World city formation: The case of Shanghai

by

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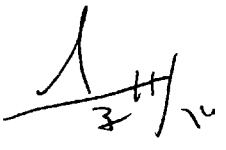
Declaration

I declare that this dissertation represents my own work, except where due acknowledgement is made, and that it has not been previously included in a thesis, dissertation or report submitted to this university or to any other institution for a degree, diploma or other qualifications.



Signed .....

Lee Ming Wai

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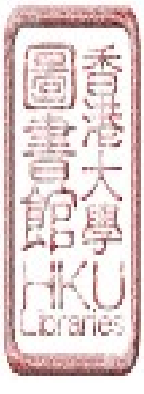
Thank You



Abstract of dissertation entitled

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Since the twentieth century, economic globalization has emerged as fundamental force shaping the spatial organization of production. Economic globalization, which linked with the idea of New International Division of Labour (NIDL), the rapid growth of Multinational Corporations and the massive development of information had contributed to the growth of important cities as centers for commanding, controlling and managing the dispersal economic activities and have become "world cities".

Although there are already many intensive study on the concept of world city, there is lacking a quantitative methodology to measure the competitiveness of a city in the formation of world city, especially those rapidly developing countries with a large size economy, such as China. Shanghai, the largest economic center in China, has experienced a remarkable growth in its economy since the early 1990s that the Central Government made a strategic policy to build Shanghai into "a dragon head".

Therefore, Shanghai will be most likely be the first candidate emerges as a world city in China.

The objective of this study is to quantify the present status of Shanghai in the world economic system using Cai's six-dimension model and methodology and to examine in detail the situation of Shanghai up to 2000 according to the six dimensions.

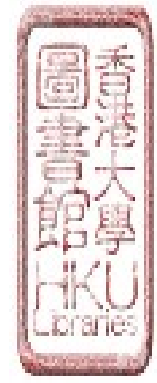
Finally, this study can conclude that Shanghai has many merits in the enabling infrastructure development, however, it still lag behind existing world cities in terms of overall economic strength and economic controlling power. As the economic controlling power is most critical to determine the city's status in the world system, Shanghai may needs at least 15-20 years time to catch up with the development of existing world cities.

Table of Contents

List of Figures/Tables

Figures

Tables



Chapter 1

Introduction: Why Study Shanghai As a Potential World City?

1.1 Globalization and Importance of world city studies

Entering the twentieth century, the concept of globalization was recognized as academically significant. Globalization is a social process, which had changed human society worldwide. The intensive capital flows across the globe, the rapid growth of multinational corporations, the decline of state intervention in urban economies and the rise of transnational cultural flows, are all recognized global developments, which make former constraints on spatial boundaries of the world no longer matter.

Globalization itself can also be divided into three main aspects: economic globalization, political globalization and cultural globalization. Among them, economic globalization is much more rift and its impacts on society are more fundamental. The economic globalization process is always linked with the New International Division of Labour (NIDL) and the development of Multinational Corporations (MNCs). With massive development of information technologies, spatial dispersal of economic activities under economic globalization had contributed to the growth of important cities as centers for commanding, controlling and managing for these economic activities and which have become "world cities". These cities have lots of academic interest and studies.

Advanced telecommunication technologies allow the dispersion of production tasks across the globe, a new globalised organization of production, co-coordinated through the network of Multinational Corporation. While at the same time, many large cities are fighting to become nodes of this new production organization. The

marked concentration of specialized services such as management, finance, information and research and development(R&D) in these large cities represented their command functions and the capability of global control in the world-system. Besides, the integration of national economies has increased the flow of capital, especially Foreign Direct Investment (FDI), on a global scale. World cities, which are the key sites for headquarters of MNCs, become the basing points of global capital accumulation.

In addition, world cities are also powerful centers that are distinct in decision-making on economic, social and political issues in the new global urban hierarchy. As the concept of world city have such great influence on the global urban economic system, to study of this concept therefore has undoubted academic significance.

The study of the world city concept is also of policy relevance for future planning and development of cities. Because world city status is a symbol of prosperity, so there is now a keen competition among cities for this top position of the global urban hierarchy. By analyzing the concept of the world city, we can identify the crucial elements for a city to become a world city. This knowledge is essential for national governments and urban planners to set up development goals and to shape polices and programmes for achieving world city status.

1.2 Problem issue

There are already many intensive studies on the concept of the world city. By reviewing existing theories and hypotheses, we realize that most of these studies focus on analyzing the roles, functions and characteristics of world cities. There are still many related issues remaining untouched. One of the unanswered questions on the world city is that how far a particular city has gone to become a world city? There is also a lack of thorough qualitative studies on the competitiveness of a particular

country especially those rapidly developing countries with a large size economy, such as China, which already have cities that are actively trying to gain the world city status.

For most of world city studies, the definition of the world city and the formation process of world cities have only been generalized from a few major cities within Western countries such as New York, London and Tokyo. There is a lack of studies on large and rapidly growing developing countries, which house major potential world cities of the future. Existing research on the world city also fails to recognize that different world city formation processes may exist in different countries, as different political, economical and social settings will undoubtedly influence the process of world city formation in a particular country.

Most of the researchers also tend to define a world city using a qualitative approach based on their own knowledge and background. They describe the characteristics and functions of a particular world city by using a narrow range of attributes and fail to generalize on the process of world city formation. Although some have attempted to carry out qualitative studies using some quantitative indicators, because of the lack of a quantitative methodology, they only focus on the economic dimension, such as number of MNCs headquarters and per capita GDP etc. As the process of world city formation involves different aspects, such indicators alone are inadequate for fully measuring world city formation and a city's position in the world city system. They therefore have failed to give comprehensive and thorough analyses on the position of particular cities in the world system. Lacking of a detailed analysis for identify potential world cities restricts the generation of guidelines for planners to formulate relevant policies for promoting world city formation.

1.3 Objective of the study (Purpose statement)

The purpose of this study is to understand the world city formation process with Shanghai as a case study. By using the six-dimensional model and the methodology formulated by Cai Jiangming as our research framework, we shall update the statistical data of his quantitative assessment to identify the present status of Shanghai in the world economic system. Based on the quantitative assessment, our study will be able to identify the advantages and disadvantages of Shanghai in comparison with existing world cities. Besides, the updated quantitative assessment will help us to conduct a comprehensive and detailed evaluation of Shanghai in striving to become a world city. Through this detailed evaluation, we can formalize guidelines for its future planning and development. In this research the definition of world city that it functions as commanders and coordinators in arranging and articulating world production and marketing through the complex network of the global urban hierarchy. We hope that this study will provide a new angle for world city research.

1.4 Research Questions

The dissertation will address the following principal questions. First, How far has Shanghai gone in the process of world city formation? Second, What are the strength and weakness of Shanghai in the world city formation process? Third, What policies should be adopted to overcome its deficiencies for achieving the world city status?

1.5 Rationale for choosing Shanghai as case study

As aforementioned, there is a need to study the competitiveness of potential world cities. Subject to some limitations, not all of these studies can be studied. Instead, Shanghai has been chosen as a case study to demonstrate how far a particular city has gone in becoming a world city.

In the past 20 years, China's rapid economic development and its integration with the world economy have already demonstrated her economic significance and her international status in the world system. It is certain that China will play a more significant role in the world economy and it will bring China's big cities a new development pattern. Compared with the other Chinese cities, Shanghai has outstanding economic performance and has experienced fast growth in its economy since the Central government announced the development of Pudong New Area in 1990s. The remarkable progress in the development of the stock and financial markets in the city has greatly strengthened the economic controlling power of Shanghai. Besides, being the most favourable place for MNCs, it has attracted enormous inflow of FDI, which in turn promoted the city's status in the world system. Therefore, Shanghai is at present striving to turn itself into a world city and it is undergoing wholesale changes to become the new economic power house of China. These changes included not only a profound restructuring of its infrastructure but also the physical form and appearance of the city. Since the economic controlling power is most critical to determine the status of the world city, therefore, we choose Shanghai as our case study as it will most likely be the first candidate for world city status in China.

1.6 Outline of the Chapters

In addition to this introductory chapter, the thesis has the following seven chapters:

In chapter two, we will review the existing literature on the concept of world city. Our focus will be on reviewing existing hypotheses and theories on world cities and the dynamics of world city formation. Through reviewing related literature on the

world city, we will further introduce the debates on existing world city studies. The roles of national states and deficiencies in the classification of world cities are the main issues.

In chapter three, we shall first give the background and the basic facts of Shanghai. Then, we shall introduce Cai's six-dimension model and methodology to illustrate the way that we will apply the methodology to our case study.

As population and skills and the enabling infrastructure are basic requirements for world city formation, therefore we shall first discuss these two dimensions in chapter four. We shall discuss the quantity and the quality of Shanghai's population. To evaluate the quantity of labour supply in Shanghai, we will focus on discussing the negative population growth and the problem of ageing population. To evaluate the quality of the human resources in Shanghai, we will analyze the education qualifications as well as the availability of specialized personnel in Shanghai. For the enabling infrastructure dimension, we shall focus on evaluating the opportunities and limitations of Shanghai in becoming an international shipping, aviation and information center in the 21st century.

In chapter five, we shall first examine the transformation of the regional economic policies on Shanghai's development and focus will be evaluating the opportunities and limitations of Pudong development policy that aims to promote Shanghai as a world city. Then, we shall evaluate Shanghai's living environment by discussing two major aspects: 1). Urban redevelopment of Shanghai. 2). Environmental quality of Shanghai. Then, we will examine some of the promotional strategies in Shanghai to illustrate how Shanghai has been depicted as a booming international city since 1990s.

As economic vitality capacity is most critical to determine the status of a city, we shall analysis the potential of Shanghai to become one of the international economic, trade and financial centers in chapter six.

In chapter seven, we shall update the statistical data of the quantitative assessment done by Cai Jianming to measure the present status of Shanghai in the world system. This quantitative assessment of Shanghai will give a horizontal comparison between Shanghai, Hong Kong, Singapore, Tokyo, London and New York. Based on this assessment, we shall be able to depict the advantages and disadvantages of Shanghai in comparison with existing world cites.

After doing the detail analysis of Shanghai's status with six key dimensions, we draw our final conclusion and put forward strategies and guidelines for Shanghai's development towards a world city.

Chapter 2

Reviewing World City Studies

Economic globalization has transformed the spatial organization of production in the world system. While economic activities are more disperse over the globe, some major cities have grown up as the commanding, controlling and management centres for the world's organization of production. Their distinctive role as the nodes of the world urban hierarchy has stimulated lots of academic study. John Friedmann, who first proposed the "The World City Hypothesis" (Friedmann, 1986) had given a detailed explanation on the concept of world city. In this section, we will review some existing literatures on the world city. Our focus will be on three major aspects:

1). Dynamics of world city formation; 2). Definitions on the concept of world cities; 3). Debate on world city studies.

2.1. Dynamics of world city formation----*Globalization and the New International Division of Labour (NIDL) and Multinational Corporations (MNCs):*

The concept of globalization become widely popularized and become the key idea for us to understand the transformation of the world economy since the twentieth century. Although there are still some debates on when globalization began, the definition of globalization is quite clear. "*Globalization is a social process in which the constraints of geography on social and cultural arrangement recede and in which people become increasingly aware that they are receding.*"(Waters, 1995). The process of globalization itself also has different aspects including economic, political and cultural aspects (Water, 1995, Short and Kim 1999). Among them, economic globalization is always regarded as the major dynamics for the formation of world city. This idea was highly marked by the classical theory of globalization proposed by

Marx, who suggested the process of globalization was attributed to the expansion of capitalism. (Marx, 1977). Some recent researchers like Waters also support his idea. *"Globalization is the direct consequence of the expansion of Europe culture across the planet.... it is also bound up intrinsically with the pattern of capitalist development as it has ramified through political and cultural arenas."*(Waters, 1995).

Under the economic globalization era, the development of information technologies has reduced the constraints on the spatial boundaries. *"Territoriality will disappear as an organizing principle for social and cultural life, it will be a society without borders and spatial boundaries."*(Waters, 1995). Therefore, it has imposed great impact on the spatial organization of the production in global scale. While the concept of division of labour in Marx's classical theory suggested the expansion of capitalism through colonization and imperialism (Marx, 1977), there was continued expansion of manufacturing sector in developing countries in 1980s, The concept of New International Division of Labour (NIDL) suggested by Frobel had marked the new reorganization of industrial production. (Frobel and Heinrich, 1980). The idea of NIDL suggested that the "production processes are further splitting into fragments that can be assigned to whichever part of world can provide the most profitable combination of capital and labour". (Frobel, 1980). Facilitated by the advanced transportation and communications technologies, there was a rapid flow of capital, labour and technology, which has caused a shift of manufacturing production from developed countries into the Newly Industrial Economics (NIEs) and the other developing countries. The key element in promoting the establishment of "world-market factories" is the intensive migration of industrial capital particularly Foreign Direct Investment (FDI) from core to peripheral locations within the world-system (Henderson, 1985). The rapid flow of FDI was greatly encouraged by the Third world

governments and this in turn promoted the rapid development of Multinational Corporations (MNCs). This kind of corporation has played an important role in economic globalization as well as in the world city system.

2.2. Definitions on the concept of world cities

Disproportionate role of world cities has stimulated lots of academic interest and studies. There were many literature concern about the definitions and characteristics of world cities.

2.2.1. Peter Hall's contribution:

Patrick Geddes firstly defined the term "world city" in 1915. (Geddes, 1915). Until 1966, Peter Hall defined world cities in a more comprehensive way by adding political aspect into the definition. (Hall, 1966). He provided a long list of characteristics of world cities, they are generally in terms of multiple roles:

1. They were centers of political power, both national and international; and of the organizations related to government;
2. Centres of national and international trade
3. Headquarters of major banks, insurance and financial companies;
4. Centres of advanced professional activities;
5. Centres of information gathering and diffusion;
6. Centres of arts, culture and entertainment;
7. Centres of conspicuous consumption of both luxury and mass-produced goods.
8. Centres of very specialized goods and services.

Peter Hall's list of characteristics of world cities provides a clear and comprehensive description of the common features of world cities. However, he fails to give more detailed explanations on the features and the dynamics for the world city

formation. As a result, it is quite difficult to use his list to form indicators for measuring the world city formation.

2.2.2. John Friedmann's contribution:

The concept of world cities became widely popularized only until Friedmann and Wolff conducted a comprehensive research in the paper "World City formation: an agenda for research and action" in 1982. They had made some assertion of urban change and had raised some significant questions about them. These questions are very useful to give general direction for further studies. In addition, they also recognized the importance of world city concept, both in understanding the fundamental change of world economic system and the impacts on the urban development.

Friedmann further provided the framework for studying world cities by proposing " The World City Hypothesis" in 1986. (Friedmann, 1986). The following are the seven interrelated theses:

1. *The form and extent of a city's integration with the world economy and the functions assigned to the city in the new spatial division of labour will be decisive for any structural changes occurring within it.*
2. *Key cities throughout the world are used by global capital as "basing points" in the spatial organization and articulation of production and markets. The resulting linkages make it possible to arrange world cities into a complex hierarchy.*
3. *The global control functions of world cities are directly reflected in the structure and dynamics of their production sectors and employment.*
4. *World cities are major sites for the concentration and accumulation of international capital.*

5. *World cities are points of destinations for large number of both domestic and/or international migrants.*
6. *World city formation brings into focus the major contradictions of industrial capitalism----among them spatial and class.*
7. *World city growth generates social costs at rates that tend to exceed the fiscal capacity of the state.*

In his study, world city formation is linked to the concept of New International Division of Labour (NIDL). The concept of NIDL suggested that different cities would perform specialized roles in the world's urban hierarchy. For the major cities, they are no longer dominated by manufacturing production but they are transformed into key production sites for producer services. These specialized functions equipped the major cities to be command centers, which act as the " basing points" in the spatial organization and the articulation of production and markets. He then further identified the world cities as the major sites of capital accumulation and the sites for international migration.

Friedmann believed the integration of the world system would lead to the formation of a complex global urban hierarchy. In his 1986 paper, he classified cities into primary and secondary in core and peripheral countries. This hierarchy was formed based on seven criteria: major financial center, headquarters for MNCs (including regional headquarters), international institutions, rapid growth of business services sector, important manufacturing center, major transportation node, and population size. He admitted *"not all the criteria were used in every case, but several criteria had to be satisfied before a city could be identified as a world city of a particular rank."* (Friedmann, 1986). However, as the world city hierarchy is not in

static structure, he believed that *"all the criteria of world system integration must be viewed as dynamic, historical perspective. Urban roles in the world system are not permanently fixed."* (Friedmann and Wolff, 1982). He thus further arranged 30 cities into different tiers of the global hierarchy according to their specialized roles. (Friedmann, 1995). In the top tier of the hierarchy, there are cities including New York, London and Tokyo. They mainly act as global financial articulations. The second tier which functioning as multinational articulations are cities like Miami, Los Angeles, Frankfurt, Amsterdam and Singapore. The third tier is the regional articulations such as Paris, Zurich Sao Paulo, and Sydney etc. The lowest level is the regional articulations like San Francisco, Chicago, Toronto, and Hong Kong etc.

Apart from the common characteristics of world cities, Friedmann also recognized the implications on the urban regions that strive for the world city status, particularly the dramatic structural changes in employment sectors and the problem of polarization of social class division.

