18.38	0.41	11.35	8.88	1.78	11.69	-12.97
1992	100.00	3.40	3.90	37.47	1.09	2.83	10.02	19.59	0.41	11.81	8.49	1.73	11.39	-12.15
1993	100.00	3.44	3.50	38.15	1.00	2.79	9.31	19.63	0.48	11.99	7.99	1.71	10.59	-10.57
1994	100.00	2.87	3.43	35.58	0.90	2.61	9.10	17.54	0.52	12.92	7.90	1.66	11.42	-6.43
1995	100.00	2.99	3.14	39.17	0.84	2.70	9.76	18.05	0.50	10.66	8.74	1.87	12.88	-11.29
1996	100.00	2.92	3.15	39.27	0.78	2.74	9.48	19.16	0.42	10.93	8.60	1.89	12.59	-11.91
1997	100.00	2.56	2.95	37.68	0.77	2.31	8.79	19.39	0.37	11.61	9.20	1.91	13.35	-10.88
<b>Average</b>														
1980-1989	100.00	4.33	5.20	34.12	1.31	3.21	10.12	15.72	0.42	11.71	8.17	2.04	12.52	-8.88
1990-1997	100.00	3.27	3.52	37.94	0.97	2.71	9.65	18.18	0.44	11.65	8.57	1.79	11.96	-10.65



**Table A12: Growth Rate of Real Value Added of Producer Services by Components (%)**

Year	Total	Wholesale trade	Retail trade	Import/export trade	Restaurants	Hotel	Transport, storage and communications	Financing	Insurance services	Real estate	Business services	Community, social and personal	Ownership of premises	Adjustment for financial intermediation
1981	9.44	-0.24	4.13	2.86	19.14	13.11	11.68	19.08	33.76	11.20	26.18	19.16	14.40	53.21
1982	-3.39	-6.40	-2.90	0.29	-0.62	1.45	4.24	1.73	-4.72	-9.99	-0.48	18.22	11.17	80.08
1983	-1.07	3.44	-4.78	21.59	8.58	13.72	16.77	0.75	12.51	-45.07	18.54	14.66	20.01	72.10
1984	7.85	11.04	14.34	27.55	2.69	15.30	0.21	-4.06	-5.29	-12.13	2.27	2.01	-3.84	7.25
1985	0.60	-0.39	0.35	-4.94	4.97	9.32	4.01	-5.15	15.78	3.45	13.45	8.20	2.96	-4.24
1986	16.53	5.67	1.68	14.19	10.41	18.29	14.24	25.28	8.15	17.89	19.44	8.63	9.70	1.13
1987	18.43	16.90	13.38	22.22	10.11	10.00	14.34	12.97	10.85	43.88	14.36	-2.40	4.21	5.91
1988	10.77	-4.98	6.79	7.48	2.36	9.65	8.78	-5.52	8.52	18.68	14.04	-0.83	4.34	-37.68
1989	-2.92	-2.39	-5.01	-4.75	9.69	-4.56	-4.54	-2.25	2.56	5.36	-6.59	-1.69	1.52	2.60
1990	7.16	24.32	-3.51	11.57	0.28	-4.29	12.89	10.66	1.62	13.54	5.95	10.46	9.52	60.69
1991	6.42	-3.30	8.64	8.50	-2.77	-3.58	4.25	42.47	8.29	1.34	7.75	5.56	5.82	53.08
1992	11.52	0.19	6.62	8.62	7.92	15.72	8.68	18.88	12.80	16.10	6.60	8.57	8.68	4.51
1993	10.22	11.52	-1.28	12.22	0.48	8.77	2.38	10.44	28.52	11.89	3.67	8.74	2.49	-4.08
1994	12.49	-6.31	10.39	4.92	1.75	4.99	9.91	0.50	21.58	21.14	11.26	9.35	21.32	-31.54
1995	3.27	7.71	-5.46	13.68	-4.26	7.01	10.79	6.27	-0.52	-14.75	14.27	16.13	16.49	81.24
1996	8.55	5.91	8.73	8.83	1.42	10.02	5.41	15.26	-8.93	11.31	6.85	9.66	6.04	14.49
1997	3.08	-9.45	-3.46	-1.09	1.44	-13.09	-4.42	4.33	-8.78	9.49	10.22	4.26	9.31	-5.86
<b>Average</b>														
1981-1989	6.25	2.52	3.11	9.61	7.48	9.59	7.75	4.76	9.12	3.70	11.25	7.33	7.16	20.04
1990-1997	7.84	3.82	2.59	8.41	0.78	3.19	6.24	13.60	6.82	8.76	8.32	9.09	9.96	21.56

**Table A13: Price Deflators of GDP and its Main Component (1990=100)**

Year	GDP deflator	Deflator of services	Deflator of producer services	Deflator of consumer services	Deflator of government services	Deflator of private consumption expenditure	Deflator of manufacturing	Deflator of domestic exports	Deflator of re-exports	Deflator of imports	Deflator of exports of services	Deflator of imports of services
1980	45.7	41.6	40.7	43.1	41.4	48.4	63.0	62.6	56.3	58.1	44.5	58.2
1981	50.4	46.3	44.8	48.5	46.7	54.2	67.5	68.3	61.1	64.6	48.9	63.9
1982	55.3	51.7	49.5	54.8	51.6	59.6	73.3	72.4	67.0	68.1	53.4	68.4
1983	57.8	53.8	49.8	58.9	53.4	64.2	78.6	79.6	73.5	76.4	58.5	71.1
1984	63.4	59.1	56.2	63.7	55.6	69.3	85.8	89.7	83.7	84.8	64.1	75.0
1985	66.8	62.7	59.7	67.4	58.1	71.3	93.3	89.3	84.8	82.7	66.0	77.3
1986	69.4	65.2	61.3	70.8	64.5	74.6	92.4	91.1	86.6	86.9	68.4	79.3
1987	75.6	71.9	70.2	74.9	69.3	78.6	93.6	93.9	88.5	90.4	75.5	81.7
1988	82.8	80.9	81.5	80.9	76.7	84.2	89.9	96.0	91.5	94.2	82.7	84.9
1989	93.0	92.6	95.2	89.9	87.5	92.0	94.0	98.7	97.1	97.6	92.6	92.3
1990	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1991	109.2	110.5	109.8	111.1	112.1	108.9	103.3	101.8	102.1	101.9	108.2	103.3
1992	119.8	120.3	118.8	121.6	124.7	116.9	114.2	102.9	102.8	102.2	114.9	106.7
1993	130.0	130.2	128.7	131.0	138.4	123.7	122.3	102.7	102.4	101.7	121.1	108.6
1994	139.0	140.6	136.5	145.4	152.5	133.6	118.4	104.7	103.6	104.0	126.9	116.9
1995	142.5	146.7	136.7	160.0	168.1	145.3	105.4	107.1	106.3	109.0	133.7	127.9
1996	150.9	153.7	141.0	171.0	182.2	153.1	117.3	107.1	105.4	107.6	135.9	129.5
1997	159.7	162.8	149.8	179.7	195.3	159.4	115.7	104.6	103.6	105.6	136.9	131.2