Friedmann's study provides a good and comprehensive framework for further studies and also provides a new basis for the states and planners to deal with the problems in the world cities. However, his study is still heavily relied on a qualitative approach, which fails to give a good database for measuring the world city formation. In his classification of world cities, the list of world cities is only suggestive and the classification is only based on limited types of criteria such as population size and GDP. Therefore, his study fails to provide a well-developed methodology for forming the global urban hierarchy.

2.2.3. Sassen's contribution:

Sassen used a bottom up approach by looking at the changing roles of cities under the contemporary globalization. (Sassen, 1991,1994, 1995). In her study, the

formation of global cities is largely attributed to the concentration of command and management functions especially finance and producer services in the global cities. These functions have contributed to the strategic role of certain major cities as "global cities". (Sassen, 1991,1994).

The characteristics of global cities are:

- Command points in the organization of the world economy;
- Key locations and marketplaces for the leading industries of the current period—finance and specialized services for firms, where firms and governments from all over the world can buy financial instruments and specialized services;
- Postindustrial sites of production for finance and specialized services industries and including the production of innovations in these industries.
- Key sites for the advanced services and telecommunications facilities necessary for the implementation and management of global economy.

There are two major processes constituted the formation of global cities. Firstly, the dispersal of economic activities has raised the scale and the complexity of international transactions, thereby feeding the growth of top-level multinational headquarters functions and the growth of service in firms. (Sassen, 1994). Since the 20th century, massive developments in telecommunications and information technologies have led to the dispersal of the economic activities over the globe. In 1980s, the process of economic globalization was further enhanced through the rapid flow of FDI. The intensive capital mobility has led to a demand for highly advanced infrastructure of specialized services and the top-level concentrations of telecommunications facilities. Cities instead of becoming obsolete are central locations for these facilities. Concentration of the advanced infrastructures in the

cities produces the "capability of global control" which is essential for the formation of global cities. (Sassen, 1994)

The second process is the increase of service intensity by firms of all industries especially producer services. Most of the advanced corporate services require multiples highly specialized inputs from several industries and the spatial proximity to buyers. Cities, which are key sites for the production of services, become the strategic locations for the service production complex. As MNC headquarters also need to buy and contract for specialized services and financing, they therefore concentrated in the major cities, which line along with the specialized services; and therefore led to a significant growth in the global cities.

Sassen's study brings us a new angle in studying the formation of global cities. Rather than viewing the global cities as the outcome of globalization, her study emphasis on the changing functions of the major cities and their impacts on international economic activities. Sassen also conducted a good comparative study of New York, London and Tokyo, which are the triad of global cities in the global economy. In the case studies, she gave some clear evidences of the agglomeration of producer services and infrastructures in the global cities. However, as her study only focuses on three cities, it is inadequate to rank cities into the global urban hierarchy and therefore fails to indicate the status of a particular city in the world system.

2.2.4. Taylor's contribution:

Taylor tried to examine world cities in a *longue duree* context. (Taylor, 1995). Rather than studying world cities in the past few decades, he gave an explanation of world cities beyond their contemporary existence. Besides, he also emphasized on the roles of cities and their mutual benefits with territorial states in the world economy. In his paper, he identified three phases-----necessity, nationalization, and demise of

territories, and used it as the framework for the location of world cities in a *longue duree* context.

In phase one, territorial states and city-states had a relationship of mutual beneficial. Territorial states are political units whose advantage would be the ability to mobilize war, while city-states are key locations for wealth accumulation. During the 15th and 16th centuries, Genoa and Antwerp are the world cities. However, in the 16th century, the rise of territorial states as a new scale of war machine and the demand on capital of cities eventually caused them into bankrupt and destroyed them both physically and economically. The new political economy had led to the rise of merchant's state, by which territorial states were not only war machines but also the economic growth machines. In this phase, it is the *"necessity of a political territoriality for capital expansion."*(Taylor, 1995, pp.53)

In the second phase, a new class of world cities was created, the great industrial metropolis. Due to Britain's industrial revolution and France's political revolution, "a new spatial congruence was created linking territorial state to national economy and national homeland". The term nation-state was widely used and cities had lost their political autonomy through the process of nationalism. As a result, in the 19th century, the importance of world city was measured by the power of the state. The world city hierarchy in Europe was that: 1) London, Berlin. 2). Paris, Vienna, St Peterburg. 3) Rome.

In the third phase, because of US hegemony strategies of trans-state institution and the national self-determination, it undermined the viability and autonomy of states. The idea of NIDL and the rediscovery of the local as an arena led to the "demise of state". With the intensive cross-border flow of people, capital and ideas, territorial

states no longer preserve their distinctiveness behind the political boundary and world cities become the apex of global urban hierarchy.

Taylor used a new approach to study the world cities. His study recognized the complexity relations amongst world cities in historical and geographical variation of the world system in which they operate. He believed that the complex relations are resulted from the unfolding of the world system before 1970. Through studying world cities in a longue duree context, we can identify the process of world city formation in the past world economy. Moreover, Taylor's study also examines the relationship between world cities and the states in different phases of the world economy, which can help us to identify their roles in different phases.

2.3. Debates on world city studies

2.3.1. Role of nation-state in world city formation:

In the contemporary world economy, most researchers believed that economic globalization would erode the role of national governments in their economy. (Sassen, 1994,Water, 1995) *"The erosion of the role of the government in the world economy, which was much larger when trade was the dominant form of international transaction, has displaced some of the organizing and servicing work from governments"(*Sassen, 1994). The state's power in controlling the economy at their borders will be further reduced through the growth of international organizations, a system of "global governance" such as WTO, UN and IMF etc. (Waters, 1995).

However, some argue that we should not ignore the importance of the nation-state in the world city formation process. (Taylor, 1995, Olds and Yeung, 2001). Although Taylor had mentioned the "demise of territories" in his paper (Taylor, 1995), he still reinforced the importance of the nation-state in the world system: *"For all*

erosion of their functions, states are still lethal instruments. State remain sovereign entities on the world scene, which mean that theirs is the only legitimate coercion within their territories standing as the final guarantee of all fixed capital."(Taylor, 1995). Besides, the national government still plays an important role in the formation of world cities. *"For cities to engender global reach (in the formation of extraterritorial terrain of network relations) they must have institutional will (political and non-political) and political legitimacy to initiate and sustain it through both material and discursive practices."* (Olds and Yeung, 2001). By identifying the relationship between world cities and nation-states, we can have a better understanding on the role of the nation state in the formation of world cities and therefore can help the decision-makers to develop plans for acquiring or reinforcing world city status.

2.3.2. Deficiency in classification of world cities:

Among the world city literatures, many scholars attempt to classify cities into global urban hierarchy, for example, Friedmann, Thrift, Knox and Short and Kim etc. However, some claim that all of these classifications are insufficient to specify a hierarchy within a network, because they are only ranked by attributes rather than measuring relations between cities by different type of data. (Beaverstock et al. 2000; Taylor 1997).

Recognized the problem of lacking relational data, some scholars like Keeling, Smith and Timberlake, Beaverstock and Taylor tried to construct new methodologies for measuring the world city formation. Examples of these new methodologies like using the data on transportation and communication (Keeling, 1995), using information on business pages of city leading newspapers (Taylor, 1997) and measuring the agglomeration of key producer service offices in cities (Beaverstock et

al, 1999). Although all of these methodologies enable large amounts of relational data to be collected, each methodology only able to focus on one specific aspect of world city formation. Without a comprehensive methodology based on quantifiable data, it is hard to have a detailed qualitative study on the competitiveness of a particular city in the world city formation.

From the review in this section, we understand that world city is a direct outcome of economic globalization. (Figure.1) The concept of NIDL has explained the new globalized production organization. With massive development of transportation and telecommunication technologies, economic activities have dispersed worldwide. The concentration of command and control functions in major cities has led to the emergency of world cities. Intensive studies on world cities have gave us a better understanding on existing definitions as well as debates on the world city studies. However, as we recognize the deficiency on existing studies, there is a need for choosing a more comprehensive methodology based on quantitative indicators for conducting a detailed qualitative study on world cities.

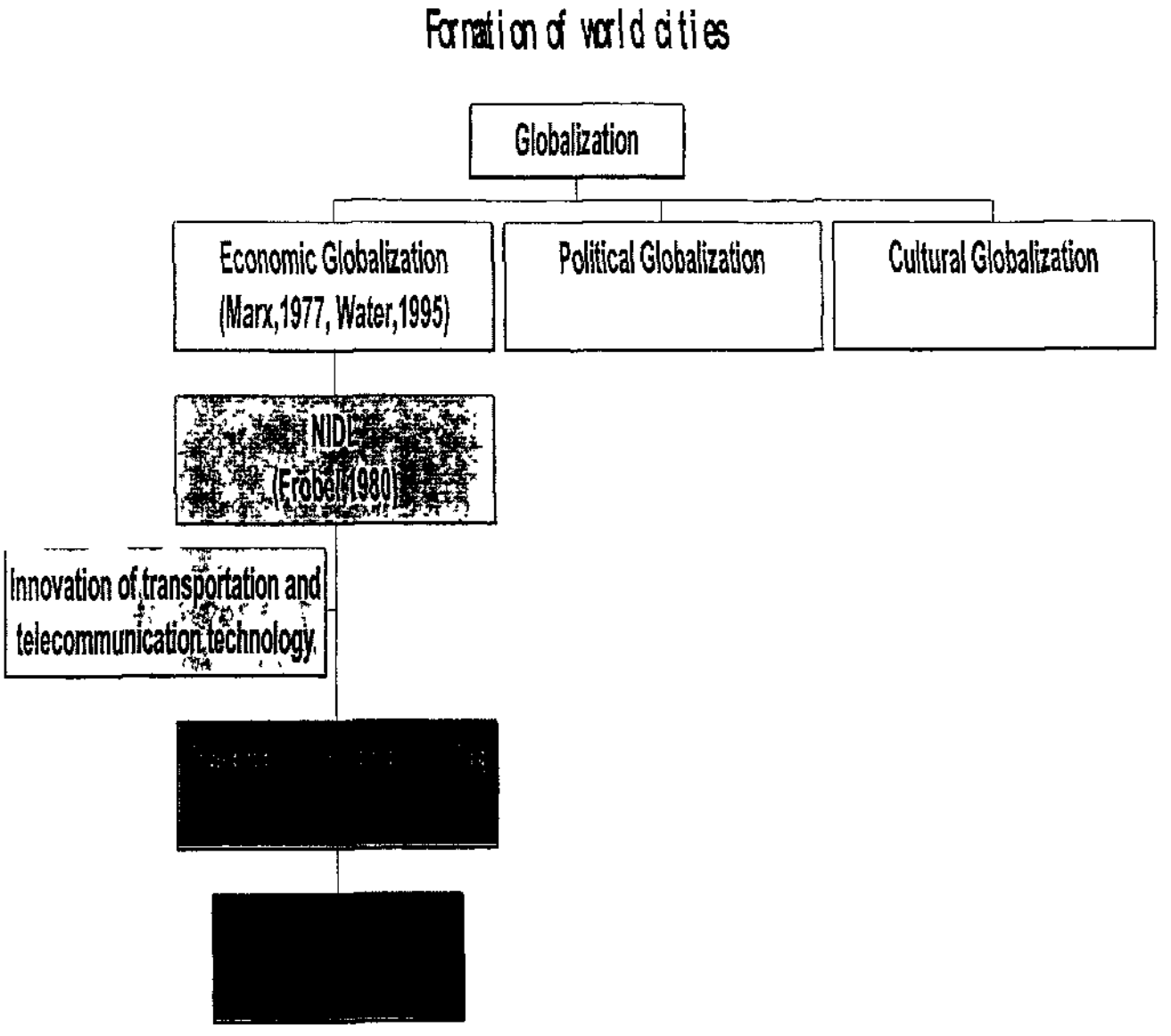


Figure 2.1 The Formation of World City

Chapter 3

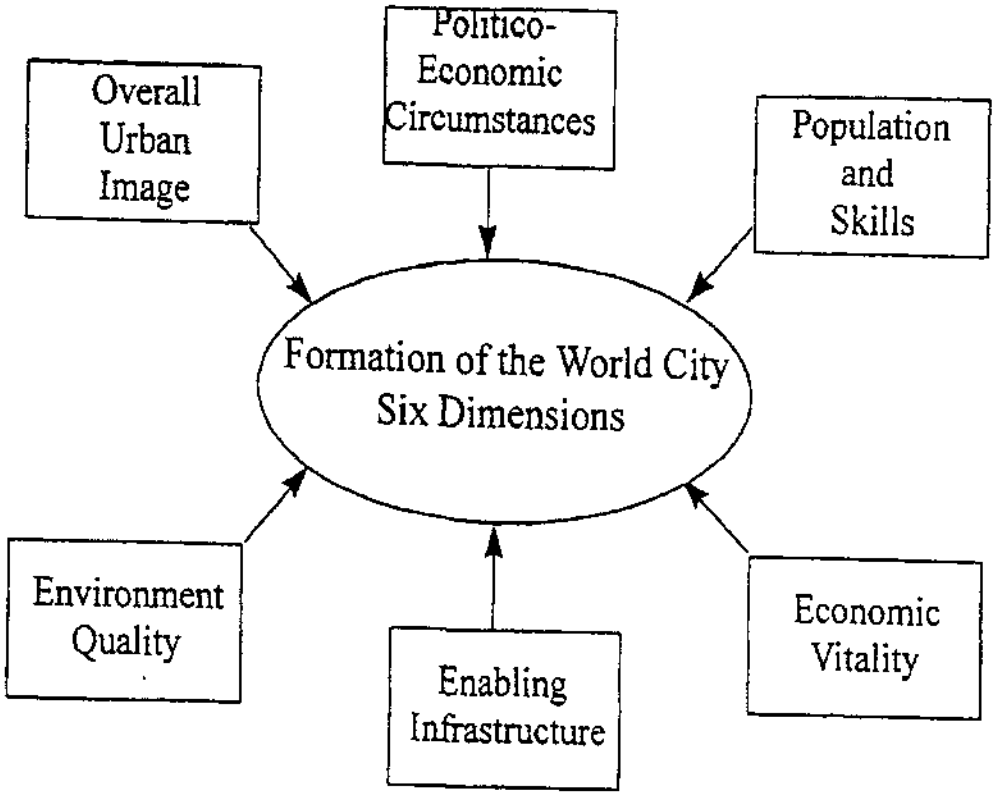
Methodology: The Six-Dimension Model

3.1. The Six-Dimension Model

The literature review in Chapter 2 has shown that there are many intensive studies on the concept of world city. However, most of these studies focus on analyzing and describing the roles, functions and characteristics of world cities, while lacking a quantitative methodology to measure the competitiveness of a city in the world city formation process. By reviewing the quantifiable measurements in existing world city studies, we realize that most of these measurements fall short of a comprehensive and integrated methodology as they only focus on the economic dimension, such as number of MNCs headquarters and per capita GDP etc.

As the development of world city is an accumulated process and it includes many dimensions, Cai therefore has distilled six most important dimensions for *measuring the formation of world city. They are politico-economic, population* and skills, economic vitality, enabling infrastructure, living environment and overall urban image. (Figure 3.1)

Fig 3.1 The Six Dimensions in the Formation of the World City



Based on the six-dimension model formulated by Cai Jianming, the characteristics of the world cities are listed in the following:

1. A compatible economic system to the dominated world economic system
2. The primate city in its home country and beyond
3. A large number of population and a large pool of skills
4. A convergent place for MNCs
5. A strong power in coordinating global capital flows and production activities in a large economic region and particularly in providing good producer services
6. A core city in a major industrial and commercial area
7. Close ties with other major cities of the world

8. Possesses an enabling infrastructure, particularly in international transportation and communication
9. A sound living environment for attracting the needed activities and skills
10. A good reputation for its manufacturing and cultural products
11. A major center for the creation of new fashions in living style, as well as values, culture traits and so on.

3.1.1. Quantifiable Attributes of the Model

The characteristics of world cities may be further represented 22 quantitative indexes for charting the status of a city in becoming a world city. Table 3.2shown the relationship between the 6 dimensions and the 22 attributes As each dimension and attribute have different contribution to the formation of world city, following Cai(2000) we have assigned different weight points to each dimension and the sub-indicators. Through assigning the ordinal scale to each attributes and applying the formula 3.1, it can then get the index value of each dimension and can use it for further comparative studies. To conduct the quantitative assessment on Shanghai, he restricted the comparison with 5 chosen world cities: New York, London, Tokyo, Hong Kong and Singapore. He further classified the five cities into two groups, the matured world cities (Mwc) (New York, London and Tokyo) and the newly emerged world cities (Newc) (Hong Kong and Singapore) and used 15 indicators to compute Shanghai's standing in these indicators as a percentage of each of the two city groups. In order to identify the present status of Shanghai in becoming a world city, we shall update the statistical data of the selected 15 indicators of Cai's six-dimension assessment in the last chapter of the thesis.

Table 3.2 Selected Attributes and Their Weights

Dimension (Weighting Factor)	Attribute (Weights)*	Original Data Scale
D1, Politico-Economic System (1 6, 0.1, 0.1)	1. D11, Urban primacy classification (0.3)	Ordinal
	2. D12, State Economic power (GDP) (0.5)	Ratio
	3. D13, Urbanization degree (0.2)	Ratio
D2, Population & Skills (1 6, 0.1, 0.1)	1. D21, Total urban population (0.3)	Ratio
	2. D22, % of population at age 60 - (0.1)	Ratio
	3. D23, College students per 10000 (0.4)	Ratio
	4.D24, Ratio of middle school student enrollment (middle school student/ population at age 12-19) (0.2)	Ratio
D3, Economic Vitality (1 6, 0.3, 0.35)	1. D31, GDP per capita (0.1)	Ratio
	2. D32, Stock value (0.3)	Ratio
	3. D33, Number of MNCs' headquarters (Fortune Global 500) (0.3)	Ratio
	4. D34, % of tertiary employment (0.1)	Ratio
	5. D35, Advertising value (0.2)	Ratio
D4, Enabling Infrastructure (1 6, 0.15, 0.2)	1. D41, Air passengers (0.3)	Ratio
	2. D42, Air cargo (0.2)	Ratio
	3. D43, Water-borne cargo (0.15)	Ratio
	4. D44, Telephone number per 100 persons (0.25)	Ratio
	5. D45, Electric power consumption per capita (0.1)	Ratio
D5, Living Environment (1/6, 0.15, 0.1)	1. D51, Average rooms per household (0.15)	Ratio
	2. D52, Doctors per 1000 persons (0.15)	Ratio
	3. D53, Living cost index (0.3)	Ordinal
	4. D54, Life quality index (0.4)	Ordinal
D6, Overall Image (1/6, 0.2, 0.15)	1. D61, General impression classification	Ordinal

Source: quoted from Cai (2000), Measuring the formation of world city: the case of Shanghai, Hong Kong: University of Hong Kong, 2000.

Formula 3.1

$$C_{id} = (\sum^{m}_{j=1} W_j C_{ij} - V_{min}) * 100 / (V_{max} - V_{min}) \qquad \text{(Formula 3.1)}$$

Where, C_{id} is the evaluation of city i for Dimension d, fallen between 0-100;
W_j is the assigned weighting factor for attribute j;
C_{ij} is the classified value of city i for attribute j (1,2,3,...);
V_{max} is the maximum assigned value for the attribute, usually is 9;
V_{min} is the minimum assigned value for the attribute, usually is 1;
m is number of attributes for Dimension d.

Following the paradigm of the six dimensions model, in the coming chapters, we shall examine in detail the situation of Shanghai according to the six dimensions, emphasising of their development and change up to 2000. Each dimension will also be qualitatively assessed against the background of their present situation and Shanghai government's plans and present endeavors. We shall then appraise Shanghai's standing in world city formation quantitatively using Cai's methodology and also compare it with the 5 selected cities.

3.2 Background of Shanghai

It is believed that the focus of international development of the world economy will shift to the Asian-Pacific region, especially East Asia, in the 21st century, therefore, quantitative methodology for measuring the world city formation is particular important to cities in the Asian-Pacific region. Recently, many cities in the region, such as Hong Kong, Singapore, Seoul, Taipei and Bangkok became significant and are aspiring to be a world city. Shanghai, the premier economic center

in China also formulated the strategic goal to become a future world city in its research project "Shanghai Moving Toward the 21st Century".

Shanghai is the largest city in China and is located on the western side of Pacific Ocean and at the middle point of China's coast. With strategic geographical location, it has long been the bridgehead of China to the world and has frequent trade with other countries such as Japan, South Korea, Hong Kong, Singapore, and Taiwan etc. Located at the middle point of China's coast, Shanghai is also well-connected with the Yangtze River Delta Region, one of the most developed areas in China. This region includes Nanjing, Suzhou, Changzhou, Jiangsu, Hangzhou, Ningbo and Zhejiang provinces, accounting a third of China's population and 40% of the total GDP in China. With a large economic hinterland and strategic geographical location, Shanghai, one of the five treat ports in China during the late 19th century was soon outstripped in the importance the other treaty ports and became the center of China and the Far East in economics, trade and banking. Because of the intensive interaction of two civilizations and the modern educational development during the colonial period, Shanghai also acquired abundant skilled manpower to drive its economic advance. Although Shanghai has been restructured as the leading industrial base after 1949 and it has experienced modest growth in comparison with South China, such as Guangdong during the 1978 reform period, it has been emerging as the hub key region for open economic development when the Chinese Government made a strategic policy decision to build Shanghai into" a dragon head and three-fold center". The 14th National People Congress of the Chinese Communist party (CCP) (October 1992) Jiang Zemin urged Pudong to take the lead in developing the Yangtze Delta Region and Shanghai should assume the role of " dragon head" in opening up of cities along the Yangtze River and looked forward to the emergence of Shanghai as one of

the international economic, financial and trade centers. Since the opening of the Pudong New Area in 1990, Shanghai has experienced fast growth and becomes an economic engine in urban China. Table 3.1 shows the significance of Shanghai in China measured by selected economic indicators in 2000. Since the economic controlling power is most critical to determine the status of world city, therefore, Shanghai will most likely be the first candidate emerges as a world city in China.

Table 3.1 Shanghai's significance in China measured by selected indicators

Indicators	China	Shanghai	Percentage of the National Total (%)
Land Area (10000 sq.km)	960	0.63	0.1
Population (mil)	1265.8	13.21	1
GDP (billion RMB)	89404	4551.15	5.1
Of which Primary sector	14212	83.2	0.6
Secondary sector	45488	2163.68	4.8
Tertiary sector	29704	2304.27	7.8
Total Municipal Financial Revenue (billion RMB)	13380	1752.7	13.1
Cargo handling volume (billion tons)	12.8	2.04	15.9
Revenue of post & communication (billion RMB)	4725	225	4.8
Total Exports and Imports (USD billion)	4743	1093.11	23
Actual utilized FDI (USD billion)	407	31.6	7.8
Enrolled college students (10000 persons)	556	22.68	4.1
Newspaper Published (billion copies)	203	16.77	8.3

Source: Shanghai Statistical Yearbook 2001, Shanghai Municipal Government

Chapter 4

Dimensions of 'Population & Skills' and 'Enabling Infrastructure'

4.1 Populations and Skills Dimension

As we have mentioned the importance of world cities is their capability to integrate with the world economy and their command and control roles in the new organization of production. Therefore, many scholars have not considered population as an important criterion for measuring world city status: *" Absolute size, however, is not a criterion of world city status, and there are many large cities even in the peasant periphery whose size clearly does not entitle them to world city status."* (Friedmann, 1986). However, from the list of world cities suggested by John Friedmann in 1986, we can see that most have a population of over one million. Thus, population is still an important indicator for evaluating the competitiveness of a city to become a world city.

Based on our definition of world city, they should have a large population size, a higher proportion of it being the working population and with higher education and special skills. Therefore, in analyzing the opportunities and challenges of Shanghai to become a world city, we will discuss both the quantity and quality of Shanghai's population. To evaluate the quantity of labour force, we will first discuss the population trend, age and sex composition and the migration pattern of Shanghai's population. All of these are crucial for examining the labour supply and employment structure. To evaluate the quality of the human resources, we will analyze the education levels of Shanghai's population and the availability of specialized personnel.

4.1.1Total population

Shanghai is one of the megacities in the world and is the most populous city in China. By the end of 2000, the total population with household registration reached 13 million. Although the absolute size of population may not be the critical factor in the formation of a world city, a large population is still important for determining the labour supply and size of the consumption market for further economic expansion. In the following, we will briefly describe the trend of population growth of Shanghai in different time periods.

The first period (1950-1959) was characterized by rapid growth. During this period, the average rate of natural increase was as high as 32 per thousand, which contributed to an annual population growth of 34%.

During the second period (1959-1979), the rate of natural increase had slow down and the annual population growth rate dropped to 9.5%. The slow natural increase was attributed to the strict immigration policy in the Maoist period and the enforcement of family planning policies.

Entering the third period (1970 to present), the population pattern has changed to one of low birth rate, low death rate and low growth rate. Since 1993, Shanghai became the first provincial region in China to experience negative population growth. In 1993, the birth rate was 6.4 per thousand and the death rate was 7.3 per thousand, resulting in a natural growth rate of –0.8 per thousand. Up to the year 2000, the natural growth rate was still –2 per thousand.

The negative population growth in Shanghai can be explained by two factors. (1) Implementation of the one-child population policy since 1979 and (2) Fast socioeconomic development has led to rising education level and changing attitudes of the female to have fewer children.

4.1.2Age-sex structure of population

a). Working population

To analysis Shanghai's future economic vitality, the size of the labour force is an important issue. As size of the labour force is highly related to the proportion of working-age population, so our analysis will be focus on the age group of 15-64. From the Table 4.1, it can be seen that the total amount of population aged 15 to 64 was 8 million or 76% of the total population in 2000. It is expected the total labour supply will decrease to 8 million and 6 million in 2015 and 2030 respectively: Therefore, Shanghai will face a deficient labour supply in the 21st century.[1]

Table 4.1 The prediction of Shanghai 's future working population growth in 1996-2030

Year	1996	2000	2005	2010	2015	2020	2025	2030
Working population (10,000 persons)	775.63	808.82	854.21	857.19	805.82	729.09	660.25	606.17
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Aged 15-34	35.47	30.62	32.43	35.19	33.31	25.97	16.39	12.38
Aged 35-49	50.98	52.70	43.69	33.84	33.15	43.87	57.44	57.12
Aged 50-64	13.56	16.68	23.89	30.97	33.54	30.16	26.17	30.15

Source: quoted from Population research Vol. 25, No.1 January 2001

[1] Wang Daben, *Analysis of Labour Resources and Related Supply and Demand, pp.147* in Harold D. Foster, David Chuenyan Lai, Naisheng Zhou.(Eds), The dragon's head : Shanghai, China's emerging mega city, Victoria, B.C.: Western Geographical Press, c1998.

In addition, Shanghai is also facing the ageing problem of its working population. From the table, we can see that the proportion of population aged 15 to 34 made up 35% of the total working population and is expected to decrease to 12% in 2030.

b). Ageing population

An "Ageing city" is defined as a city whose elderly population exceeding 7%. Based on this definition, Shanghai has become the first "ageing city" in China in 1979 when people aged 60 or over represented 10.2% of its total population.[2] At present, the proportion of population aged 65 or over is 11.5%. Compared with 1990, it increased by about 2.1%.

It is projected that the proportion of population aged 65 or over will increase more rapidly in future. (Table 4.2) By 2010, the population aged 60 or over will be 2.8 million, while the population aged 65 or over will be 1.9 million. By 2030, ageing population will be much more serious as the population aged 60 or over will increase to 4.6 million, which is nearly double of the figure in 2010, while the population aged 65 or over will reach to about 3.8 million persons.[3]

[2] 老齡化對中國的挑戰,袁緝輝,張鍾汝主編,上海:復旦大學出版,1991,pp.133 (Lao ling hua dui zhong guo de tiao zhan / Yuan ji hui, zhang zhong ru zhu bian)
[3] 21 世紀初重大經濟課題研究, 陸道生 主編, 上海人民出版社, 2001, pp. 92

Table 4.2 The prediction of Shanghai's ageing population trend

Year	Total *population*	Aged *population* (>60)	Proportion	Aged population (>65)	Proportion	Aged population (>80)	Proportion
	(10,000 persons)	(10,000 persons)	%	(10,000 persons)	%	(10,000 persons)	%
2000	1343.54	238.85	17.78	184.99	13.77	30.01	2.23
2005	1347.37	249.91	18.21	189.66	13.82	38.75	2.82
2010	1372.02	287.28	20.51	194.93	13.92	46.67	3.35
2015	1388.22	350.02	25.32	226.63	15.94	51.19	3.81
2020	1389.01	435.68	30.46	291.61	20.39	49.69	3.47
2025	1373.32	468.85	32.73	357.99	24.99	52.44	3.66
2030	1345.98	462.30	32.31	380.38	26.58	66.65	4.66

Source: quoted from 21 世紀初重大經濟課題研究, 陸道生 主編, 上海人民出版社, 2001

Growing ageing is a common phenomenon in most developed countries and is also one of the characteristics that distinguish world cities. While Shanghai's ageing population increased at a faster rate, its economic strength is much lower than other developed countries. Therefore, it is not difficult to see that Shanghai will face the labour deficiency and the huge economic burden caused by a large dependent population.

4.1.3. Migration in Shanghai

a). Floating population in Shanghai

Since the opening of China in 1978 and the relaxation of household registration system in 1984, there was more frequent floating and migration of people between provinces and between urban and rural areas. The floating population is defined as the population without permanent household registration, i.e. those who had no employers to arrange documents. As they usually do not get the residence permit and not even temporary cards, therefore, almost half of them live in the rural areas of Shanghai, where household control was less strict than in formally urban districts. It was estimated that one-quarter of Shanghai's total population was floating population in 1994. In 2000, there were 0.2 million immigrants to Shanghai and the mechanical increase of population was 0.1 million.

In Shanghai, most immigrants are floating population. In 2000, there were 2.2 million migrants stayed for more than one year, of which, only 0.7 million stayed for five years or above. Besides, a large proportion of migrants are male aged between 15 and 34 and they represented 57% of the total migrants in Shanghai. They are mainly come from rural areas of different provinces in China, especially Jiangsu and Zhejiang. In addition, they usually migrate to Shanghai for economic reason. In 1993, there was 74% of the floating population came for doing business and for searching jobs, and there was only 0.8% of them came for education and training. As most of the floating population has low education qualification, they usually look for temporary jobs in construction and transport.

The floating population may become a source of labour force. However, the overall education qualifications of the floating population are quite low: *"85% of migrant*

labour force attained middle school level, 27% attained only primary school level." [4] Therefore, the contribution of Shanghai's floating population to the knowledge-based economy will be very limited.

b). International migrants in Shanghai

Under economic globalization, international migrants will play a more important role in the new economy. Since the opening up of Pudong in 1990, Shanghai has reduced the restrictions on oversea technician immigration and has adopted many preferential policies to attract qualified personnel. Over the 20 years of China's open door policy, there were 15.4 million international immigrants to Shanghai; this figure was 46 times the total amount in the period of 1949-1978. [5] Most of these international migrants are come from Japan, United States, Korea, Germany and Singapore.

International migrants in Shanghai generally have higher educational qualifications than the local obtained. In 1990, 30 % of international migrants had attained college or above level, while only 7 % local residents had attained the same level.

With the emergence of new types of industry, especially advanced and specialized services, we believe the skillful and talented migrants will be the important assets of Shanghai. With the keen competition for skillful personnel in the existing world cities, the potential of Shanghai in aspiring to become a world city will therefore heavily depend on its ability to attract skillful and talented migrants.

[4] Population Research Vol. 25 no. 1 January 2001, pp.12
[5] Population research vol.24 no.5 Sept 2000, pp.55

4.1.4 Quality of population

In aspiring to become a world city, educational qualifications of Shanghai's population and the availability of qualified personnel are the two main factors determining the quality of the human resources.

I). Educational qualifications

Since the adoption of educational reform in 1990s, Shanghai has a leading position in the educational development in China. In 2000, there were 1.8 million people reached college or university level and made up 11 % of the total population, while the proportion of illiterate or semi-illiterate was only 5.4 % of the total population. Compared with 1990, the number of person attained university level or above increased by 67% and the proportion of illiterate decreased by 5%.

Apart from the educational levels of the general public, education qualification of workers is more critical to determine the economic strength of Shanghai. Before Cultural Revolution, education levels of Shanghai's workers were below low middle school. In 1998, the proportion of workers attained college or university level increased to 13% and the proportion of illiterate or semi-illiterate decreased to 4.6%. The improvement of educational qualifications of workers can provide sufficient qualified personnel in upgrading Shanghai's economic structure.[6]

Although educational qualifications of Shanghai's population are improving, it is still lower when compared with the international standards. For example, Japan already had 20.7% of the population aged 25 or over attained university level in 1990, while

[6] 21 世紀初重大經濟課題研究, 陸道生 主編, 上海人民出版社, 2001, pp.82

United States also had 46.5% of the population attained university level in 1994. Therefore, Shanghai's educational level still needs further improvement to catch up the development of the existing world cities.

II). Availability of scientific and technical personnel in Shanghai

To achieve the goal of becoming an international economic, trade and financial center, Shanghai should prepare a large pool of qualified personnel to meet the demand in the new economy. In 1990, there were 1.1 million scientific and technical personnel, which represented 13% of every 10,000 employees. Although this amount increased to 3,099 persons in 2000, comparing with the other developed countries, they are much inferior in terms of the quantity and quality. For example, Japan already had 3,182 scientific and technical personnel for every 10,000 employees in 1982.

In terms of quality, the education levels of Shanghai's qualified personnel are low. In 1994, there was only 45% reached college or above levels[7] and 43% of the financial and accounting personnel obtained higher education level in 2000.

In terms of number of professional titles, the proportion of senior personnel is much lesser than the junior personnel. In 2000, there were only 3,202 of economic personnel and 807 of financial personnel with senior titles, which represented 3% and 1.1% of their total amount respectively.

While knowledge-based economy requires a large pool of professional in tertiary sector particularly business and commerce sectors, there were only 2.5% and 2.9% of

[7]經濟社會發展研究,上海市哲學社會科學規劃辦公室編,上海:財經大學出版社,1996

the total professional engaged in finance and telecommunication sectors respectively.[8] To have further restructuring in Shanghai's economy, Shanghai should develop more professional and technical personnel in the tertiary sector, especially sectors of finance, transportation, telecommunication, science and technology, information etc.

4.1.5 Problems of human resources development in Shanghai

Education is explicitly made a vehicle to accomplish the transition to a market economy.[9] Shanghai has a leading position in education development in China, however, there are still some problems that limit human resources development there.

1). Insufficient higher educational institutions and specialized technical schools. Shanghai has some of the best universities in China, including Fudan University, Tongji University, Jiaotong University and St. John's University. However, compared with other developed countries, Shanghai's universities have not yet reached international standards.