**Table A14: Growth Rate of Price Deflator of GDP and its Main Component (%)**

Year	GDP deflator	Deflator of services	Deflator of producer services	Deflator of consumer services	Deflator of government services	Deflator of private consumption expenditure	Deflator of manufacturing	Deflator of domestic exports	Deflator of re-exports	Deflator of imports	Deflator of exports of services	Deflator of imports of services
1981	10.28	11.21	10.23	12.50	12.87	11.98	7.07	9.11	8.53	11.19	9.89	9.79
1982	9.72	11.81	10.75	13.00	10.50	9.96	8.60	6.00	9.66	5.42	9.20	7.04
1983	4.52	3.94	1.18	7.54	3.41	7.72	7.20	9.94	9.70	12.19	9.55	3.95
1984	9.69	9.98	11.38	8.10	4.18	7.94	9.22	12.69	13.88	10.99	9.57	5.49
1985	5.36	6.04	5.96	5.85	4.55	2.89	8.71	-0.45	1.31	-2.48	2.96	3.07
1986	3.89	4.05	3.76	5.03	10.91	4.63	-0.92	2.02	2.12	5.08	3.64	2.59
1987	8.93	10.19	13.54	5.79	7.44	5.36	1.30	3.07	2.19	4.03	10.38	3.03
1988	9.52	12.53	15.43	7.99	10.75	7.12	-3.98	2.24	3.39	4.20	9.54	3.92
1989	12.32	14.43	16.54	11.08	14.07	9.26	4.61	2.81	6.12	3.61	11.97	8.72
1990	7.53	8.03	6.08	11.26	14.26	8.70	6.33	1.32	2.99	2.46	7.99	8.34
1991	9.20	10.49	10.13	11.10	12.12	8.90	3.32	1.80	2.10	1.90	8.20	3.30
1992	9.71	8.84	8.54	9.42	11.24	7.35	10.54	1.08	0.69	0.29	6.19	3.29
1993	8.51	8.28	8.60	7.72	10.98	5.82	7.12	-0.19	-0.39	-0.49	5.40	1.78
1994	6.92	8.01	6.52	11.00	10.18	8.00	-3.20	1.95	1.17	2.26	4.79	7.64
1995	2.52	4.35	1.36	10.07	10.20	8.76	-11.04	2.29	2.61	4.81	5.36	9.41
1996	5.89	4.74	3.70	6.87	8.39	5.37	11.32	0.00	-0.85	-1.28	1.65	1.25
1997	5.83	5.91	6.27	5.08	7.20	4.11	-1.35	-2.33	-1.71	-1.86	0.74	1.31
<b>Average</b>												
1981-1989	8.25	9.36	9.86	8.54	8.74	7.43	4.64	5.27	6.32	6.03	8.52	5.29
1990-1997	7.01	7.33	6.40	9.07	10.57	7.13	2.88	0.74	0.83	1.01	5.04	4.54

**Table A15: Nominal Value Added of Producer Services by Components**

Year	Total producer services	Wholesale trade	Retail trade	Import/export trade	Restaurants	Hotel	Transport, storage and communications	Financing	Insurance services	Real estate	Business services	Community, social and personal services	Ownership of premises	Adjustment for financial intermediation services
1980	51,113	2,528	2,959	14,357	601	1,295	4,465	7,884	174	9,135	3,040	812	5,413	-1,549
1981	61,598	2,777	3,393	16,262	789	1,613	5,491	10,338	256	11,185	4,224	1,066	6,818	-2,614
1982	65,827	2,875	3,644	18,040	867	1,810	6,331	11,633	270	11,136	4,650	1,394	8,384	-5,207
1983	65,523	2,992	3,491	22,070	947	2,071	7,438	11,793	305	6,155	5,546	1,608	10,123	-9,016
1984	79,697	3,747	4,502	31,748	1,097	2,693	8,406	12,759	326	6,100	6,397	1,850	10,978	-10,906
1985	85,132	3,963	4,797	32,045	1,222	3,126	9,283	12,850	401	6,700	7,706	2,126	12,002	-11,089
1986	101,838	4,299	5,007	37,563	1,385	3,796	10,886	16,526	445	8,108	9,448	2,370	13,515	-11,512
1987	138,175	5,758	6,504	52,600	1,748	4,784	14,262	21,390	565	13,367	12,379	2,651	16,137	-13,969
1988	177,617	6,349	8,060	65,606	2,076	6,087	18,002	23,451	712	18,408	16,381	3,050	19,537	-10,103
1989	201,616	7,246	8,953	73,065	2,663	6,793	20,094	26,803	854	22,677	17,892	3,506	23,190	-12,120
1990	226,840	9,458	9,070	85,593	2,803	6,826	23,817	31,140	911	27,034	19,903	4,066	26,666	-20,448
1991	265,148	10,046	10,823	101,999	2,994	7,229	27,272	48,728	1,084	30,091	23,555	4,715	30,993	-34,379
1992	319,762	10,884	12,479	119,806	3,494	9,046	32,052	62,642	1,322	37,779	27,154	5,535	36,423	-38,854
1993	381,803	13,148	13,345	145,646	3,803	10,659	35,547	74,945	1,840	45,791	30,495	6,520	40,438	-40,374
1994	455,663	13,069	15,629	162,124	4,106	11,872	41,449	79,907	2,374	58,849	35,996	7,565	52,047	-29,322
1995	471,250	14,098	14,798	184,571	3,937	12,723	45,990	85,038	2,365	50,240	41,194	8,798	60,720	-53,221
1996	527,512	15,397	16,592	207,128	4,117	14,434	49,989	101,070	2,221	57,663	45,388	9,948	66,396	-62,831
1997	577,845	14,815	17,022	217,712	4,438	13,330	50,773	112,055	2,153	67,093	53,163	11,023	77,122	-62,853

**Table A16: Share of Nominal Value Added of Producer Services by Components (%)**

Year	Total producer services	Wholesale trade	Retail trade	Import/export trade	Restaurants	Hotel	Transport, storage and communications	Financing	Insurance services	Real estate	Business services	Community, social and personal services	Ownership of premises	Adjustment for financial intermediation services
1980	100.00	4.95	5.79	28.09	1.18	2.53	8.74	15.42	0.34	17.87	5.95	1.59	10.59	-3.03
1981	100.00	4.51	5.51	26.40	1.28	2.62	8.91	16.78	0.42	18.16	6.86	1.73	11.07	-4.24
1982	100.00	4.37	5.54	27.41	1.32	2.75	9.62	17.67	0.41	16.92	7.06	2.12	12.74	-7.91
1983	100.00	4.57	5.33	33.68	1.45	3.16	11.35	18.00	0.47	9.39	8.46	2.45	15.45	-13.76
1984	100.00	4.70	5.65	39.84	1.38	3.38	10.55	16.01	0.41	7.65	8.03	2.32	13.77	-13.68
1985	100.00	4.66	5.63	37.64	1.44	3.67	10.90	15.09	0.47	7.87	9.05	2.50	14.10	-13.03
1986	100.00	4.22	4.92	36.89	1.36	3.73	10.69	16.23	0.44	7.96	9.28	2.33	13.27	-11.30
1987	100.00	4.17	4.71	38.07	1.26	3.46	10.32	15.48	0.41	9.67	8.96	1.92	11.68	-10.11
1988	100.00	3.57	4.54	36.94	1.17	3.43	10.14	13.20	0.40	10.36	9.22	1.72	11.00	-5.69
1989	100.00	3.59	4.44	36.24	1.32	3.37	9.97	13.29	0.42	11.25	8.87	1.74	11.50	-6.01
1990	100.00	4.17	4.00	37.73	1.24	3.01	10.50	13.73	0.40	11.92	8.77	1.79	11.76	-9.01
1991	100.00	3.79	4.08	38.47	1.13	2.73	10.29	18.38	0.41	11.35	8.88	1.78	11.69	-12.97
1992	100.00	3.40	3.90	37.47	1.09	2.83	10.02	19.59	0.41	11.81	8.49	1.73	11.39	-12.15
1993	100.00	3.44	3.50	38.15	1.00	2.79	9.31	19.63	0.48	11.99	7.99	1.71	10.59	-10.57
1994	100.00	2.87	3.43	35.58	0.90	2.61	9.10	17.54	0.52	12.92	7.90	1.66	11.42	-6.43
1995	100.00	2.99	3.14	39.17	0.84	2.70	9.76	18.05	0.50	10.66	8.74	1.87	12.88	-11.29
1996	100.00	2.92	3.15	39.27	0.78	2.74	9.48	19.16	0.42	10.93	8.60	1.89	12.59	-11.91
1997	100.00	2.56	2.95	37.68	0.77	2.31	8.79	19.39	0.37	11.61	9.20	1.91	13.35	-10.88
<b>Average</b>														
1980-1989	100.00	4.33	5.20	34.12	1.31	3.21	10.12	15.72	0.42	11.71	8.17	2.04	12.52	-8.88
1990-1997	100.00	3.27	3.52	37.94	0.97	2.71	9.65	18.18	0.44	11.65	8.57	1.79	11.96	-10.65

**Table A17: Growth Rate of Nominal Value Added of Producer Services by Components (%)**

Year	Total producer services	Wholesale trade	Retail trade	Import/export trade	Restaurants	Hotel	Transport, storage and communications	Financing	Insurance services	Real estate	Business services	Community, social and personal services	Ownership of premises	Adjustment for financial intermediation services
1981	20.51	9.85	14.66	13.27	31.20	24.56	22.98	31.13	47.30	22.45	38.95	31.22	25.97	68.71
1982	6.87	3.53	7.40	10.93	9.93	12.21	15.30	12.53	5.39	-0.44	10.09	30.77	22.96	99.19
1983	-0.46	4.07	-4.20	22.34	9.24	14.42	17.49	1.37	13.19	-44.73	19.27	15.36	20.74	73.15
1984	21.63	25.23	28.95	43.85	15.81	30.03	13.01	8.20	6.81	-0.90	15.34	15.05	8.45	20.96
1985	6.82	5.76	6.56	0.94	11.46	16.08	10.43	0.71	22.93	9.84	20.46	14.89	9.33	1.68
1986	19.62	8.48	4.38	17.22	13.34	21.43	17.27	28.60	11.02	21.02	22.61	11.51	12.61	3.81
1987	35.68	33.94	29.90	40.03	26.16	26.03	31.01	29.44	27.00	64.85	31.02	11.82	19.39	21.35
1988	28.54	10.26	23.92	24.73	18.78	27.24	26.23	9.64	25.93	37.71	32.33	15.07	21.07	-27.68
1989	13.51	14.13	11.07	11.37	28.25	11.60	11.62	14.29	19.92	23.19	9.22	14.95	18.70	19.96
1990	12.51	30.53	1.31	17.15	5.29	0.49	18.53	16.18	6.70	19.21	11.24	15.98	14.99	68.71
1991	16.89	6.22	19.33	19.17	6.80	5.90	14.50	56.48	18.95	11.31	18.35	15.94	16.23	68.13
1992	20.60	8.34	15.30	17.46	16.70	25.13	17.53	28.55	21.98	25.55	15.28	17.40	17.52	13.02
1993	19.40	20.80	6.94	21.57	8.85	17.83	10.90	19.64	39.22	21.21	12.30	17.80	11.02	3.91
1994	19.35	-0.60	17.12	11.31	7.95	11.38	16.60	6.62	28.99	28.52	18.04	16.02	28.71	-27.37
1995	3.42	7.87	-5.32	13.85	-4.11	7.17	10.95	6.42	-0.37	-14.63	14.44	16.30	16.66	81.51
1996	11.94	9.21	12.12	12.22	4.58	13.45	8.70	18.85	-6.09	14.78	10.18	13.08	9.35	18.06
1997	9.54	-3.78	2.59	5.11	7.80	-7.65	1.57	10.87	-3.06	16.35	17.13	10.80	16.15	0.03
<b>Average</b>														
1981-1989	16.97	12.81	13.63	20.52	18.24	20.40	18.37	15.10	19.94	14.78	22.14	17.85	17.69	31.24
1990-1997	14.21	9.82	8.67	14.73	6.73	9.21	12.41	20.45	13.29	15.29	14.62	15.41	16.33	28.25