2). Limited investment in education. In 1994, actual amount of investment in education was less than US$ 40. In addition, per capita expenditure in education was only RMB 136, which made up 2.6 % of Shanghai people's total budget.[10]

[8]九十年代上海人口(上海市第四次普查論文選集, 上海人口普查辦公室編,<北京>:中國統計,1992 (Jiu shi nian dai shang hai ren kou : Shang hai shi di si ci ren kou pu cha lun wen xuan ji / Shang hai shi ren kou pu cha ban gong shi bian)

[9] Grace C.L. Mak & Leslie N.K. Lo, *Education, pp.376* in Y.M.Yeung and Sung Yun-Wing (Eds), 1996, Shanghai Transformation and Modernization under China's Open Policy

[10]經濟社會發展研究,上海市哲學社會科學規劃辦公室編,上海:財經大學出版社,1996 (Jing ji she hui fa zhan yan jiu / Shang-hai shi zhe xue she hui ke xue gui hua ban gong shi bian)

3). Low educational qualifications of teachers. Since 1980s, most secondary school teachers in Japan, Korea and Taiwan are Master Degree holders. However, there was only 29% of Shanghai's high middle school teachers are post-graduates.

4.1.6 Summary in Population and Skills Dimension

In the modern economy, the quality instead of the quantity of the human resources is more critical to determine the status of a city. In terms of the quantity, Shanghai should have sufficient amount of labour force. Although Shanghai is now facing the negative growth of population, the influx of migrant workers could counterbalance any deficiency in labour force.

With the improvement in life expectancy, the proportion of aged population will increase rapidly in the coming decades and is expected to reach an ageing peak in 2030. Resultant problems such as ageing working population and heavy social and economic burden will become the obstacles of Shanghai to achieve a higher level of economic development.

In terms of quality, shortage of skilled personnel, particularly in sectors of finance, business, food industry, telecommunication will be the biggest challenge. To live up to the international standards, Shanghai should put more resources to improve its education system. Besides, Shanghai also faces " brain drain". In 1990, there were 66,000 people emigrated from Shanghai, which made up 0.5% of Shanghai's total population. Many of the emigrants were young and talented people who seek for better learning and working opportunities in the other developed countries.

Last but not the least, most scientific and technical personnel in Shanghai still have lower qualifications and skills compared with international standards. Therefore, Shanghai should further relax the control of international migration and modify the education system in order to provide sufficient qualified labour for future economy.

4.2 Enabling Infrastructure Dimension

Cities are arranged into different levels of the global hierarchy according to their functional roles. World cities are ranked at the top level and they exist in a world of global flows, linkages, connections and relations. As they are sites of dense global flow pattern of people, capital, information and materials, global network of transportation and communication infrastructures are therefore essential to facilitate these interactions.

Basic infrastructures such as international port, international airport and international communications port with networked sources of information are important elements to strengthen Shanghai's future status and economic capabilities.

4.2.1 International container port

Port construction provides the necessary infrastructure for regional and national development. To facilitate the flow of goods, technology and raw materials, Shanghai requires a well-developed communications and modern container transport networks. Therefore we shall firstly evaluate the opportunities and limitations of Shanghai's existing port infrastructures that befit an international shipping hub.

a). Shanghai Port---The largest port in China

Shanghai port is the largest port in China with a total area of 3618 square kilometers. At present, the port has 225 berths and 63 of them are capable of accommodating ships over 10,000 tonnage. Shanghai port operates 16 international shipping lines and has established links with over 500 ports in more than 200 countries. In addition, it also operates container shipping routes to more than 120 ports around the world.[11].

In 2000, Shanghai was placed as the top general cargo port in the world and it handled with 20,440,000 tones of cargo. In addition, the container throughput of Shanghai port has expanded by about 30% per year on average since early 1990s.[12] By 2000, it became the seventh busiest container port in the world, handled with a total 5.6 million TEUs. With the development of Waigaoqiao port in Pudong New Area, Shanghai port is expected to handle up to 9 million TEUs by 2005.

b). Geographical location and its extensive hinterland

Located on the western side of Pacific Ocean and at the middle of China's coast, Shanghai has frequent trade with countries like Japan, South Korea, Hong Kong, Singapore, and Taiwan etc. It is also connected with cities along the Yangtze River such as Nanjing, Suzhou, Jiangsu, Hangzhou, Ningbo and Zhejiang etc. In the 10th Five-Year Plan (2001-2005), the Chinese government also draws up a plan to develop the central and western China through establishing extensive transportation network linkages to coastal provinces.

[11] The two cities: Shanghai, Hong Kong / Research Department, Hong Kong Trade Development Council, pp.11, Hong Kong: Hong Kong Trade Development Council, 2001
[12] The two cities: Shanghai, Hong Kong / Research Department, Hong Kong Trade Development Council, pp.11, Hong Kong: Hong Kong Trade Development Council, 2001

c). Improvement on port service and management

Shanghai port has upgraded the quality of port services and management through various ways. Firstly, it has hired foreign companies for port management. Hutchison Port Holdings has introduced world-class port management expertise to manage Shanghai Container Terminals (SCT). Secondly, Beijing has decided to establish a new regional port authority to manage container port development in Shanghai. The Shanghai Joint Port Authority is responsible for the planning, construction and co-ordination of the deep-water container ports in Shanghai and Ningbo etc. It is also responsible for the resources management and construction of port facilities. Thirdly, the Central government has imposed some guidelines for port development since 1997. Rather than relax in policy, only prominent projects such as energy-related project are given top priority to develop. Furthermore, the Shanghai Shipping Exchange also adopted a reporting and filing system for international container liner freight price.

d). Increased foreign investments in port development

In 1992, the Central government adopted a new policy to allow foreign investment in port development. At present, there are about 80 world's top container shipping companies established their subsidiaries in Shanghai. Besides, China's biggest shipping companies such as the Container Transport Company of China Ocean Shipping Corporation (Cosco), the China Shipping Group, and Sinotrans Container Shipping Company have moved their headquarters to Shanghai.[13]

[13] Asian Shipping, June 2000, pp.19

Foreign investments in port development provide financial support in the construction of port facilities. Large foreign companies such as Hutchison, P&O and PSA Corporation are keen to invest in key strategic projects; for example, a joint venture between Hutchison, Cosoco and the Shanghai government was set up for running the operations in the first phase of Waigaoqiao new port. In 2001, Shanghai government planned to reclaim an entire new deepwater container port at the mouth of Yangtze River in 2005. It will therefore provide lots of opportunity for foreign investment in the port development.

4.2.2Challenges to become a hub for international shipping

1). Shallow water depth

Containerization is one of the recent developments in current ocean transportation. Container ships of the fifth generation already put into use in China in 1997. To accommodate the fifth-generation container ships, the port should have a water depth of 15 metres.[14]However, because of the problem of silt and sandbars at the mouth of Huangpu River, the average water depth is only 7 metres, which can only allow the first and second-generation container ships to pass.[15] Therefore, dredging of the channels along Huangpu River will be the major projects in Shanghai port. However, even the channel dredged to about 11-12 metres deep, the third and forth-generations container ships can only allow to pass at high tides. Currently, the other ports in China such as the port of Qingdao, Dalian and Shandong are able to accommodate container

[14] Acta Geograpgica Sinica Vo. 53 No.3 May, 1998, pp. 193-201

[15] Chen Jiyu, Hu Hui, Zhu Huifang, *21st Century Construction of a Port Complex in the Changjiang Delta Economic Area, pp.184,* in Harold D. Foster, David Chuenyan Lai, Naisheng Zhou(Eds), The dragon's head : Shanghai, China's emerging megacity, Victoria, B.C. : Western Geographical Press, c1998.

ships of the fifth-generation. Inability of Shanghai port to accommodate modern container ships will become a drawback to become an international shipping hub.

2). Lack of capacity and shipping-call frequency

Shanghai Port has insufficient berths for handling container traffic. In 1992, the overall throughput of the port was 730,000 TEU, but it is already overloaded by 46%. Compared with the international container ports in Asia, Shanghai port is much inferior in terms of the port efficiency. Currently, container ports in Hong Kong and Singapore are served by over 2,000 international container shipping lines and the frequencies of container ships departure are about 10,000 per year. However, Shanghai port is now served by 14 international container shipping lines and the efficiency of distribution is quite low. For example, it required 24 hours to load 1,000 units of containers while the port in Hong Kong only required half about that time.[16]

3). Reduced hinterland

River transportation between Shanghai and inland provinces is not well coordinated, while the linkages of central China with Hong Kong is even better than with Shanghai. For instances, since the Beijing-Kowloon Railway was completed in 1996, the provinces along Yangtze River can export their goods through Hong Kong or Shenzhen instead of Shanghai. The development of railway in southwestern China can also enable the port of Hong Kong to extend their hinterland to the southwestern China. Currently, the ports along lower reach of Yangtze River have already developed direct container ship routes to Korea, Japan and Hong Kong. Poor

[16] Acta Geograpgica Sinica Vo 53 No.3 May, 1998, pp. 197

coordination with the inland cities reduces the size of direct hinterland of Shanghai port.

4). Strong competition by other ports in China

The Yangtze River Delta Region has a well-developed river-based transport system. There are 26 ports in the delta region such as ports in Shanghai, Zhangjiagang, Nanjing, and Ningbo etc. However, instead of regional co-operations between the ports, there is considerable rivalry between them.[17] While Shanghai port is facing the problem of limited throughput capacity, Beilun Port in Ningbo having advantage as a natural deepwater port. At present, Beilun Port has sufficient water depth for construction of a 100,000 tonne berth, thus it has a larger capacity for handling container traffic. Aiming to compete with Shanghai port, Beilun Port has expanded its capacity to 500,000 TEU and 90 million tones of freight in 1999. In addition, the container handling capacity also jumped by 60% in first two month of 1999. Currently, the port has three dedicated container handling berths with fourth under development and it also established various linkages with other parts of Yangtze delta to improve access to her natural deepwater harbour. Apart from Ningbo, the opening services to Taicang Port also threaten Shanghai's leading position as regional shipping centre. Taicang Port has best comprehensive conditions with direct hinterland of Suzhou and Wuxi, which supply plenty of containers and has good distribution conditions.

With the keen competition of ports in China, inadequacy of Shanghai's port capacity will certainly be the major challenge to the future development.

[17] Lloyd's List Maritime Asia, January 1994, pp. 15

4.2.3 New port development plans in Shanghai

Facing the problem of limited capacity, the development of Waigaoqiao port in Pudong New Area provides opportunity to boost the port capacity and to strengthen Shanghai's position as a regional shipping hub. At present, the first six berths at Waigaoqiao port is already in operation, adding 1.6 million TEU to Shanghai's handling capacity.[18] Apart from the Waigaoqiao port, there are also other port development projects such as the new port area at Jinshanzui. It has completed the construction of two container berths with a potential total handling capacity of 50 million tons a year.

To realize the goal of becoming an international shipping hub, Shanghai should develop a deep-water port to accommodate the growth of container traffic. Regional cooperation between ports in Yangtze River should be encouraged to develop a combination port in the delta region. The idea of combination port has been identified in the Fourteenth Central Committee, which aims to develop Shanghai port as the central port with Beilun port in Ningbo and Taicang port in Jiangsu to be sub-central ports. The development of the combination port can promote the cooperation of ports and can encourage efficient division of port functions as well as to avoid duplication of port facilities and unhealthy competition.

4.2.4 Air transportation hub in Shanghai

At present, air transportation in China is still largely domestic in nature. There are 142 operating civil airports and only 31 of them are open to international routes. [19]

[18] Lloyd's List Maritime Asia, June 2001, pp. 19

[19] The two cities: Shanghai, Hong Kong / Research Department, Hong Kong Trade Development Council, pp.16, Hong Kong: Hong Kong Trade Development Council, 2001

Shanghai is the first city in China with two civil international airports—the Hongqiao International Airport and the new Pudong International Airport.

1). Significances of Shanghai's air transportation:

Shanghai airport operates flights to 56 foreign and 47 domestic cities. In 1999, the city further increased air services to oversea cities, adding 8 new routes and bring to a total 300 air links with domestic and oversea cities.[20] Besides, the annual growth rate of air cargo is about 6.4% and air cargo traffic grew by an average rate of 22% from 1990-1999. In 2000, Shanghai is the only airport in China that ranks the world's top 30 with freight volume of 6.7 million passengers and 340,800 tons of air cargo. [21]

The rapid increase in air traffic in Shanghai is closely related to the development of the new airport. In the past, Hongqiao International Airport was the only airport in Shanghai. Its designed handling capacity is about 9.6 million passengers a year, but the airport capable of handling 13.7 million passengers and 571,700 metric tons of cargo in 1998.[22]

However, with growing demand for air transportation, the handling capacity of Hongqiao International Airport has already been exceeded. Therefore, the development of Pudong International Airport provides good opportunity to accommodate the new demands. The airport is designed to handle 20 million passengers a year and 750,000 metric tons of cargo. To improve the linkage between two airports, new access roads and a new metro line will be constructed to link

[20] China Business information Network, New York, July 22, 1999
[21] China Business information Network, New York, July 22, 1999

[22] Aviation Week and Space technology, New York, August 2, 1999

Shanghai metropolitan area and two airports. The completion of these constructions in 2005 will allow Pudong International Airport to handle 80 million passengers annually and 5 million metric tons of cargo.[23]

4.2.5 Opportunity to become hub of air transportation

The main obstacle is the limited international traffic right in Shanghai's airports. The two international airports in Shanghai are mainly for domestic rather than international air traffic. We are now using Shanghai Airlines as an example to illustrate this limitation. Shanghai Airlines is one of the largest and most successful regional carriers in China. Although it operates flies of 100 routes, it mainly links with cities in China. Airline flies cover 35 cities in China including Beijing, Guangzhou, Kunming, Shenzhen and Xian etc. It only opens a few international routes, such as flights between Shanghai and Phnom Penh. Although it is one of the largest carriers for domestic flights, limited international flies in Shanghai airport will hamper its expansion to be an international air transport hub.[24]

Currently, competition between airlines in China can stimulate further expansion of their airline services. Shanghai-based China Eastern Airlines is a good example to show the improvement of airline services. China Eastern operating a cargo fleet that serves more than 100 international routes and 50 domestic airports. Because of the increase in passenger traffic volume on Japanese, Korean and Thailand routes, it actively seeking joint operation of routes. This new arrangement lead to the opening of new ShanghaiFukushima rout and increase the flight frequencies from Shanghai to Paris and Munich as well as to Korea and Southeast Asia. In addition, it also began to

[23] Aviation Week and Space technology, New York, August 2, 1999
[24] Airfinance journal, Coggeshall, Jan 2001

develop cargo business by opening new cargo routes from Shanghai to Paris, Nagoya, Okayama and Los Angeles, Seoul and Nagasaki. With the expansion of air network ties, passenger traffic of China Eastern Airlines has experienced significant increase. In 1999, it carried 8 million passengers and the total traffic volume also increased by 27.48%.[25]

With China's entry into World Trade Organization (WTO), the demand for air transportation will increase substantially. Shanghai has two international airports should have a great potential to develop as a regional air transportation hub. However, as their airline services are mainly served in the domestic market rather than operated in a global scale, it still has a long way to catch up with the world's international airports in terms of airport facilities and services.

4.2.6 Telecommunication infrastructure

China is one of the largest and fastest-growing telecommunication markets in the world. The annual growth rate of this sector even exceeds several times of China's gross domestic product (GDP). In 1996, Shanghai municipal government has decided to build Shanghai as an international communication port. Over the past five years, the pace of telecommunications development was very fast. There are 549 million installed telephones users in 2000. Compared with the figure in 1999, it increased by 650,000 telephone users.[26] In addition, the mobile phone users also increased by 71 % to a total of 6.2 million.[27]Moreover, there are 882,400 Internet service users in 2000, which is the largest figure reported by a Chinese city.[28]

[25] Air Transport World, Cleverland, Sep 2000
[26] Shanghai Statistical Yearbook 2001, Shanghai Municipal Government
[27] People Daily Jan 16, 2002
[28] Shanghai Statistical Yearbook 2001, Shanghai Municipal Government

Advanced telecommunications infrastructure also contributed to the rapid growth of information technology sector. In 2001, information technology in Shanghai generated a total output value of more than 100 billion yuan (about US$ 12.1) for the first time in history.[29] It has maintained an average annual growth rate of approximately 40% for the past five years and has contributed to about 8.2% of Shanghai's GDP in 2001. At present, Shanghai already accounted 26% of China's information market according to International Data Corporation (IDC). With the business-friendly policies offered by the Shanghai government, more business investment will be invested in this sector and Shanghai will soon overtake Beijing as China's largest information technology market.[30]

To develop Shanghai as a communication port, Shanghai government offers many favourable policies to attract foreign investment in the construction of telecommunication networks. Therefore, the telecommunication infrastructure has experienced a fast pace of development in the recent years.

4.2.7 Recent development of telecommunications infrastructures

a). Expansion of the network capacity

By the end of 2000, Shanghai has built the world's largest Asynchronous Transfer Mode (ATM) municipal local area network (LAN). The new network has a capacity equaling 625,000 pairs of telephone lines and it is able to transfer sound, pictures and digital multi-media communications. In addition, Shanghai also has put

[29] People Daily Jan 16, 2002
[30] People Daily, May 8, 2001

into operation optical fibers of 320,000 kilometers to cover 90% of buildings and residential districts.