**Table A18: Singapore (Mn Singaporean \$ at 1990 Prices)**

Year	Real Government Services	Real Consumer Services	Real Producer Services	Real Manufacturing	Others	Real GDP
1975	1,561	4,913	7,775	5,459	2,541	22,248
1976	1,663	5,227	8,083	6,099	2,803	23,874
1977	1,730	5,855	8,402	6,665	2,835	25,486
1978	1,893	6,516	8,945	7,422	2,684	27,459
1979	2,120	7,239	9,578	8,444	2,602	29,984
1980	2,361	7,649	11,025	9,287	2,564	32,886
1981	2,745	8,217	12,243	10,147	2,692	36,044
1982	3,436	8,509	13,332	9,795	3,552	38,623
1983	3,918	9,083	14,290	10,070	4,500	41,860
1984	4,352	9,182	16,160	10,821	4,847	45,362
1985	4,696	8,760	17,874	10,033	3,264	44,626
1986	4,694	9,303	18,042	10,865	2,589	45,493
1987	5,102	10,357	19,717	12,740	1,925	49,840
1988	5,709	12,433	20,422	15,027	1,993	55,583
1989	6,540	13,950	21,572	16,502	2,357	60,921
1990	7,403	15,698	23,432	18,068	1,805	66,406
1991	8,286	16,281	25,913	19,044	1,717	71,240
1992	9,037	17,458	26,977	19,479	2,757	75,708
1993	10,004	19,538	31,329	21,356	3,017	85,245
1994	11,668	20,537	35,017	24,088	3,468	94,778
1995	12,627	21,060	38,951	26,505	3,641	102,782
1996	14,208	21,463	42,713	27,310	4,817	110,510
1997	15,453	21,598	48,173	28,541	5,574	119,338
1998	15,755	21,029	49,950	28,398	5,980	121,112

**Table A19: Proportion in GDP of Singapore (%)**

Year	Real Government Services	Real Consumer Services	Real Producer Services	Real Manufacturing	Others	Sum
1975	7.0	22.1	34.9	24.5	11.4	100.0
1976	7.0	21.9	33.9	25.5	11.7	100.0
1977	6.8	23.0	33.0	26.2	11.1	100.0
1978	6.9	23.7	32.6	27.0	9.8	100.0
1979	7.1	24.1	31.9	28.2	8.7	100.0
1980	7.2	23.3	33.5	28.2	7.8	100.0
1981	7.6	22.8	34.0	28.2	7.5	100.0
1982	8.9	22.0	34.5	25.4	9.2	100.0
1983	9.4	21.7	34.1	24.1	10.8	100.0
1984	9.6	20.2	35.6	23.9	10.7	100.0
1985	10.5	19.6	40.1	22.5	7.3	100.0
1986	10.3	20.5	39.7	23.9	5.7	100.0
1987	10.2	20.8	39.6	25.6	3.9	100.0
1988	10.3	22.4	36.7	27.0	3.6	100.0
1989	10.7	22.9	35.4	27.1	3.9	100.0
1990	11.1	23.6	35.3	27.2	2.7	100.0
1991	11.6	22.9	36.4	26.7	2.4	100.0
1992	11.9	23.1	35.6	25.7	3.6	100.0
1993	11.7	22.9	36.8	25.1	3.5	100.0
1994	12.3	21.7	36.9	25.4	3.7	100.0
1995	12.3	20.5	37.9	25.8	3.5	100.0
1996	12.9	19.4	38.7	24.7	4.4	100.0
1997	12.9	18.1	40.4	23.9	4.7	100.0
1998	13.0	17.4	41.2	23.4	4.9	100.0



**Table A20: Year-on-year Growth of GDP Components of Singapore (%)**

Year	Real Government Services	Real Consumer Services	Real Producer Services	Real Manufacturing	Others	Real GDP
1976	6.5	6.4	4.0	11.7	10.3	7.3
1977	4.1	12.0	3.9	9.3	1.1	6.8
1978	9.4	11.3	6.5	11.4	-5.3	7.7
1979	12.0	11.1	7.1	13.8	-3.0	9.2
1980	11.4	5.7	15.1	10.0	-1.5	9.7
1981	16.3	7.4	11.0	9.3	5.0	9.6
1982	25.2	3.6	8.9	-3.5	31.9	7.2
1983	14.0	6.7	7.2	2.8	26.7	8.4
1984	11.1	1.1	13.1	7.5	7.7	8.4
1985	7.9	-4.6	10.6	-7.3	-32.7	-1.6
1986	0.0	6.2	0.9	8.3	-20.7	1.9
1987	8.7	11.3	9.3	17.3	-25.6	9.6
1988	11.9	20.0	3.6	17.9	3.6	11.5
1989	14.6	12.2	5.6	9.8	18.3	9.6
1990	13.2	12.5	8.6	9.5	-23.4	9.0
1991	11.9	3.7	10.6	5.4	-4.9	7.3
1992	9.1	7.2	4.1	2.3	60.5	6.3
1993	10.7	11.9	16.1	9.6	9.4	12.6
1994	16.6	5.1	11.8	12.8	14.9	11.2
1995	8.2	2.5	11.2	10.0	5.0	8.4
1996	12.5	1.9	9.7	3.0	32.3	7.5
1997	8.8	0.6	12.8	4.5	15.7	8.0
1998	2.0	-2.6	3.7	-0.5	7.3	1.5

**Table A21: Taiwan (Mn Taiwanese \$ at 1991 Prices)**

Year	Real Government Services	Real Consumer Services	Real Producer Services	Real Manufacturing	Others	Real GDP
1962	85,762	50,891	61,109	60,356	120,029	378,147
1963	90,835	54,996	73,746	68,592	125,351	413,520
1964	97,383	64,799	77,486	82,784	141,515	463,967
1965	104,602	73,769	88,078	94,525	154,654	515,628
1966	113,333	81,415	96,393	111,146	159,296	561,583
1967	123,565	95,583	101,827	129,040	171,722	621,737
1968	130,147	107,990	104,927	151,164	184,530	678,758
1969	140,341	116,770	116,646	181,964	183,774	739,495
1970	155,509	125,338	131,772	219,259	191,703	823,581
1971	169,329	139,501	152,423	267,428	201,103	929,784
1972	172,929	159,874	178,634	323,021	219,149	1,053,607
1973	180,903	183,163	215,819	379,156	229,771	1,188,812
1974	171,689	203,418	227,380	358,664	241,474	1,202,625
1975	189,179	218,207	231,408	374,283	248,819	1,261,896
1976	201,590	244,906	254,590	458,368	277,350	1,436,804
1977	217,417	269,046	280,156	517,420	299,170	1,583,209
1978	232,039	304,220	327,717	624,263	310,188	1,798,427
1979	248,592	361,160	353,505	673,354	308,819	1,945,430
1980	262,511	377,985	401,453	739,829	305,694	2,087,472
1981	280,492	393,889	458,824	796,112	286,799	2,216,116
1982	296,874	419,027	481,633	813,224	284,057	2,294,815
1983	311,600	453,816	509,957	906,723	306,561	2,488,657
1984	332,203	514,150	566,335	1,038,262	301,493	2,752,443
1985	350,933	551,549	613,345	1,072,522	300,409	2,888,758
1986	362,072	601,720	707,207	1,235,155	318,908	3,225,062
1987	382,434	697,998	743,385	1,396,764	415,398	3,635,979
1988	413,781	834,454	796,034	1,455,843	420,948	3,921,060
1989	442,594	999,043	868,807	1,509,614	423,833	4,243,891
1990	487,777	1,072,916	976,523	1,502,940	432,643	4,472,799
1991	532,239	1,136,887	1,082,072	1,603,842	455,665	4,810,705
1992	564,634	1,245,304	1,198,770	1,655,794	471,512	5,136,014
1993	590,005	1,361,831	1,299,234	1,697,328	512,073	5,460,471
1994	610,492	1,502,823	1,408,762	1,794,663	500,662	5,817,402
1995	635,005	1,568,997	1,550,411	1,902,114	511,525	6,168,052
1996	672,568	1,662,614	1,694,662	1,986,977	500,804	6,517,625
1997	694,621	1,810,560	1,866,275	2,118,989	468,155	6,958,600
1998	713,920	1,960,223	1,960,667	2,194,757	452,669	7,282,236

**Table A22: Proportion in GDP of Taiwan (%)**

Year	Real Government Services	Real Consumer Services	Real Producer Services	Real Manufacturing	Others	Sum
1962	22.7	13.5	16.2	16.0	31.7	100.0
1963	22.0	13.3	17.8	16.6	30.3	100.0
1964	21.0	14.0	16.7	17.8	30.5	100.0
1965	20.3	14.3	17.1	18.3	30.0	100.0
1966	20.2	14.5	17.2	19.8	28.4	100.0
1967	19.9	15.4	16.4	20.8	27.6	100.0
1968	19.2	15.9	15.5	22.3	27.2	100.0
1969	19.0	15.8	15.8	24.6	24.9	100.0
1970	18.9	15.2	16.0	26.6	23.3	100.0
1971	18.2	15.0	16.4	28.8	21.6	100.0
1972	16.4	15.2	17.0	30.7	20.8	100.0
1973	15.2	15.4	18.2	31.9	19.3	100.0
1974	14.3	16.9	18.9	29.8	20.1	100.0
1975	15.0	17.3	18.3	29.7	19.7	100.0
1976	14.0	17.0	17.7	31.9	19.3	100.0
1977	13.7	17.0	17.7	32.7	18.9	100.0
1978	12.9	16.9	18.2	34.7	17.2	100.0
1979	12.8	18.6	18.2	34.6	15.9	100.0
1980	12.6	18.1	19.2	35.4	14.6	100.0
1981	12.7	17.8	20.7	35.9	12.9	100.0
1982	12.9	18.3	21.0	35.4	12.4	100.0
1983	12.5	18.2	20.5	36.4	12.3	100.0
1984	12.1	18.7	20.6	37.7	11.0	100.0
1985	12.1	19.1	21.2	37.1	10.4	100.0
1986	11.2	18.7	21.9	38.3	9.9	100.0
1987	10.5	19.2	20.4	38.4	11.4	100.0
1988	10.6	21.3	20.3	37.1	10.7	100.0
1989	10.4	23.5	20.5	35.6	10.0	100.0
1990	10.9	24.0	21.8	33.6	9.7	100.0
1991	11.1	23.6	22.5	33.3	9.5	100.0
1992	11.0	24.2	23.3	32.2	9.2	100.0
1993	10.8	24.9	23.8	31.1	9.4	100.0
1994	10.5	25.8	24.2	30.8	8.6	100.0
1995	10.3	25.4	25.1	30.8	8.3	100.0
1996	10.3	25.5	26.0	30.5	7.7	100.0
1997	10.0	26.0	26.8	30.5	6.7	100.0
1998	9.8	26.9	26.9	30.1	6.2	100.0

**Table A23: Year-on-year Growth of GDP Components of Taiwan (%)**

Year	Real Government Services	Real Consumer Services	Real Producer Services	Real Manufacturing	Others	Real GDP
1963	5.9	8.1	20.7	13.6	4.4	9.4
1964	7.2	17.8	5.1	20.7	12.9	12.2
1965	7.4	13.8	13.7	14.2	9.3	11.1
1966	8.3	10.4	9.4	17.6	3.0	8.9
1967	9.0	17.4	5.6	16.1	7.8	10.7
1968	5.3	13.0	3.0	17.1	7.5	9.2
1969	7.8	8.1	11.2	20.4	-0.4	8.9
1970	10.8	7.3	13.0	20.5	4.3	11.4
1971	8.9	11.3	15.7	22.0	4.9	12.9
1972	2.1	14.6	17.2	20.8	9.0	13.3
1973	4.6	14.6	20.8	17.4	4.8	12.8
1974	-5.1	11.1	5.4	-5.4	5.1	1.2
1975	10.2	7.3	1.8	4.4	3.0	4.9
1976	6.6	12.2	10.0	22.5	11.5	13.9
1977	7.9	9.9	10.0	12.9	7.9	10.2
1978	6.7	13.1	17.0	20.6	3.7	13.6
1979	7.1	18.7	7.9	7.9	-0.4	8.2
1980	5.6	4.7	13.6	9.9	-1.0	7.3
1981	6.8	4.2	14.3	7.6	-6.2	6.2
1982	5.8	6.4	5.0	2.1	-1.0	3.6
1983	5.0	8.3	5.9	11.5	7.9	8.4
1984	6.6	13.3	11.1	14.5	-1.7	10.6
1985	5.6	7.3	8.3	3.3	-0.4	5.0
1986	3.2	9.1	15.3	15.2	6.2	11.6
1987	5.6	16.0	5.1	13.1	30.3	12.7
1988	8.2	19.5	7.1	4.2	1.3	7.8
1989	7.0	19.7	9.1	3.7	0.7	8.2
1990	10.2	7.4	12.4	-0.4	2.1	5.4
1991	9.1	6.0	10.8	6.7	5.3	7.6
1992	6.1	9.5	10.8	3.2	3.5	6.8
1993	4.5	9.4	8.4	2.5	8.6	6.3
1994	3.5	10.4	8.4	5.7	-2.2	6.5
1995	4.0	4.4	10.1	6.0	2.2	6.0
1996	5.9	6.0	9.3	4.5	-2.1	5.7
1997	3.3	8.9	10.1	6.6	-6.5	6.8
1998	2.8	8.3	5.1	3.6	-3.3	4.7