Moreover, private telecommunications companies also launched some projects to expand the capacity of telecommunications network. For instances, Shanghai Mobile, one of the biggest telecommunication network operators in China also expanded the GSM network capacity by one million subscribers in 2000. Through installing the GSM base stations, it will able to support GSM transmission and the third-generation (3G) transmission.

b). Increase foreign investment in telecommunication developments

Many foreign investors are attracted to invest telecommunications projects in China. Siemens industrial park is a good example of the German company's great success in China. The establishment of Siemens Industry Park in Pudong New Area is a join venture project between Siemens and Chinese partners. It is established to provide GSM mobile telecommunication system as well as the mobile phone development. At present, it has built 34 GSM mobile networks for China Mobile and China Unicom in 26 Chinese provinces. Therefore, it becomes one of the most important telecommunication enterprises in Shanghai. [31]

Another foreign investment project is the join venture between Shanghai Long Distance Telecommunications Corporation and the Century Internet Data Center Corporation to develop an advanced E-port in Shanghai's Waigaoqiao.

[31] People Daily, Jan 10, 2001

Because of the advanced telecommunications facilities, telecommunications services are now more widespread, and Shanghai becomes the largest market for telecommunications services in China. With the expansion of investment in this sector, the pace of telecommunication infrastructure construction will accelerate and it will create good opportunity for Shanghai to become an international communication center.

4.2.8 Future challenges to the telecommunications development

First, most of the telecommunication constructions are promoted by the government's industrial policy rather than driven by the market competition. In the past few years, Shanghai municipal government has invested lots of money and manpower in the telecommunications development. Because of the strong government protection, many small and medium-sized enterprises were rapidly developed and can successfully made up a large market share in this sector. However, with China's accession to WTO, the role of municipal government in controlling industrial development will be limited. Therefore, government's investments in this sector may not be sustainable. In addition, as foreign engagement is permitted in telecommunications services after China's entry into WTO, there will be a strong competition in this sector. Whether Shanghai's enterprises can make a significant share in the market will depend on their ability to improve their services and technological level.

Second, the development of telecommunications not only depends on the infrastructure development, but also depends on the capability of telecommunication research and development. To become an international information center, the city

should play a leading role in innovating new telecom technologies and upgrading the quality of telecommunications services.

Third, the software industry in Shanghai is still underdeveloped. At present, China is still heavily dependent on the imported microelectronic products such as microelectronic chips while it only produces 10% of what it needs. These chips indeed are essential in producing digital telecommunications and computers. Without its own chip production line, it will hinder the telecommunications production in Shanghai.

We can conclude that the development of telecommunications has gained a great success in the past few years. The pace of telecom infrastructure construction has been fast in comparison with the other cities in China. Domestic and foreign investments have contributed a lot to improve the network capacity and they created a good environment for the development of information technology. In the future, the Shanghai municipal government will no longer be the main regulator to control the industrial investment. Therefore, the main challenge is how to maintain a sustainable investment in developing telecom infrastructure as well as research and development.

4.2.9 Conclusion of enabling infrastructure dimension

Since the Shanghai municipal government has decided to make Shanghai an international financial, economic and trade centre, the pace of infrastructure development in Shanghai has been fast compared with other cities in China. To be China's hub for international container shipping, air transportation and communications are the main goals of Shanghai in the 21st Century. With a strategic

geographical location in China, Shanghai has long been the nation's largest port and aviation center. However, as world cities are characterized by a dense flow pattern of people, capital and goods, without further expansion of the ports and airports, Shanghai will not be able to meet the growing demand in future.

Shanghai has many merits in this dimension. With huge infrastructure investment, especially in telecommunications development, the standard of information technology is already close to those of the developed countries. A high technological level can benefits telecommunications development but also other industrial development. It is believed that comprehensive infrastructures development can increase overall city's strength.

Chapter 5

Dimensions of 'Politico-Economic Circumstance', 'Living Environment' and 'Overall Urban Image'

5.1 Politico-Economic Circumstance Dimension

Under economic globalization, efficient transportation and advanced communication technologies reduce the constraints of spatial boundary. Cities in the world system are closely networked and are more interdependent to each other. Some scholars (Sassen, 1994, Water, 1995) believed that national governments have less controlling power in their national economies. Indeed, with rigorous inter-city competition for the world prominence, how national government can actively promote a city to become a world city will be one of the critical factors for the success. Therefore, the politico-economic circumstance has the predominant influence on the development of a city. For China, the role of the Central government and national policies can never been ignored. With the shift of the focus of the world's economy to Asian-Pacific region, the Central government has boosted Shanghai's development as well as the overall Chinese economic development. The implementation of the Pudong development strategy in the 1990s is therefore the most important policy decision for promoting Shanghai as a world city.

In this section, we will focus on evaluating the opportunities and limitations of the Pudong development policy for developing Shanghai as a world city, because the development of Pudong is an important step to revive Shanghai as a world city in the 21st century. The main purposes are: (a). To revive Shanghai's role as international finance and trade center. (b). To expand the scale of China's opening up. (c). To

extend the economic growth to Yangtze River Delta as well as the whole Yangtze River area.

5.1.1 Transformation of the national policies on Shanghai's development

Shanghai has long been the key economic center in China and is also the major contributor to central revenues. In the nineteenth and early twentieth centuries, Shanghai was a treaty port and was one of the major trading, commercial and financial centres in the world. However, since 1949 the financial and commercial sectors had suffered in the process of China's socialist transformation since 1949. Despite the declined role as a world city, Shanghai had evolved into a key industrial city in China and it supplied a wide range of industrial products for the domestic and the world markets. In the 1980s, Shanghai has emerged as the fastest growing and the most dynamic regional economy of China. The opening up of Pudong New Area in 1990 is the new development strategy of the Central government to develop Shanghai as an international economic, financial and commercial center.

5.1.2 Development of Pudong New Area and the role as an international economic, finance and trading center

Since the Chinese government adopted the economic reform and the open door policy in 1978, the role of Shanghai in China's economic significance was declining and was falling behind some provinces, such as Guangdong, in industrial production, foreign trade, and economic growth. The reasons was that Shanghai did not get any preferential treatment similar to those adopted in the Special Economic Zones (SEZs) in the southern China especially Shenzhen and Guangdong. Unlike the SEZs, the Central government feared the adoption of preferential treatments in

Shanghai would undermine its control over Shanghai's revenue. As a result, the southern China became the developmental focus in China and the SEZs soon overtook Shanghai to emerge as the fastest growing and the most dynamic regional economy in China.

The revival of Shanghai's economic role came only in the early 1990s, when the Central government shifted the national focus of the economic reform to Shanghai. The opening up of the Pudong New Area in 1990 marked an important shift in China's regional development strategy and became the engine of Shanghai's economic growth.

5.1.3 Strategic development of Pudong New Area

Pudong is a triangular area of 533 square kilometers, located opposite the Shanghai city center at Puxi on the eastern side of the Huangpu River. Its development has a dual role, functioning as an administrative district and a special zone designed to promote international trade and commerce.

The development strategy of Pudong New Area follows the shifts of the focus of the world's economy. It is believed that the focus of international economy will shift to the Asia-Pacific region in the 21st century, especially the East Asia. Currently, many countries in the Asia-Pacific region are on a drive to achieve world city status and they are refashioning policies, programmes and projects in a manner that integrates metropolitan areas into the world system. With the strategic geographical location and the high quality of human resources, Shanghai has the biggest potential

to become a center city in Asia. Therefore, it is right time for the Central government to adopt the Pudong development policy in 1990s.

The preferential policies for the Pudong development provide favourable conditions to attract foreign investment. There are ten preferential policies in Pudong.[32]

1. Income tax of foreign investors
2. Custom duties and tax for equipment, vehicles and building materials related to foreign investment
3. Foreign investment should be export oriented
4. Foreign investors are allowed to invest in infrastructure projects
5. Foreign investors are allowed to operate tertiary industries
6. Foreign backs are allowed to open foreign branches in Shanghai, including the Pudong New Area
7. There will be a free trade zone in Pudong New Area
8. Preferential treatment in terms of income tax reduction will be given to enterprises conforming with the industrial policies and beneficial to Pudong development
9. Land leasing for 50-70 years will be used in Pudong. Foreign investors may contract large tracts of land for development.
10. Pudong New Area can keep the revenue for further development

[32] Anthony G. O. Yeh, Pudong: Remaking Shanghai as a World City, pp. 277 in Y.M.Yeung and Sung Yun-wing (Eds), Shanghai: transformation and modernization under China's open policy, Hong Kong : Chinese University Press, c1996.

Apart from the preferential policies, various incentives, such as reduced the profit taxes, the tax holiday and the exemptions from customs duties are also available to foreign investors. Under the favourable investment environment, many foreign enterprises are attracted to operate their businesses in Pudong, which have been prohibited or partly restricted in the past.

There are four special development zones in Pudong New Area, namely the Waigaoqiao Free Trade Zone, the Jinqiao Export-processing Zone, the Zhangjiang High-tech Park and the Lujiazui Financial and Trade Zone. Each of them has its own specialization and has been success in attracting foreign investment. Because of the over-congestion in Puxi, the development of the special zones in Pudong can provide invaluable new space for the economic and the technological development. For instances, the port in Waigaoqiao Free Trade Zone is a " free port", which allows free movement of commodities and capital as well as foreign companies to carry out entrepot activities. By the end of 1995, there were 29 projects established in this zone with the total investment amounted to US$630 million. [33]

The land reform of Shanghai in 1988 was another favourable policy for the Pudong development. The new land use policy allows the transfer of land use rights or land leasing and both foreign and domestic businesses have the right to lease land in Shanghai for forty to seventy years. Land leasing becomes the way to capture revenue from land and in turn used to develop infrastructures. Therefore, Pudong had successfully attracted many big land investors. In 1993, there were 224 land parcels

[33] Jianzhong Tang, Jinfeng Chu, *Planning and Construction of Pudong New Area, pp. 277*, in Harold D. Foster, David Chuenyan Lai, Naisheng Zhou (Eds), The dragon's head: Shanghai, China's emerging megacity, Victoria, B.C.: Western Geographical Press, c1998.

leased in Shanghai with a majority of 93% invested in Pudong. The land reform provides the opportunity to utilize foreign investment for Pudong development and can reduce the financial burden of the Central government.

The development of Pudong provides the right direction for Shanghai's future development. Many of the development strategies, such as preferential policies and the designation of the key economic and technological zones can greatly strengthen Shanghai's ability to attract foreign investment. By the end of 2000, the number of projects involving a contracted investment of US$10 million or more increased to 1,853 and their contractual foreign investment reached US$ 33 billion. With the success of the Pudong development policy, Shanghai will have a big potential to revitalize and redevelop its international status.

5.1.4 Economic achievements of Shanghai under the Pudong development policy

With the favourable development policy, Shanghai has achieved great economic progress in the recent years.

First, the overall economic power of Shanghai was strengthened since 1990s. In 2000, Shanghai's GDP was 455 billion yuan, compared with 1995; it increased by 70%. In addition, its per capita GDP has also increased from 22,275 yuan in 1995 to 34,547 yuan in 2000.[34] In Pudong New Area, the GDP increased from 60 billion yuan in 1990 to 801 billion yuan in 1999. The annual growth rate of GDP was as high as 21.3%.

[34] Shanghai Statistical Yearbook 2001, The Municipal Government, pp. 328

Second, Shanghai has experienced rapid modernization of the industrial structure and the growth of industrial production. Since the adoption of the industrial development policy in 1990s: "Develop the tertiary industry firstly, adjust the secondary industry actively, improve the primary industry steadily", the financial, trade and the real estate sectors become the key industries for economic development. In 1995, the tertiary industry represented 40% of Shanghai's GDP while it increased to 49% in 1999. [35] In addition, the six pillar industries like automobile, communications, power station facilities, iron and steel, petrochemicals, electronics communication facilities are gradually taking place. In 1994, the combined value of their sales represented 45%of Shanghai's revenue and 55% of profit tax revenue.[36]

In Pudong New Area, the pace of structure adjustment also accelerated. In 1990, Primary, secondary and tertiary industries accounted for 3.7%, 76.2% and 20.1% respectively. During the period between 1990 and 1999, its tertiary industries became the main engine for economic growth. The annual growth rate of tertiary industries was about 30% and its proportion of GDP also increased from 20% to 45%.

Third, the value of foreign investment is regarded as important index to represent the effect of the Pudong development policy. In 1990, the total contract value of foreign direct investment was only US$34 billion, but it increased to US$28 billion in 2000.[37] In addition, by the end of 1999, there were 67 foreign countries invested over 5,900 enterprises with the total investment about US$300 billion. In

[35] 城市綜合競爭力: 2001 年上經濟發展藍皮書,A report of economic development in Shanghai 2001, 尹繼佐主編 上海社會科學院出版社

[36] "Shanghai-Hong Kong economic co-operation for the 21st century" conference /organizers: Business and Professionals Federations of Hong Kong, Shanghai Municipal Government Economic delegation, Hong Kong : the Federation, 1994

[37] Shanghai Pudong New Area Statistical yearbook 2001, pp. 302

Pudong New Area, there are also 88 transnational corporations invested in 150 projects and over 20 transnational corporations have established their regional headquarters in there.[38] Apart from the foreign investment, the international trade in Pudong is also increasing rapidly. With the establishment of free trade zone in Waigaoqiao, the total value of imports and exports increased from US$25 billion in 1993 to US$ 254 billion in 2000 with the annual growth rate over 30%.[39]

5.1.5 Challenges of Pudong development

Economic achievements of Shanghai have proved the success of Pudong development policy to revitalize Shanghai's international role. Indeed, Pudong is still at its early stage of development, there are still many long-term challenges faced by Shanghai.

First, there was a decline in the foreign investment inflow in Pudong since mid-1990s. From the beginning, foreign investment is the major source of funding for Pudong development and is the major impetus to economic growth. However, with the rigorous inter-city competition in Asia, the amount of foreign capital invested in Shanghai and Pudong was declining since the mid-1990s. In 1992, the foreign direct investment actually used represented 32 % of the total investment. However, it dropped to –17.3%in 1997. In addition, the total investment in fixed assets was 583 billion yuan in 1998, but it was dropped to 438 billion yuan and 351 billion yuan respectively in 1999 and 2000. [40] The decline of foreign investment in Shanghai will

[38] 上海經濟發展藍皮書(A Report of economic development in Shanghai 2000),尹繼佐主編, 上海社會科學院出版社,2000

[39] Shanghai Pudong New Area statistical Yearbook 2001, pp. 302

[40] in Y.M.Yeung and Sung Yun-wing (Eds), Shanghai: transformation and modernization under China's open policy, Hong Kong : Chinese University Press, c1996.

hinder the economic growth of Shanghai, the pace of technological innovation and the industrial restructuring.

Second, Pudong is now facing the problem of high land and rental prices since the implementation of land reform in 1988. As the land reform allows the transfer of land use rights, the local government therefore highly promoted Pudong as a center of real estate development to secure investment funds. As a result, land was quickly purchased by foreign investors at inflated prices. Although local government benefit from the massive inflow of capital, high land and rental prices would encourage some potential investors to seek alternative locations outside Pudong.

In addition, most of the foreign direct investment was penetrated in real estate sector in the early 1990s. In short run, Shanghai would enjoy rapid economic growth and tremendous progress in real estate development and the developers would enjoy windfall profits because of the rent gap between present land price and the potential land value. However, in long run, foreign investors will suffer greatly from the oversupply of residential property. At present, the problem of high vacancy rates in Pudong is quite serious; the vacancy rate reached 60% of all grades of office properties. High vacancy rate of properties will interrupt capital circulation and it will discourage foreign investors to invest in Pudong.

Third, Shanghai is under tight control by the Central government. Although the Central government has played a vital role to adopt Pudong development policy and the other preferential policies for Pudong development, the excessive control and

the heavy involvement of the Central government in local development would lower the market efficiency of the economic management. For instances, it requires three different approval procedures for approving the establishment of a foreign investment enterprise in Shanghai while it simply combined three into one procedure in Pearl River Delta. The inflexible system for dealing foreign investment will hinder the pace of Pudong development.

In addition, the success of Pudong policy is heavily relied on the preferential policies introduced by the Central government. However, with China's accession to World Trade Organization (WTO), it would eventually erode the role of the Chinese government. In the future, phasing out of all preferential policies will eliminate Pudong's advantage over the other regions and Shanghai will face more real challenges to become a world city.

Last but not the least, Shanghai and Pudong face strong competition with the other cities in China. Shenzhen is one of the competitors of Shanghai. As it has a longer history of development than Pudong, many foreign investors already developed their offices and industrial linkages in there. Besides, Shenzhen has a locational advantage as it is close to Hong Kong, which is the most dominant source of foreign investment. Although the Central government has offered ten preferential policies in Pudong to attract foreign investment, most of them are similar to the preferential policies in other economic zones. Therefore, the reliance on the preferential policies to attract foreign investment is inadequate for Shanghai to compete with other cities in China and in Asia.

Conclusion

Despite the decline role of national government in city's economy under the economic globalization, the central policies still play a predominant role on the development of Shanghai. Therefore, whether Shanghai can realize its goal to become a world city in the 21st century is closely related to its politico-economic circumstances.

With the shift of focus of international economy to the Asian-Pacific region, the Central government decided to redevelop Shanghai as one of the major international economic, financial and trade centers. The adoption of the Pudong development policy in early 1990 is therefore a major step to realize Shanghai's goal. Preferential policies and the development of special zones in Pudong New Area have strengthened Shanghai and Pudong's ability to attract foreign investment. However, the declining trend of foreign investment in Shanghai has proved that it is not a sustainable way for Pudong's development. Sustainable economic growth should achieve through various means such as improving factor productivity, having a flexible market economy and creating a favourable investment environment with effective legal protection to foreign investors etc. Therefore, whether Shanghai will become a world city is not solely determined by the value of foreign investment, the other economic criteria should also be considered, such as being a financial center, a headquarter for the transnational corporations (TNC) and a center for dissemination of information so on.