**Table A24: Korea (Bn Won at 1990 Prices)**

Year	Real Government Services	Real Consumer Services	Real Producer Services	Real Manufacturing	Others	Real GDP
1970	7,065	8,141	2,517	3,833	14,151	35,707
1971	7,388	8,934	3,980	4,547	14,542	39,391
1972	7,449	9,393	4,440	5,186	14,820	41,288
1973	7,585	10,378	5,287	6,717	16,604	46,572
1974	7,753	10,901	5,721	7,875	18,081	50,330
1975	7,917	11,475	6,525	8,853	18,901	53,670
1976	8,093	12,317	7,839	10,937	20,797	59,983
1977	8,376	13,088	9,258	12,615	22,835	66,172
1978	8,753	13,910	10,678	15,412	23,632	72,385
1979	9,137	15,018	11,288	16,974	25,130	77,547
1980	9,554	15,432	11,776	16,708	21,996	75,465
1981	9,909	16,800	11,723	18,401	23,317	80,150
1982	10,232	18,681	12,304	19,678	25,335	86,231
1983	10,460	20,505	13,840	22,694	28,648	96,147
1984	10,568	22,705	15,400	26,529	29,288	104,489
1985	10,768	24,510	17,656	28,170	30,225	111,330
1986	11,113	26,237	21,153	33,656	32,035	124,194
1987	11,475	28,193	25,543	40,235	33,052	138,499
1988	11,984	30,703	29,878	45,773	35,773	154,111
1989	12,535	34,048	31,736	47,714	37,918	163,950
1990	13,098	37,719	34,730	52,351	41,641	179,539
1991	13,577	41,422	38,503	57,108	45,324	195,935
1992	14,068	44,885	41,625	60,001	45,283	205,861
1993	14,464	47,831	45,761	63,015	46,627	217,699
1994	14,700	51,975	50,685	69,600	49,416	236,375
1995	14,832	56,711	55,043	77,126	53,789	257,501
1996	15,284	61,193	58,688	82,875	57,651	275,691
1997	15,585	64,728	63,578	88,032	58,966	290,888

**Table A25: Proportion in GDP of Korea (%)**

Year	Real Government Services	Real Consumer Services	Real Producer Services	Real Manufacturing	Others	Sum
1970	19.8	22.8	7.0	10.7	39.6	100.0
1971	18.8	22.7	10.1	11.5	36.9	100.0
1972	18.0	22.8	10.8	12.6	35.9	100.0
1973	16.3	22.3	11.4	14.4	35.7	100.0
1974	15.4	21.7	11.4	15.6	35.9	100.0
1975	14.8	21.4	12.2	16.5	35.2	100.0
1976	13.5	20.5	13.1	18.2	34.7	100.0
1977	12.7	19.8	14.0	19.1	34.5	100.0
1978	12.1	19.2	14.8	21.3	32.6	100.0
1979	11.8	19.4	14.6	21.9	32.4	100.0
1980	12.7	20.4	15.6	22.1	29.1	100.0
1981	12.4	21.0	14.6	23.0	29.1	100.0
1982	11.9	21.7	14.3	22.8	29.4	100.0
1983	10.9	21.3	14.4	23.6	29.8	100.0
1984	10.1	21.7	14.7	25.4	28.0	100.0
1985	9.7	22.0	15.9	25.3	27.1	100.0
1986	8.9	21.1	17.0	27.1	25.8	100.0
1987	8.3	20.4	18.4	29.1	23.9	100.0
1988	7.8	19.9	19.4	29.7	23.2	100.0
1989	7.6	20.8	19.4	29.1	23.1	100.0
1990	7.3	21.0	19.3	29.2	23.2	100.0
1991	6.9	21.1	19.7	29.1	23.1	100.0
1992	6.8	21.8	20.2	29.1	22.0	100.0
1993	6.6	22.0	21.0	28.9	21.4	100.0
1994	6.2	22.0	21.4	29.4	20.9	100.0
1995	5.8	22.0	21.4	30.0	20.9	100.0
1996	5.5	22.2	21.3	30.1	20.9	100.0
1997	5.4	22.3	21.9	30.3	20.3	100.0

**Table A26: Year-on-year GDP Components of Korea (%)**

Year	Real Government Services	Real Consumer Services	Real Producer Services	Real Manufacturing	Others	Real GDP
1971	4.6	9.7	58.1	18.6	2.8	10.3
1972	0.8	5.1	11.6	14.0	1.9	4.8
1973	1.8	10.5	19.1	29.5	12.0	12.8
1974	2.2	5.0	8.2	17.2	8.9	8.1
1975	2.1	5.3	14.1	12.4	4.5	6.6
1976	2.2	7.3	20.1	23.5	10.0	11.8
1977	3.5	6.3	18.1	15.3	9.8	10.3
1978	4.5	6.3	15.3	22.2	3.5	9.4
1979	4.4	8.0	5.7	10.1	6.3	7.1
1980	4.6	2.8	4.3	-1.6	-12.5	-2.7
1981	3.7	8.9	-0.5	10.1	6.0	6.2
1982	3.3	11.2	5.0	6.9	8.7	7.6
1983	2.2	9.8	12.5	15.3	13.1	11.5
1984	1.0	10.7	11.3	16.9	2.2	8.7
1985	1.9	8.0	14.7	6.2	3.2	6.5
1986	3.2	7.0	19.8	19.5	6.0	11.6
1987	3.3	7.5	20.8	19.5	3.2	11.5
1988	4.4	8.9	17.0	13.8	8.2	11.3
1989	4.6	10.9	6.2	4.2	6.0	6.4
1990	4.5	10.8	9.4	9.7	9.8	9.5
1991	3.7	9.8	10.9	9.1	8.8	9.1
1992	3.6	8.4	8.1	5.1	-0.1	5.1
1993	2.8	6.6	9.9	5.0	3.0	5.8
1994	1.6	8.7	10.8	10.5	6.0	8.6
1995	0.9	9.1	8.6	10.8	8.9	8.9
1996	3.0	7.9	6.6	7.5	7.2	7.1
1997	2.0	5.8	8.3	6.2	2.3	5.5

**Table A27: Japan (Bn Yen at 1990 Prices)**

Year	Real Government Services	Real Consumer Services	Real Producer Services	Real Manufacturing	Others	Real GDP
1970	18,525	42,794	41,160	48,856	36,988	188,323
1971	19,088	45,913	43,312	51,188	37,088	196,589
1972	19,769	50,486	48,634	55,827	38,413	213,129
1973	20,624	56,041	50,057	62,891	40,637	230,249
1974	20,516	56,961	49,602	61,252	39,097	227,428
1975	22,959	59,796	51,359	58,107	42,238	234,459
1976	24,023	60,471	54,286	63,109	41,889	243,778
1977	24,899	63,698	58,326	65,135	42,423	254,481
1978	26,028	68,399	60,033	67,026	46,411	267,897
1979	27,012	74,275	63,665	72,867	44,771	282,589
1980	27,857	74,547	72,547	75,406	40,195	290,551
1981	28,880	75,878	76,008	78,083	40,913	299,762
1982	29,770	80,031	76,230	80,650	42,246	308,927
1983	30,196	83,717	80,176	83,145	38,866	316,101
1984	30,732	86,789	84,648	88,588	37,727	328,484
1985	30,725	89,777	90,052	95,718	36,678	342,950
1986	31,497	95,008	92,559	94,230	39,585	352,880
1987	31,983	100,279	96,318	98,613	40,363	367,556
1988	32,319	107,158	100,883	106,506	43,459	390,326
1989	32,599	114,003	106,325	113,490	42,767	409,184
1990	32,688	119,750	111,569	121,219	44,760	429,986
1991	32,378	122,533	118,726	127,598	45,080	446,315
1992	32,678	125,297	121,686	125,822	45,441	450,923
1993	33,162	126,922	122,374	120,841	48,983	452,282
1994	33,800	129,954	123,100	119,986	48,358	455,198
1995	34,460	131,674	126,092	126,554	43,114	461,894
1996	35,258	138,735	129,358	134,300	47,568	485,219
1997	36,014	140,682	133,809	138,368	43,270	492,142