5.2 Living Environment Dimension

World cities are the centers for the accommodation of headquarters of Multinational Corporations (MNCs) and they are also the major destinations for the

international migration. As MNC headquarters require locations that allow them to manage their global empire effectively and a desirable physical environment is particular appreciated by the highly educated personnel. Therefore, for cities that aspiring to become world cities, having a good living environment is important to increase their attractiveness. A good living environment should have sufficient transport and communication infrastructures, pleasant living and working conditions and the diversified cultural and social amenities etc. In this section, we are going to examine the living environment of Shanghai and we will focus on two major aspects. First, we will examine the urban redevelopment of Shanghai in 1990s. The improvement on the housing conditions and the industrial locations will be discussed. Second, we will also assess the environmental conditions of Shanghai particularly air and water pollution problems.

5.2.1 Urban redevelopment in Shanghai

Shanghai is the largest city in China with a metropolitan population of over 13 million. However, the living environment of the central districts was relatively poor and it has been characterized by an extremely high density of housing and industries. On average, the population density is as high as 25,104 persons per square km and there were over 4,000 industrial enterprises which taking up a quarter of the land.[41] Since 1990s, Shanghai is undergoing a profound restructuring of the infrastructures and the appearance of the city. Redevelopment of the old central city has successfully demolished those dilapidated housing and the aged industries.

[41] Cities, Vol. 16 No. 3, pp. 207-216

5.2.2 Factors contributed to the improvement on housing conditions

The improvement of housing conditions since 1990s is attributed to: (1) the increase diversification of capital for housing development. Through adopting the financial reforms and the land leasing system in late 1980s, Shanghai government has gained greater fiscal autonomy and the opening up of Pudong has also encouraged the massive inflow of foreign investment in real estate sector. In 1996, among a total of US$ 4.72 billion, there was 22% invested in the real estate sector.[42]

(2) The adoption of housing reform programs in 1990s has increased the state investment in housing development. The investment in residential housing increased from 0.04 billion yuan in 1951 to 425 billion yuan in 2000. In addition, the commercialization of the state housing also led to the emergency of housing market, which greatly widened the source of housing investment.

5.2.3 Achievement of the housing development

a). Since the housing reform, the total supply of housing in 1988 was 1,018,000 sq m, and it increased to 2,843,000 sq m in 1994. The demands of housing also increased from 6,79000 sq m in 1988 to 1,334,000 sq m in 1994. (Table 5.1) However, as the increase in effective demand flattened, there is now an over-supply market conditions in Shanghai.

[42] Urban Studies vol.37, issue 8, pp. 1362

Table 5.1 Supply and Demand of Ordinary Market Housing (Internal market), 1979-1994

Year	Surplus from last year	New Supply	Total supply	Effective demand	Take up rate (%)
1979-1987		1036	1036	1036	100
1988	0	1018	1018	679	67
1989	272	764	1036	517	50
1990	452	729	1181	872	74
1991	3.4	716	1020	640	63
1992	380	646	1026	558	54
1993	390	1559	1949	1449	74
1994	500	2343	2843	1334	47

Source: quoted from Shanghai: transformation and modernization under China's open policy, Hong Kong: Chinese University press, c1996.

In addition, the aggregate space standard also increased. In 1980-2000, the housing stock increased more than five times from 44,030,000 square meters to 205,860,000 square meters and the average per capita living area was tripled from 4.4 sq m in 1980 to 11.8 sq m in 2000.

b). Improvement on the housing conditions. In 1990, the old residential blocks occupied 306,700,00 sq m and it decreased to only 189,60,000 sq m in 2000. Instead, the staff housing increased more than ten times from 140,10000 sq m to 179,939,0000 sq m. The increase in staff housing can reflected the improvement on housing

conditions, as most of these staff housing built after 1980 were generally better equipped than the old residential blocks.

Moreover, there was also a large concentration of luxury housing due to the huge foreign direct investment in real estate sector. Most foreign investors prefer to develop high-quality commercial housing with stylish images. In 1980, the total area of villas was only 1,340,000 sq m, and it increased almost double to 2,500,000 sq m in 2000. In addition, apartments also increased from 920,000 sq m to 2,060,000 sq m in 1980-2000.

Although the improvements on housing conditions have been phenomenal, the problems of housing shortages and of low quality still persisted. High cost of redevelopment compensation may still be the obstacle for the residential relocation. As most compensation provided to households to be relocated is made on an in-kind basis and it rarely reflects the economic value of either demolished or new units. Because of the high relocation cost, there was still 15 million sq m of dilapidated housing awaited redevelopment in Shanghai.

5.2.4 Industrial relocation and the development of satellite towns

Over-concentration of the industrial activities was largely an historical legacy from the rapid industrialization in the Maoist period. With the increasing scale of production and the degradation of environmental quality in the inner city, it is necessary to disperse industrial activities to spatially distinct zones.

In 1984, the municipal government designated some of the areas as the Economic and Technological Development Zone (ETDZ) to attract foreign investment and to disperse both commercial and industrial activities from the central city. In Shanghai, there are Hongqiao ETDZ, Minhang ETDZ and Caohejing High-tech Park at the peripheral areas of the city as special development zones. Since 1990s, Pudong is designated as the site for new central business district (CBD), with the development of the four independent complex subareas: Luijiazui Financial and Trade Zone, Jinqiao Export-processing Zone, Waigaoqiao Free Trade Zone, Zhangjiang High-tech Park. In case of Luijiazui Financial and Trade Zone, it will developed as a host of the financial institutions, corporate headquarters as well as the commercial and cultural activities. At present, many large international corporations or joint ventures have established in Luijiazui Financial and Trade Zone, including Eriksson of Sweden, General Motors of the United States, McDonalds etc.

While the development of the special zones provides new spaces for future economic development, some problems still encounter in the relocation of industrial activities.

First, high land prices in Pudong are a deterrent for the relocation of industries already established in the central city. It has been reported that the price of the industrial land in Pudong is now at a level of over US$ 100 per square meter which is five times that comparable plots to the west of the city.

Second, many industrial firms receive no compensation for the land value and they often obtain limited funds for their relocation. In addition, they also need to bear

all the cost for infrastructure development in Pudong. Therefore, many industrial firms have strong reluctance to relocate.

Third, industries in Puxi are incompatible with the industries that Pudong intends to attract. Many industries in Puxi that need to be relocated are polluting industries, while those special development zones are to be built for placing high technologies and newly developed industries like computer software and precision medical apparatus.

As a conclusion, we can see that the success of urban redevelopment in Shanghai relies on both local and foreign influences. The clustering pattern of high quality housing and Grade A office buildings in Luijiazui Financial and Trade Zone clearly shows the importance of foreign investment for improving living environment while the housing reform programs in 1991 also accelerated the rate of urban redevelopment. In the future, Shanghai government should advocate and encourage residents to renovate their own houses and much planning is needed to make the redevelopment programme in central city compatible with the development of planned subareas. In addition, they should invest more capital to further improve the infrastructure and public amenities.

5.2.5 Environmental quality of Shanghai

I). Air and water quality of Shanghai

Air quality of Shanghai has greatly improved since 1990s. Total suspended particulates (TSP) and Sulphur Dioxide (SO2) are the major air pollutants, which

decreased by 58.5% and 44.2% respectively in 1990-2000.[43] The average yearly and daily indicator of SO2 also decreased to 0.045 mg/cu. M in 2000.[44] Although the industrial waste gas emission is still the dominant source of air pollution, the amount of SO2 discharged decreased from 415,000 tons/year in 1990 to 32,6200 tons/day in 2000, while the volume of industrial dust discharged also decreased from 60,000 tons/year in 1990 to 30,000 tons/year in 2000.

The improvement of air quality is attributed to: (1) the decline of secondary production. (2) Using environmental friendly energy source. (3) The improvement of purification techniques for handling industrial exhaust.

For the water quality in Shanghai, it has also got a substantial improvement. The industrial waste water discharged decreased to 7 billion tons in 2000 and the waste water handling rate was increased to 98.2% in 2000.

The improvement of the water quality is largely attributed to the implementation of water protection measures in 1987 including the implementation of the Regulations for the Protection of the Upperstream Huangpu Water Source and the Three Synchronization Policy etc.

In addition, the adoption the combined sewerage project in 1993 allows the diversion of wastewater into sewage treatment plants prior discharge and has significantly reduced the discharge of pollutants into Huangpu River.

[43] Shanghai Environmental Science 2001, vol.20, no.5, pp. 209
[44] Shanghai Statistical Yearbook , The Municipal Government, pp. 102

Moreover, as the municipal government put environmental protection in a higher priority in public agenda and the capital invested in pollution control and environmental protection was increased to 141 billion yuan, represented 3.1% of the GDP in 2000. Increase of environment investment also greatly improved the urban infrastructures for the environmental protection. For instances, the green coverage rate in the constructed areas increased from 17% in 1990 to 22% in 2000.

Furthermore, the massive inflow of foreign investment has speeded up the development of cleaner production technologies and the other sewerage treatment facilities. As a result, Shanghai's handling rate of industrial sewage discharge was as high as 98.2% in 2000.

Last but not the least, the industrial development policy:" Develop the tertiary industry firstly, adjust the secondary industry actively, improve the primary industry steadily" has clearly shown that heavy industries will play a less significance role and more infrastructures will therefore invested for the environmental protection.

Despite the success of the environmental protection in the recent years, the large proportion of state-owned enterprises is still the obstacle for improving the environmental quality. As they are lacking of the investment in technological renovation, the pace of improving environmental quality will be hindered.

Conclusion of this section:

Shanghai government has put lots of effort to improve the living environment. Urban redevelopment since 1990s has, to some extent relieve the pressure of the congested

inner city of Shanghai. The development of Pudong and the massive foreign investment are the major factors contributed to the improvement of housing conditions and the transformation of the mixed land use pattern in Puxi has successfully improved the environmental quality of the inner city. In the future, whether Shanghai will become the main destination for international migrants still relies on the general impression of the outsiders. Therefore, in the next section, we are going to examine the changing image of Shanghai particularly after the development of Pudong New Area.

5.3 Overall Urban Image Dimension

Even up to the 1990s, Shanghai has an image of an industrial city. Therefore, since the Central government decided to develop Shanghai into one of the international economic, finance, and trade centers, it has put lots of effort on restructuring the physical appearance of Shanghai. The aim of the Central government is to re-image the negative image of the industrial past and to present a new image to strengthen the competitiveness of Shanghai.

In this section, we will examine some of the promotional strategies such as the creation of the symbolic urban landscapes and the organizing of the international fairs etc, to illustrate how Shanghai has been depicted as a booming international city since 1990s.

5.3.1 Creation of symbolic urban landscapes

Over the forty years, Shanghai was the largest industrial base in China and has long been regarded as a smoky, smelly and noisy city. The chaotic land use pattern, the dilapidated housing and the aged industries in the central city have gave a negative

and an unattractive impression to outsiders. To reinvent a new urban image, it is not a simple matter of re-imaging the perception of the place, but more important is to modify the physical aspect of the environment.

Shanghai's development of the symbolic urban landscapes is achieved through the participation of the foreign architectural firms in urban design and planning, which brings international style to Shanghai. For instances, Shanghai Center, located in the heart of the famous Nanjing Road was designed by John Portman & Associates (JPA), and it was built by Japanese Kajima Corporation. This project is a joint multinational real estate development between the foreign investment and the Shanghai Exhibition Center. The foreign partners include Portman Companies, American International Group (AIG) of the United States, Kajima Corporation of Japan and Shangri-la Asia limited of Hong Kong. This center combines three rising towers which rise from an eight-storey podium, creating an image of a convenient, people oriented with outstanding workmanship.[45]

Apart from this outstanding project, many mega projects in Shanghai also create a pro-development atmosphere. Mega projects like the Orient Pearl TV tower is the Asian's tallest TV tower, the East Concert Hall, the Yangpu and Nanpu Bridge, the 88-storied Jin Mao Mansion and the 94-storied Shanghai World Financial Center. All of these projects become new symbols of Shanghai and they quickly transform the urban landscapes of Shanghai. In 1978, there were only 135 building over 8 stories, however, in between 1990 and 1996, the number of buildings over 30 stories

[45] Cities, vol. 17, No.5, pp.351

increased from 15 to 72. It was believed that Shanghai has grown into a three-dimensional city and will soon be completing the world' tallest building.

5.3.2 Internationalization of urban life

Shanghai's reshaped skyline is not the only symbol of Shanghai's internationalization, the changing lifestyles of Shanghanese is another evidence of globalization.

Shanghai is no longer be the major base of heavy industries, the rising importance of the tertiary industries can been seen by the massive advertisements of commercial goods, especially the products of multinationals such as Coca-Cola, Pepsi, 7up, Visa, McDonalds, Kentucky Fried Chicken etc. Modern urban life can also been seen by the development of urban amenities such as museum, grand theater and libraries, luxurious hotels and restaurants of American, European or Thai styles.[46] All of these show the new and modern elements in Shanghanese life and they represent the life of ordinary people is faded out.

5.3.3 Involvement in international fairs

To promote the city's new urban image, organizing international fairs is the most common and effective promotional strategy. Since 1990s, Shanghai has used various resources to develop large-scale exhibitions and fairs. In 1995, Shanghai organized over 100 international exhibitions, such as the '95 Eastern China Export Products Exhibition' and it was held in the Shanghai Business Centre. In addition, the '99 Fortune Global Forum' was held in the Shanghai International Convention Center. In mid-October of 2001, the Asian Pacific Economic Cooperation (APEC)

[46] Cities, vol. 17, No.5, pp.355

meeting was also held in Shanghai. The city has taken a number of measures to create an attractive urban environment for the meeting. The Central government also aims to use this event to show the spectacular urban infrastructure projects to the world. To provide the best facilities and places for the meeting, Shanghai has upgraded the scientific and technology museum and the Shanghai international news center, the airport in Shanghai's Pudong New Area has also improved its security facilities, telecommunication equipment and services for special and chartered flights. All of these measures are to promote Shanghai as a modern city and to use these events to boost the new urban image of Shanghai.

From the above analysis, we can see that Shanghai has put lots of effort to create an new image of a modern international city, the mushrooming global symbols including all those creative building design, logo and advertisements of the multinational products are quickly becoming the dominant symbols of the modern Shanghai and they help to re-image the industrial past of Shanghai. The profound restructuring of the infrastructure and the appearance of the city has shown the important role of the Shanghai government in creating an attractive urban image for Shanghai. The most important reform policy made by the state is the land leasing system. This system allows the emergence of land market and it greatly strengthens the government's capacity for infrastructure investment. Although the promotional strategies cannot immediately replace the deep local culture of Shanghai and individual perception of Shanghai varied, intensive infrastructure investment from both local and foreign investors has successfully marked the beginning of reinventing a new image of Shanghai and creating an attractive investment environment to outsiders.

Chapter 6

The Economic Vitality Dimension

Economic globalization has emerged as fundamental force shaping the organization of economic space. The massive trends towards the spatial dispersal of economic activities have contributed to the growth of world cities for the management and the regulation of the new space economy. As the command and control centers of the world economic system, world cities should be centers for the financial and the special business services such as accountancy, advertising and legal services. They should also be the regional headquarter locations and the top investment locations for the Multinational Corporations (MNCs). Therefore, overall economic power of a city is mostly important for determining its competitiveness to become a world city. In this chapter, we are going to examine the economic vitality of Shanghai. The main issue of the discussion is whether Shanghai can become one of the international economic, trade and financial centers in the world.

6.1 Shanghai's position as an international economic centre

With the opening up of Pudong in 1990, Shanghai's economy has experienced a remarkable economic growth and it becomes one of the leading economic centres in China. In the following, we are going to evaluate Shanghai's economic performance and its role as the international economic center in terms of GDP, industrial output, value added of the tertiary sector and foreign investment.

6.1.1 Shanghai's GDP

In 2000, the city had a GDP of 4551 billion yuan in 2000 and the per capita GDP of 34,547 yuan, which is the highest record in the mainland and it is five times of the mainland average. Compared to Hong Kong, Shanghai still has a lower economic strength.

Table 6.1 Comparison between Hong Kong and Shanghai by selected indicators

	1990	1999
GDP (US$bn)		
Hong Kong	72	159
Shanghai	16	49
Ratio	5	3
Trade (US$ bn)	——	——
Hong Kong	164	352
Shanghai	7	39
Ratio	23	9

Source: quoted from The two cities: Shanghai, Hong Kong / Research Department, Hong Kong Trade Development Council, Hong Kong: Hong Kong Trade Development Council, 2001.