**Table A28: Proportion in GDP of Japan (%)**

Year	Real Government Services	Real Consumer Services	Real Producer Services	Real Manufacturing	Others	Sum
1970	9.8	22.7	21.9	25.9	19.6	100.0
1971	9.7	23.4	22.0	26.0	18.9	100.0
1972	9.3	23.7	22.8	26.2	18.0	100.0
1973	9.0	24.3	21.7	27.3	17.6	100.0
1974	9.0	25.0	21.8	26.9	17.2	100.0
1975	9.8	25.5	21.9	24.8	18.0	100.0
1976	9.9	24.8	22.3	25.9	17.2	100.0
1977	9.8	25.0	22.9	25.6	16.7	100.0
1978	9.7	25.5	22.4	25.0	17.3	100.0
1979	9.6	26.3	22.5	25.8	15.8	100.0
1980	9.6	25.7	25.0	26.0	13.8	100.0
1981	9.6	25.3	25.4	26.0	13.6	100.0
1982	9.6	25.9	24.7	26.1	13.7	100.0
1983	9.6	26.5	25.4	26.3	12.3	100.0
1984	9.4	26.4	25.8	27.0	11.5	100.0
1985	9.0	26.2	26.3	27.9	10.7	100.0
1986	8.9	26.9	26.2	26.7	11.2	100.0
1987	8.7	27.3	26.2	26.8	11.0	100.0
1988	8.3	27.5	25.8	27.3	11.1	100.0
1989	8.0	27.9	26.0	27.7	10.5	100.0
1990	7.6	27.8	25.9	28.2	10.4	100.0
1991	7.3	27.5	26.6	28.6	10.1	100.0
1992	7.2	27.8	27.0	27.9	10.1	100.0
1993	7.3	28.1	27.1	26.7	10.8	100.0
1994	7.4	28.5	27.0	26.4	10.6	100.0
1995	7.5	28.5	27.3	27.4	9.3	100.0
1996	7.3	28.6	26.7	27.7	9.8	100.0
1997	7.3	28.6	27.2	28.1	8.8	100.0

**Table A29: Year-on-year Growth of GDP Components of Japan (%)**

Year	Real Government Services	Real Consumer Services	Real Producer Services	Real Manufacturing	Others	Real GDP
1971	3.0	7.3	5.2	4.8	0.3	4.4
1972	3.6	10.0	12.3	9.1	3.6	8.4
1973	4.3	11.0	2.9	12.7	5.8	8.0
1974	-0.5	1.6	-0.9	-2.6	-3.8	-1.2
1975	11.9	5.0	3.5	-5.1	8.0	3.1
1976	4.6	1.1	5.7	8.6	-0.8	4.0
1977	3.6	5.3	7.4	3.2	1.3	4.4
1978	4.5	7.4	2.9	2.9	9.4	5.3
1979	3.8	8.6	6.0	8.7	-3.5	5.5
1980	3.1	0.4	14.0	3.5	-10.2	2.8
1981	3.7	1.8	4.8	3.6	1.8	3.2
1982	3.1	5.5	0.3	3.3	3.3	3.1
1983	1.4	4.6	5.2	3.1	-8.0	2.3
1984	1.8	3.7	5.6	6.5	-2.9	3.9
1985	0.0	3.4	6.4	8.0	-2.8	4.4
1986	2.5	5.8	2.8	-1.6	7.9	2.9
1987	1.5	5.5	4.1	4.7	2.0	4.2
1988	1.1	6.9	4.7	8.0	7.7	6.2
1989	0.9	6.4	5.4	6.6	-1.6	4.8
1990	0.3	5.0	4.9	6.8	4.7	5.1
1991	-0.9	2.3	6.4	5.3	0.7	3.8
1992	0.9	2.3	2.5	-1.4	0.8	1.0
1993	1.5	1.3	0.6	-4.0	7.8	0.3
1994	1.9	2.4	0.6	-0.7	-1.3	0.6
1995	2.0	1.3	2.4	5.5	-10.8	1.5
1996	2.3	5.4	2.6	6.1	10.3	5.0
1997	2.1	1.4	3.4	3.0	-9.0	1.4

**Table A30: US (Bn US\$ at 1992 Prices)**

Year	Real Government Services	Real Consumer Services	Real Producer Services	Real Manufacturing	Others	Real GDP
1977	717	663	1,705	797	306	4,187
1978	732	694	1,820	837	346	4,427
1979	739	716	1,898	865	349	4,567
1980	749	729	1,930	823	324	4,555
1981	749	741	1,986	859	332	4,666
1982	748	755	1,973	810	274	4,560
1983	753	790	2,052	857	304	4,756
1984	760	822	2,218	948	355	5,103
1985	778	863	2,287	976	388	5,293
1986	796	891	2,356	968	446	5,457
1987	810	929	2,414	1,042	431	5,626
1988	829	966	2,552	1,111	390	5,848
1989	848	968	2,678	1,106	453	6,052
1990	867	979	2,710	1,090	483	6,129
1991	874	941	2,767	1,050	444	6,076
1992	874	991	2,837	1,064	479	6,244
1993	876	1,042	2,890	1,101	477	6,386
1994	878	1,103	2,984	1,193	425	6,584
1995	877	1,157	3,029	1,272	391	6,725
1996	878	1,221	3,154	1,294	390	6,935
1997	884	1,284	3,291	1,370	352	7,181

**Table A31: Proportion in GDP of US (%)**

Year	Real Government Services	Real Consumer Services	Real Producer Services	Real Manufacturing	Others	Sum
1977	17.1	15.8	40.7	19.0	7.3	100.0
1978	16.5	15.7	41.1	18.9	7.8	100.0
1979	16.2	15.7	41.6	18.9	7.6	100.0
1980	16.4	16.0	42.4	18.1	7.1	100.0
1981	16.1	15.9	42.6	18.4	7.1	100.0
1982	16.4	16.5	43.3	17.8	6.0	100.0
1983	15.8	16.6	43.2	18.0	6.4	100.0
1984	14.9	16.1	43.5	18.6	7.0	100.0
1985	14.7	16.3	43.2	18.4	7.3	100.0
1986	14.6	16.3	43.2	17.7	8.2	100.0
1987	14.4	16.5	42.9	18.5	7.7	100.0
1988	14.2	16.5	43.6	19.0	6.7	100.0
1989	14.0	16.0	44.2	18.3	7.5	100.0
1990	14.1	16.0	44.2	17.8	7.9	100.0
1991	14.4	15.5	45.5	17.3	7.3	100.0
1992	14.0	15.9	45.4	17.0	7.7	100.0
1993	13.7	16.3	45.3	17.2	7.5	100.0
1994	13.3	16.8	45.3	18.1	6.5	100.0
1995	13.0	17.2	45.0	18.9	5.8	100.0
1996	12.7	17.6	45.5	18.7	5.6	100.0
1997	12.3	17.9	45.8	19.1	4.9	100.0