6.1.2 Shanghai's Industrial Output

In the past, Shanghai was the major industrial base in China and was also the largest contributor of the Central revenues. In 1999, the value added of the industrial output was 1758 billion yuan and its growth rate was about 9.6%. Of which, the value added of light industry was 2770 billion yuan and the value added of heavy industry

was 3536 billion yuan. Their growth rates were 9.2% and 12.6% respectively.[47] Although Shanghai still has large industrial outputs, their contribution to the national economy was declining. Shanghai's share to China's GVIO declined continuously from 12 % in 1978 to 5 % in 1995.[48]

6.1.3 Shanghai's tertiary sector

Since the strategic adjustment of the economic structure in 1990s, the share of the tertiary production is gradually expanding in Shanghai. In 1990, the value of tertiary industry was 241 billion yuan, which accounted 32% of the GDP. In 2000, it reached 2304 billion yuan, which accounted 51% of its GDP. In addition, the financial and insurance industries have the most impressive achievement. By 2000, the value added by Shanghai's financial and insurance industries was 690 billion yuan, which represented about 12% of the municipality GDP and 30% of the total value added of tertiary industry. From the above figures, we can see that the tertiary industry has experienced rapid development, of which the financial and the real estate sectors become the growth engines of Shanghai's economy. However, when compared with the world's leading economic centers like Hong Kong and Singapore, the development of Shanghai's tertiary industry is still not reached the international standards. In Hong Kong, the ratio of the tertiary industry is 84% and the percentage of tertiary employment is also as high as 76%. Besides, Singapore's tertiary industry ratio is also 65% and the tertiary employment also represents 71%.[49] Therefore, we can see that the tertiary sectors in Hong Kong and Singapore are the leading industry

[47] 城市國際競爭力:2001 年上海經濟發展藍皮書(A report of economic development in Shanghai ,2001) 尹繼佐主編, 周振華副編,上海:上海科學院出版社
2Brian Hook(Eds), Shanghai and the Yangtze Delta : a city reborn, pp. 151, Hong Kong : Oxford University Press, 1998.
[49] Shanghai Economic Forum, vol. 173, 2002/01, pp. 6-7

in their economies and they reflect the city's controlling function in the world economy. On the other hand, even Shanghai's service sector has experienced rapid development since 1990s, the tertiary industry is still not as developed as those world cities, especially the development of personal services. In 2000, the value added of personal service of Shanghai only accounted 7% of the total value added of tertiary industry. The low ratio of the personal services represents a lower competitiveness of the human resources in Shanghai, which in turn disadvantage Shanghai to compete the world city position.

6.1.4 Shanghai's foreign investment

Since the opening up of Pudong, foreign investment inflow becomes an important driving force behind the growth of Shanghai's economy. By 2000, the number of signed contacts already increased to 2,375 with a contacted foreign capital of US$80 billion. In addition, it is reported that over half of the top global players have established a presence in Shanghai. Among the foreign investors of Shanghai, Hong Kong is the largest investors, accounting for 42% of the total accumulated FDI in the city. Indeed, during the Ninth Five Year Plan period, the trend of foreign capital inflow was declining. In 1995(the first year of Ninth FYP period), the number of signed foreign contracts was 3,334 with a contracted foreign direct investment of US$ 53 billion. However, the number decreased to 2,028 in 2000. Apart from the declining trend of the foreign investment, its share to China's foreign direct investment was also declining. In 1993, Shanghai's utilized foreign direct investment accounted 11% of China's total. However, it decreased to 7% in 2000. In compared with the other Chinese cities, for example, Guangdong, its utilized FDI accounted 27% of China's total in 1993 and the percentage increased to 27% in 2000. Therefore, we can see that

Guangdong has consistently outstripped Shanghai and the other regions to become the largest basing point of foreign investment in China.

Moreover, the large proportion of foreign direct investment in Shanghai is mainly flow into secondary industry rather than tertiary industry. By 2000, the total value of foreign capital absorbed in secondary industry was US$ 20 billion while there were only US$11 billion absorbed in tertiary industry. The lower proportion of FDI in services sector will weaken its ability to become a major international business city.

In a nutshell, Shanghai is still far from China's foremost economic center in terms of most of the major economic indicators, including GDP, industrial output, size of tertiary sector and foreign investment. To become an international economic center, the city should be the largest economic center and should have the largest economic power to support its command and control functions. Compared to the other world cities, Shanghai's overall economic power is still not reached the international standard. In general, the per capita GDP of a world city should be more than 10 thousands and the ratio of tertiary sector should be over 70%. Hong Kong's per capita GDP already reached US$14,370 in 1991 and the ratio of service sector also reached 73.2% in 1992. Therefore, we can see that even Shanghai has experienced fast growth and maintained two-digits growth rates since 1990s, it still probably takes a longer time to become an international economic center.

6.2 Shanghai's position as international trading center

Projecting into China's development in the 21st century, Shanghai will be most likely to become the first international trade center in China. In this section, we will focus on examining Shanghai's trade performance in the recent years and to discuss its opportunities and limitations to become a global trade center.

6.2.1 Significance of Shanghai's foreign trade

Shanghai, located at the mouth of Yangtze River has long been the major trading center in China. In the period of 1990-1999, the city's foreign trade expanded by over 20% per year. Shanghai's foreign trade share to its GDP also shows the significances of Shanghai's foreign trade. In 1985, its share to its GDP was only 33% and it was doubled to 79% in 1999. [50]

In terms of export, the growth rates maintained at 10% per year from 1990-1999. In 2000, it even increased to 38 %.[51] In terms of total value, it was US$53 billion in 1990 and it increased to US$187 billion in 1999, which was 3.5 times as large as figure in 1990. By 2000, the total export value even increased to US$253 billion. Since 1999, Shanghai's export to the Asian countries has experienced a rapid growth. In 1999, its export to Korea, Philippines, Taiwan and Singapore has grown by 143%, 58%, 29% and 28% respectively. The total export value to Asia countries was as high as US$ 41.48 billion.[52] Moreover, the value of export goods from the foreign funded enterprises in Shanghai has a significant increase. In 1998, it was US$81billion and it increased to US$142 billion in 2000.

[50] The two cities: Shanghai, Hong Kong / Research Department, Hong Kong Trade Development Council, pp. 7 Hong Kong: Hong Kong Trade Development Council, 2001.
[51] Shanghai Economic Review 2001 vol.2 pp. 18
[52] 上海經濟:1999 分析與 2000 年預測, 上海經濟分析與預測課題組:上海:上海財經大學出版社,2000 Shang-hai jing ji : 1999 nian fen xi yu 2000 nian yu ce

In terms of import, the growth rate reached a peak of 103% in the period of 1990-2000. By 2000, the growth rate of import still maintained at 56%.[53] Of the total import value, the import of the production goods accounts for a larger proportion than the consumer goods. In 1990, the total value of import was US$ 21billion and it increased more than 10 times to US$ 293 in 2000, of which, the import of production goods accounted for 95%

6.2.2 Factors contributed to the development of international trade center

Outstanding performance of Shanghai's foreign trade provides the opportunities for Shanghai to become an international trade center.

Firstly, the rapid development of Shanghai's service sector can strengthen its ability to perform the intermediary role by providing the other value-added services to their clients such as production planning control, financing, export documentation etc.

Secondly, as Hong Kong is a well-established international trading center, the trade cooperation between two cities can help to strengthen Shanghai's credentials in services sectors such as legal consultancy, warehouse and storage and finance etc.

Thirdly, with China's accession to World Trade Organization (WTO), Shanghai's trading companies can establish direct links with foreign firms under a more liberal and transparent trade regime. It is anticipated that Shanghai will soon increase its importance as a sourcing center for Chinese products and this will certainly led to an expansion of the foreign trade.

[53] Shanghai Economic Review 2001 vol.2 pp. 18

6.2.3 Challenges and limitations to become international trade center

We should not over-emphasis the importance of Shanghai's trade performance before we give some comparative studies with the other cities.

In 2000, Shanghai's trade was US$30billion only accounted 11% of China's total while Guangdong's trade accounted 36 % of China's total. Therefore, Guangdong has moved ahead of Shanghai and emerged as the most open province in the country.

In terms of export and import value, Guangdong also ranked as the largest export and import province in 2000. The export value of Guangdong was as high as US$ 934 billion and its import was US$ 820billion, but in Shanghai, the export value was only US$ 246billion and the import value was only US$ 300billion.

To compete for the status of an international trade center, Shanghai still faces some limitations and challenges.

Firstly, Shanghai is still restricted to its role as an important trading center for local products while its entrepot trade is still underdeveloped. Even its processing trade increased from US$ 68 billion to US$ 96 billion in 1995-1998, Hong Kong is still the most important sourcing base for Chinese products and about 60% of Hong Kong's commodities re-exports originated in China with the rest coming from Japan, Taiwan, the United States and Korea. In Guangdong, the export value of processing

trade with customer's materials also increased from US$91billion in 1990 to US$ 265 billion in 2000.

Secondly, Shanghai still has limited trading capacity as its exports are mainly light industrial products, textiles and handicraft while there is little export of hi-tech commercial products such as computers and electronic equipment. In addition, its service trade such as tourism, export of labour force and oversea construction contracts still underdeveloped.

As a conclusion of this section, we can see that even Shanghai has maintained a trade surplus over the years, its share to China's foreign trade is gradually declining and Guangdong already becomes the largest export and import province in China. Up to present, Shanghai's foreign trade is still dominated by commodities trading with slow growth of service and high value added trading. Therefore, it is anticipated Shanghai will remain as a regional trading hub for inland provinces in central and northern China.

6.3 Shanghai's position as an international financial centre

With the strategic objective of developing into a world city, top priority should be given to internationalize Shanghai's financial market. In the recent years, Shanghai's financial industry has made a great progress and it already become the largest capital and foreign exchange centers in China. In this section, we are going to examine the recent development of Shanghai's financial market to discuss the opportunities of Shanghai to become an international financial center.

6.3.1 Significance of Shanghai's financial market

1). The expansion of Shanghai's financial industry

Followed the strategic principle of " developing Shanghai as one of the important international economic, financial and trade center", Shanghai's financial industry has shown a continuous, rapid and healthy growth. The total output of Shanghai's financial industry jumped from 245 billion yuan to 685 billion yuan in 2000, and its share in Shanghai's GDP also enlarged from 10% to 16%. Moreover, the number of employees engaged in financial industry is also increasing. In 1993, there were 4,500 employees and it increased to about 80,000 in 1999.[54]

2). Growth in deposits and loans in Shanghai

In 1993, the total deposits of Shanghai was only 1305billion yuan, it increased to 7771 billion yuan in 2000. The total loans of Shanghai also increased from 2822 billion yuan in 1995 to 6385 billion yuan in 2000.

3). Growth in stock and insurance market

Stock Market:

Year 2000 witnessed an active investment and transaction on the Shanghai stock market. The annual trading value rose from 34335 billion RMB in 1998 to 49901 billion RMB with a total 243 billion shares being traded. In addition, there had been 572 companies listed in the Shanghai Stock Exchange (SSE) in 2000, an increase of 18% compared with that of the previous year. For the other cities, there were 680 companies had been listed in Hong Kong Stock Exchange, 1890 companies listed in

[54] Shanghai Economic Review,2001 vol. 3, pp. 30

Tokyo, 2668 in New York and 2423 in London. We can see that SSE still has lots of the room for expansion. Apart from the increasing number of listed companies in SSE, the number of listed shares also rose from 16% to a total 614, including 559 A shares and 55 B shares and the ratio of the total market value of the shares to GDP was 30%. Above statistics proved that the fund raising ability of Shanghai's stock market is greatly strengthened. In 2000, there were 91,432 million RMB raised through the share issuing and it represented 59% of the total capital raised on the mainland.

Insurance Market:

Shanghai's insurance market has also grown relatively rapid in the recent years. In 2000, the output of Shanghai's insurance already accounted 15% of its GDP. In 1995-2000, the growth rate of Shanghai's insurance premium was 27%, while the average growth rate of the insurance premium in Hong Kong is about 13%. In addition, the total amount of income from the insurance premium also increased from 8 billion yuan in 1990 to 127 billion yuan in 2000. However, even the per capita insurance premium of Shanghai was 936 yuan in 2000, the amount was still lower compared with the other developed countries. For instance, the per capita insurance premium of the United States was US$2,570 in 1997 and the per capita insurance premium of Japan and United Kingdom were US$3,896 and US$ 2,452 respectively.[55]

4). Largest domestic financial center in China and increase opening of financial market

[55] Shanghai Economic Forum vol. 173, 2002/01, pp. 25

At present, Shanghai is regarded as the largest financial center in China with an increasing diversification of financial institutions. In the past, the corestone of Shanghai's financial system were only state commercial banks and the other commercial banks. But now, many non-bank institutions also set up branches in Shanghai such as finance companies, insurance companies, securities institutions etc. Up to June 2000, the total deposits of the Chinese financial institutions were as high as 7312 billion yuan and the total loans were 5560 billion yuan, accounted 6% and 5% respectively. Shanghai is not only important for domestic financial institutions but it also able to attract more and more foreign financial institutions.

The number of foreign financial institutions operating in Shanghai has increased markedly in the recent years. For instance, out of 163 foreign bank branches in China in 1999, 51 were in Shanghai and they accounted about 46% of the total foreign bank activities in China in terms of assets, loan and deposits. Besides, of 32 foreign banks licensed to conduct RMB business, 24 are in Shanghai. Moreover, Shanghai is one of only two cities open to the foreign insurers. Of 26 local and foreign insurance companies in China, Shanghai is home to 16, eleven of which are foreign-invested. In addition, there are now 153 representative offices of the foreign financial institutions in Shanghai. These statistics show that more and more foreign financial institutions are considering moving their business to Shanghai and Shanghai is now the most openness city, which plays host to a largest number of foreign institutions.

6.3.2 Opportunities to become an international financial center

We have demonstrated different statistics to show the rapid expansion of Shanghai's financial industry. Increasing opening and the diversification of

Shanghai's financial industry marked Shanghai's potential to become an international financial center. In the next part, we will further examine some factors that contributed to the recent development of Shanghai's financial markets, particularly the improvement on the efficiency of Shanghai's securities and insurance market.

Firstly, the Shanghai Stock Exchange improved its construction of infrastructure in 2000 in order to guarantee an efficient operation of the stock market.[56]

1). Updated the trading system. At present, the SSE used the Computerized Automatic Trading System including the automatic transaction matching counterpurchase dealing and the financial commodities trade for trading stock. This system could handle 37 million orders and 60 million transactions at speed of 6000 transactions per second.

2). Improvement on the information and communication systems. The SSE has established a dual backup system has been established between a satellite communication system and a digital data transmission system in 2000

3). Upgraded the registering and clearing systems. Through establishing the first PROP 2000 communication system for the functions of securities registration, depository and delivery, its operational velocity raise by nearly 40%.

[56] Shanghai Stock Exchange Factbook

Apart from the improvement on infrastructure development, the SSE also improves the market operational mechanism to increase the efficiency of its operation.

a). Improving the construction of a market system. In 2000, the SSE formulated and revised a series of regulation including the Regulation on Listing, Regulation on Transaction, Regulations on the Suspension and Restoration of Share Trading etc.

b). Intensify the market supervision and controls with the emphasis on certain facets. In 2000, the SSE strengthened key supervision over securities companies with huge risks and also paid great attention to the supervision over insurance funds and finance companies.

Secondly, the opening of Pudong New Areas in 1990s speeded up the opening of financial market of Shanghai. At present, the Lujiazui financial zone already attracted a huge foreign investment inflow and a large number of foreign financial institutions to establish their branches in there.

Thirdly, before China's entry into WTO, Shanghai is the first city open to the foreign financial institutions including foreign banks, foreign insurance companies and the other financial agents. Other cities such as Beijing, Chongqing and Ningbo etc are only allowed to open to foreign insurers two years after China's accession to WTO. Therefore, it provides a good foundation for the opening of its financial market.

6.3.3 Challenges to become an international financial center:

Although Shanghai's financial industry was greatly expanded in the recent years, an international financial center will not emerge overnight and Shanghai still faces lots of limitations to live up to the requirement as an international financial center.

First, Shanghai's financial and banking system is not yet fully liberalized and marketized. At present, the Central government still resorts some administrative control over the financial system. For the interest rates and the capital transfer of Shanghai, instead of determining by the aggregate impersonal market interplays among lenders and borrowers, the Central government has the right to determine the interest rates to tame inflation. Such control will severely hamper the development of the financial market in Shanghai.

Second, a large concentration of state owned enterprises (SOEs) in Shanghai is another obstacle for the banking reform. As the state banks have to help the ailing state enterprises, they still carry a substantial amount of bad loan on their book. Without fully commercialization of Shanghai's state banks, it is very difficult for them to handle international capital flows.

In addition, the low efficiency and the low services quality of the state- owned banks would hamper the development of market system in Shanghai's financial market.

Third, the headquarters of China's specialized banks are still located in Beijing instead of Shanghai. Because of the planned allocation of bank credit, banks usually

prefer to stay in Beijing, where decisions on the planned allocation of bank loans and most of the major deals are negotiated and completed. Therefore, Shanghai is still not the major destination for the headquarters of specialized banks in China.

Fourthly, the development of Shanghai's financial industry is still not reached the international standards. Shanghai still lag behind Hong Kong in terms of overall financial, legal and business systems. Hong Kong's financial system has the free capital and information flows, free mobility of talent, currency convertibility, an established legal framework and a more transparent regulations in its financial center, Shanghai's legal, institutional and regulatory system are not yet fully in place. In addition, Shanghai still lacking of professional personnel in financial industry. In 1990, the proportion was only 0.7% in Shanghai, while London, New York, Hong Kong were 11.5%, 11.5% and 14% respectively.[57]

Fifthly, Shanghai is more like a domestic market than an international trading place. In 2000, there were only 55 B-share stocks while there were 559 A-share stocks in SSE by the end of 2000. In addition, the total amount of fund raised by B-share stocks was only US$0.44 billion, while A-share stocks has raised a total of US$ 910billion in 2000. These statistics show that Shanghai is still not capable in raising funds for the foreign investment and this will restrict its role as a domestic financial center for mobilizing domestic funds to fuel China's economic reform.