**Table A32: Year-on-year Growth of GDP Components of US (%)**

Year	Real Government Services	Real Consumer Services	Real Producer Services	Real Manufacturing	Others	Real GDP
1978	2.0	4.7	6.8	5.0	12.9	5.7
1979	1.1	3.2	4.3	3.4	0.9	3.2
1980	1.3	1.9	1.7	-4.9	-7.0	-0.3
1981	0.1	1.5	2.9	4.4	2.4	2.4
1982	-0.1	1.9	-0.6	-5.6	-17.6	-2.3
1983	0.6	4.7	4.0	5.8	11.1	4.3
1984	0.9	4.1	8.1	10.7	16.8	7.3
1985	2.4	5.0	3.2	3.0	9.2	3.7
1986	2.3	3.2	3.0	-0.9	15.1	3.1
1987	1.8	4.2	2.5	7.6	-3.4	3.1
1988	2.4	4.0	5.7	6.7	-9.4	4.0
1989	2.3	0.2	4.9	-0.5	16.1	3.5
1990	2.3	1.2	1.2	-1.4	6.6	1.3
1991	0.8	-3.9	2.1	-3.7	-8.0	-0.9
1992	0.0	5.3	2.5	1.3	7.9	2.8
1993	0.3	5.2	1.9	3.5	-0.5	2.3
1994	0.3	5.8	3.3	8.4	-10.8	3.1
1995	-0.2	4.9	1.5	6.6	-8.0	2.1
1996	0.1	5.5	4.1	1.7	-0.3	3.1
1997	0.7	5.2	4.3	5.9	-9.6	3.5

**Table A33: Employment Shares by Sector (%)**

	All	Primary	Industry				Services						
			Agriculture and fishing	Mining and quarrying	Manufacturing	Electricity, gas and water	Construction	Total services	Wholesale and retail trades	Import/export trade	Restaurants and hotels	Transport, storage and communications	Finance, insurance, real estate and business services
1986	100.00	2.06	0.03	34.72	0.60	7.42	55.16	9.70	7.70	6.59	8.17	5.97	17.04
1987	100.00	1.95	0.03	34.08	0.59	7.75	55.61	9.54	8.33	6.58	8.33	6.12	16.70
1988	100.00	1.59	0.02	32.26	0.58	8.11	57.44	9.46	9.39	6.62	8.71	6.48	16.77
1989	100.00	1.35	0.02	30.43	0.59	7.92	59.69	9.48	10.28	6.84	9.07	6.93	17.10
1990	100.00	1.04	0.02	27.78	0.61	7.80	62.74	9.86	11.43	7.25	9.32	7.20	17.68
1991	100.00	0.95	0.02	24.52	0.61	7.71	66.19	10.22	12.68	7.62	9.42	7.85	18.39
1992	100.00	0.84	0.02	21.53	0.62	8.03	68.95	10.35	13.49	7.94	10.28	8.06	18.83
1993	100.00	0.80	0.02	18.45	0.62	7.61	72.51	10.05	14.93	7.82	10.89	9.96	18.86
1994	100.00	0.77	0.02	15.44	0.60	7.38	75.79	9.95	17.13	7.69	11.41	10.91	18.70
1995	100.00	0.73	0.02	13.40	0.60	7.69	77.57	9.62	17.59	7.44	11.03	11.45	20.44
1996	100.00	0.56	0.02	11.18	0.58	8.90	78.77	9.76	17.47	7.43	10.99	11.67	21.44

**Table A34: Average Number of Persons Engaged per Establishment by Sector**

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
<b>I. Goods Producing Sector</b>																	
Mining & Quarrying	48.0	50.0	70.1	63.7	70.9	61.3	77.6	73.4	71.3	73.0	63.4	61.9	55.6	59.4	69.3	68.6	84.6
Manufacturing	18.9	18.2	18.8	18.7	18.5	18.5	17.6	16.8	15.7	14.5	14.2	13.3	13.1	12.5	12.2	11.9	11.2
Electricity & Gas	2640.5	2864.5	2671.0	3514.3	3658.3	3739.7	3671.3	3628.0	3727.3	553.5	513.0	392.1	388.5	504.3	512.2	449.4	387.1
Construction Sites	68.1	66.0	64.5	65.6	61.5	61.2	58.7	61.1	51.0	53.8	49.5	52.2	51.1	56.5	59.0	70.1	75.3
<b>II. Service Producing Sector</b>																	
Wholesale, Retail & Restaurants and Hotels	6.5	6.3	6.2	6.3	6.1	6.0	6.1	6.1	6.2	6.2	6.2	6.3	6.5	6.3	6.4	6.5	6.4
Community, Social & Personal Services	11.3	10.9	10.6	10.6	10.7	10.6	10.7	10.9	10.8	10.7	11.2	11.1	11.7	11.3	11.8	12.6	12.3
Producer Services*	9.9	9.8	9.3	9.1	9.0	9.0	9.1	8.4	8.1	7.6	7.3	7.1	6.8	6.5	6.6	7.0	7.2
Imports & Exports	6.0	5.9	5.6	5.7	5.8	6.0	6.2	5.9	5.8	5.5	5.4	5.1	5.1	4.9	4.9	5.2	5.3
Transport, storage & communications	25.7	26.2	29.0	27.5	26.3	27.1	25.6	23.9	22.4	21.9	20.8	20.3	19.5	17.7	18.6	19.4	18.6
Financing, insurance, Real Estate & Business Services	12.0	12.2	11.6	11.5	11.5	11.5	11.4	10.4	9.7	9.2	8.6	8.5	8.2	7.6	8.1	8.6	8.6
All Services	8.3	8.2	7.9	7.9	7.8	7.8	7.9	7.7	7.7	7.4	7.3	7.2	7.2	6.9	7.0	7.4	7.4
<b>III. All Sectors</b>	12.1	11.5	11.3	11.2	10.8	10.8	10.7	10.2	9.7	9.1	8.7	8.4	8.2	7.7	7.8	8.1	8.1

Note: \* Producer services here is arbitrarily defined, incorporating imports and exports, transport, storage and communications, financing, insurance, real estate & business services.