Last but not the least, the development of the financial market in Shanghai also limited by the inconvertibility of RMB. As RMB is not fully convertible, the

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trading of foreign exchanges and stocks can only take place in China and it will greatly reduce the degree of openness of Shanghai 's financial market.

Through analyzing the limitations of Shanghai to become an international financial center, we can see that Shanghai's financial system should undergo further reform. It is believed that Shanghai will at least take another 15 to 20 years to develop its financial market. At present, Shanghai will only play a role as domestic financial center and Hong Kong will retain its role as the leading international financial center in Asia in the coming decades.

6.4 Shanghai's position as the base for MNCs headquarters

As the globalization proceeds, the Multinational Corporations (MNCs), which are "companies that are headquartered in one country but control productive facilities and sales outlets in other countries" (Berry, 1997) will play an important role in the world economic system. Therefore, the location selection of their headquarters matters very much to the transformation of the world urban pattern. As the regional headquarters of MNCs, they are served as the nerve centers for the regional operations and it provides firms with the critical control, co-ordinations, strategic-setting, support and information functions. Therefore, they usually prefer to locate in world cities, which are large nodal cities with efficient transportation and communication infrastructures, easily available of skilled and multilingual managers, large potential markets and the high quality of specialized services such as financial and professional services. As world cities are favourite destinations of regional headquarters of MNCs, a city's role as a center for the regional headquarters can thus determine her status in

the world system. In this section, we will further evaluate Shanghai's economic strength through discussing her attractiveness to be the site for multinational management activities.

At present, Shanghai already attracted lots of foreign enterprises especially foreign financial institutions to set up their business. "According to the survey conducted by the Chinese edition of Fortune magazine in October 1999, foreign-funded enterprises preferred Shanghai to all other cities in mainland for investment."[58] Therefore, it is expected Shanghai will soon become the major destination for regional headquarters of MNCs in Asia.

However, according to another survey,[59] the leading choice of the responding companies for the location of regional headquarters is Hong Kong, where 35% of responding companies have an regional headquarters in there. The second one is Singapore, which accounted for 30%, but there were only 3% of responding companies chose Shanghai as the location for their regional headquarters. Actually, Hong Kong is a city with stable political and social system, proximity to major markets, quality local management, excellent infrastructure, dense network of information as well as financial and professional service firms, all of these are the most critical factors for a regional headquarter location.

Although Hong Kong will retain dominant positions for the MNCs operations, Shanghai still has opportunity to attract MNCs headquarters. In the new information

[58] The two cities: Shanghai, Hong Kong / Research Department, Hong Kong Trade Development Council, pp. 28, Hong Kong: Hong Kong Trade Development Council, 2001.

[59] Business Asia, New York Dec 11,2000,pp. 4 of 5

technology era, it is relatively common to find companies with a set of distributed regional headquarters, for instances, marketing and finance in one location, logistics in another, production and shared services elsewhere. Through the use of information system, activities of these distributed regional headquarters can be co-coordinated to the main regional headquarters. Therefore, even Hong Kong is the ideal location for MNCs regional headquarters, Shanghai still plays a different role in the MNCs management activities and it will certainly gain the importance as a major investment location for MNCs.

6.5 Conclusion of economic vitality dimension

Under globalization era, internationalizing of the global economic activities give rise to the emergence of world cities. To be the centers of global control, world cities should have the influential economic power to control the international financial, trading and economic activities. Shanghai has experienced a remarkable economic growth since the opening of Pudong in 1990. Preferential policies and the favourable investment environment are the major factors contributed to the huge inflow of foreign investment and they also led to a fast pace of economic restructuring in Shanghai. However, due to the small economic base and the limited resources of Shanghai, its economic strength is still much lower than the other cities in the world or even cities in China like Guangdong. Therefore, we can conclude that Shanghai now is still at the primary stage of development. The ultimate goal of Shanghai to become one of the economic and financial centers will only achieve through further reforming and opening up of its financial system. As Shanghai's financial system is still partially marketized and Renminbi is not yet fully convertible, Shanghai may still

needs at least 15-20 years time to catch up with the development level of the existing world cities.

Chapter 7

Assessment Quantitatively Shanghai's Position in World City Formation

Based on Cai's methodology, we shall now update the statistical data of selected 15 indicators of 6 cities including Shanghai, i.e. they are Shanghai, Hong Kong, Singapore, London, New York and Tokyo. This give us a more updated measurement on Shanghai's current position in the world system against our chosen world cities and it thus make the comparison more useful in terms of policy implication. The raw data for these cities are shown in Table 7.1

Our basic data collection comes various Statistical Yearbooks of Shanghai, Singapore, Hong Kong and Japan. Also, Internet resources such as official websites of government departments, Civil Aviation Authority, International Air Transport Association, Port Maritime Authority, Stock Exchange provide most update statistical data for New York, London and Tokyo.

We firstly show Cai's assessment on Shanghai compared with the 5 selected world cities in Table 7.1.

Table 7. 1 Cai's six-dimension assessment of Shanghai

Source: quoted from Cai (2000), Measuring the formation of world city:the case of Shanghai, Hong Kong: University of Hong Kong,2000

Attributes	***SH/(HK-SG)***	***SH/(NY-LD-TK)***
Total population (mil.1996)	295	80
% of population at age 60+	119	76
College student per 10000 persons	86	21
Ratio of high middle school attendance	86	80
GDP per capita (US$, 1994)	15	11
Stock value (bil. Ponds 1997.12.31)	41	2
% of tertiary employment	55	50
Air passenger in mil. In 1997	42	12
Air cargo in 1997 (10000 tonnes in 1995	28	23
Port handling volume in 10000 tonnes in 1995	76	262
Port container handling volume in 10000 TEUs in 1996	19	111
Telephone per 100 persons	41	33
Electricity consumption per capita (kwh)	33	12
Average rooms per house hold in 1994	76	43
Doctors per 1000 persons	239	99

Table 7.2 Comparison between Shanghai and selected world cities

ATTRIBUTES	*SHANGHAI*	*HONG KONG*	*SINGAPORE*	*LONDON*	*NEW YORK*	*TOKYO*
Total Population in 2000(mil)	13.2	6.7	4	* 7.3	18.9	12.1
% of population at age 60+ in 2000	11.5	14.8	8.7	12.3	16.8	15.5
College student per 10000 persons in 2000	172	133	240	n/a	593	***582
Ratio of high middle school attendance in 2000	97	52.4	39.4	***90	***95	**97
GDP per capita (US$) in 2000	4429.1	23987.8	34805.85	26547.6	*33890	54571.4
Stock value (bil Ponds) in 2000	322.5	#506	n/a	#5856	11060	2669
% of tertiary employment in 2000	44.9	86.11	65.5	89.2	**87.8	77.8
Air passenger in mil in 2000	*15	23.024	28.619	62.2	#59.9	#27.7
Air Cargo (10000 short tonnes) in 2000	*61.3	206	168.2	***139.8	#225.3	*184.1
Port handling volume in 10,000 tonnes 2000	20440	17464.2	#31348.7	***5136	1875.5	8456
Port container handling volume in 10,000TEUs In 2000	561.3	1809.8	1557.1	n/a	305	***230
Telephone per 100 persons in 2000	42	73.1	35.3	***91	***56.1	***77.2
Electricity consumption per capita (kwh)	42.3	1334.1	*1658.7	***1576	***1152	**6451.5
Average rooms/ households in 1997	<2	2.3	3	4	5.2	**3.9
Doctor per 1000 person in 2000	3.8	1.5	1.4	***1.9	***3.87	***3.1

Note: # refers to data in 2001
* refers to data in 1999
** refers to data in 1998

*** refers to data in 1997

Table 7.3 Shanghai's position compared to the selected world cities%

Attributes	*SH/(HK-SG)*	*SH/(NY-LD-TK)*
Total Population (mil)	246.4	103.5
% of population at age 60+	98	77.4
College student per 10000 persons	92.2	29.3
Ratio of high middle school attendance	211.3	103.2
GDP per capita (US$)	15.1	11.6
Stock value (bil. Ponds)	63.7	4.9
% of tertiary employment	59.2	52.9
Air passenger in mil	58.1	30
Air Cargo (10000 short tonnes)	32.8	33.5
Port handling volume in 10,000 tonnes	83.7	396.4
Port container handling volume in 10,000TEUs	33.3	209.8
Telephone per 100 persons	77.5	56.2
Electricity consumption per capita (kwh)	2.8	1.38
Average rooms per household	75.5	45.8
Doctor per 1000 person	262.1	128.5

Against Cai's assessment with our updated data, we have compared Shanghai separately with the matured world cities (Mwc) i.e. they are New York, London and Tokyo and the newly emerged world cities (Newc), i.e. they are Hong Kong and Singapore as shown in Table 7.3

From the table 7.3, we can notice that Shanghai has higher scores for some indicators. In terms of total population, Shanghai still maintained 246% of the NEwc and 103% of the Mwc in the year 2000. Compared with the scores of Cai's

measurement in 1997, Shanghai is still one of the megacity in the world and is also the most populous city in China. For the ratio of high middle school attendance indexes (the number of middle school students to the total population aged at 12-19), we can see that Shanghai has got much higher scores when compared with the scores in 1997. In 1997, it was only 86% and 80% of the Newc and the Mwc respectively while it increased to 211% of the Newc and 103% of the Mwc in 2000. The improvement on the middle school attendance is attributed to the improvement on Shanghai's education system. In Shanghai, there are constant reminders of education's role to prepare more and better workers and it therefore has a history of sophistication and receptiveness to education. To accelerate the supply of educated manpower for the modern economy, Shanghai has already universalized nine-year basic education in 1980s and attention is now focused on the expanding post-compulsory education through increasing the number of private schools and the joint sponsorship of schools by education department and enterprises. Given by the top priority of investment, human resources development in Shanghai has got an impressive achievement.

In addition to the human resources development, Shanghai also has outstanding scores in the port development. The improvement on the port infrastructures can be noticed from the indexes of port handling volume and the port container handling volume. Shanghai was 84% of the Newc and 396% of the Mwc in terms of port container handling volume while in terms of port container handling volume, it also reached 33% of the Newc and 210% of the Mwc in 2000. Since 1990s, Shanghai has successfully attracted foreign direct investment in the infrastructure development especially the port development. Large foreign investment companies such as Hutchison, P&O and PSA Corporation are keen to invest in key strategic

projects of port infrastructures. For example, in 1999, a joint venture between Hutchison, Cosoco and the local government in Shanghai was established to run operations in the first phase of Waigaoqiao new port. The development of Waigaoqiao new port can also boost the port handling capacity of Shanghai, by adding 1.6 million TEU to its handling capacity and thus strengthened Shanghai's position as the regional shipping hub in China. In the coming future, with the development of a deep-water port and the large container terminal on Dayangshan and Xiaoyangshan Islands, it will provide good potential for Shanghai to accommodate growth of container traffic.

For the indicator of Doctor per 1000 persons, we also found that Shanghai maintained high scores in this indicator in both of the quantitative assessments. In 2000, Shanghai was 262% of the Newc and 129% of the Mwc in terms of doctors per 1000 persons, the scores are even higher than the scores in 1997, which were only 239% and 99% of the Newc and the Mwc respectively. High scores of this indicator represent the role of Shanghai as command and control centre is further strengthened. As a global city, it should be a key site for the production of advanced and specialized services, so to attract the concentration of MNCs headquarters. Shanghai, which is the core city of Shanghai EMR should play a disproportionate role in many services functions for its own city as well as cities in Yangtze hinterland region. Therefore, when compare with the value of this indicator, Shanghai obtained a higher score than the other world cities due to the larger range of service areas.

Despite Shanghai's strength in the total population, ratio of middle school attendance, port handling volume and the number of doctors, Shanghai still lag behind of the two groups of world cities in terms of their total economic strength. The differences in their economic controlling power can be seen from the indicators of

GDP per capita and stock value. Shanghai was only 15% of the NEwc and the 12% of the Mwc in terms of GDP per capita while it was only 64% of the NEwc and 5% of the Mwc in terms of Stock value. Although Shanghai's financial market has a remarkable progress in terms of number of foreign financial institutions, trading volume and the total volume of deposits and loan and the infrastructures of stock exchange since mid-1990s, the degree of internationalization of Shanghai's financial market is still very limited. Without liberalization of the interest rates and free convertibility of RMB, Shanghai's financial market still cannot live up to the international requirements with existing world cities.

Apart from the economic controlling power, Shanghai also has lower scores in term of high education and air transport. In term of College student per 10,000 persons, Shanghai was 92% and 29% of the Newc and the Mwc respectively. Although we mentioned that Shanghai has great improvement on the education system, the number of higher institutions and the research institutions still very limited. To provide sufficient qualified personnel, Shanghai should train more people of talent at higher degree levels. In addition to the limitation of high education, limitation of international traffic right and the inefficiency of airport services also contributed to the low scores in the indexes of air transport. Shanghai was only 30% and 34% in terms of air passengers and air cargo when compared with the Mwc. In economic globalization era, we believe that economic controlling power is the most critical indicator to determine the competitiveness of a city in aspiring to become a world city. However, it can seen from the tables that Shanghai still lag behind the two groups of world cities in terms of general economic strength. Based on the scores of some indicators, we noticed that Shanghai only reached 10% of the Mwc and 30% of the Newc in terms of economic controlling power. In terms of infrastructure

development, Shanghai already reached 30% of the Mwc and 50% of the Newc. Therefore, we believed that Shanghai should further improve the infrastructure development particularly the shipping and air transport facilities, so to achieve the goal of becoming a hub of international linkages.

The six-dimension assessment on Shanghai by using Cai's methodology has give us a comprehensive, objective and scientific measurement on Shanghai's current position in the world urban system. While the qualitative assessment in previous chapters has analyzed the situation of Shanghai in details, the quantitative measurement can quantify the position of Shanghai in the world system by different dimensions. By doing so, it can identify the strength and weakness of Shanghai as measured by the generally assumed qualities of a world city. Therefore, by using the quantitative approach to measure the world city formation, we can depict the development stage of Shanghai in the process of becoming a world city and the analysis based on the methodology can provides a good basis for further comparative studies as well as to give guidelines for planners to formulate relevant policies to promote Shanghai as a world city.

Chapter 8

Conclusion

8.1 Summary of the findings

Since the twentieth century, economic globalization has transformed the spatial organization of production in the world system. Such transformation can be best explained by the massive development of advanced transportation and communication technologies and the concept of New International Division of labour (NIDL). While economic activities are more disperse over the globe, some major cities have grown up as the centers of command, control and management for organizing world's economic activities and which have become "world cities". Over the years, because of their distinctive role as the nodes of the world urban hierarchy, world cities have lots of academic interest and studies. In chapter 2, we have reviewed some related literature on the world cities. We have focused on reviewing existing hypotheses and theories on world cities in order to identify their characteristics and definitions as well as to examine the major dynamics of world city formation. Through the literature review, we understand that world cities are a direct outcome of economic globalization.

The concept of globalization was widely popularized since 1980s. Among different processes of globalization, including political, economic and social aspects, economic globalization is much more rift and has more fundamental impacts on the society. This idea was greatly supported by Marx and Waters. (Marx 1977, Water 1995). With massive development of advanced transportation and communications technologies in globalization era, constraints of spatial boundaries are therefore no longer matter. With rapid flow of FDI over the globe, the concept of NIDL ((Frobel

and Heinrich, 1980) has emerged to explain the transformation of spatial organization of production. In bringing a dispersal pattern of global economic activities, economic globalization has promoted the concentration of controlling and commanding functions in some core cities, which represent their capability of global control. Because large cities are key sites for producer services and MNC headquarters are also concentrated in major cities that line along with those specialized services, therefore, world cities with high concentration of management functions become top tier of the world's urban hierarchy.

There are many theories on the definition of world cities. In the chapter 2, we have focused on reviewing three main approaches on defining world cities. The first one is John Friedmann, who proposed "The World City Hypothesis" in 1986. (Friedmann, 1986). In his study, he adopted a macro approach by using the concept of NIDL to explain the formation of new world urban hierarchy. By placing world cities into top tier of this hierarchy, he further proposed seven hypotheses to explore the characteristics of world cities. Another scholar is Sassen, she defined a global world city by using a bottom up approach. Instead of looking at the spatial transformation of the world production system, she emphasis on studying the changing functions of major cities and their impacts on the pattern of international economic activities. The increasing concentration of advanced corporate services and infrastructures has promoted the growth of major cities, which lead to the formation of global cities. The third one is Taylor, rather than studying world cities in the past few decades, he gave an explanation of world cities beyond their contemporary existence. In his paper, the focus was put on the roles of cities and their mutual benefits with territorial states in the world economy.

Based on the literature review, we recognized that there is a lack of quantitatively measurement on the competitiveness of a particular country especially those rapidly developing countries with a large size economy, such as China, which already has cities that are actively trying to gain the world city status. Therefore, we have chosen Cai Jianming's six-dimension model and methodology as our research framework to identify Shanghai's advantages and disadvantages in aspiring to become a world city. In chapter 3, we have briefly introduced Cai's six-dimension model and methodology to illustrate the way we apply it to Shanghai case.

We then examined in detail the situation of Shanghai according to the six dimensions. In chapter 4, we have examined Shanghai in terms of population and skill and enabling infrastructure. In terms of quantity of labour forces, Shanghai will face problems of negative population growth and ageing population. Although reduction in population growth is desirable, increasing proportion of ageing population will encounter severe problems such as insufficient labour force and heavy economic burden for health care services in the future economy. Compared to the other developed countries, ageing population in Shanghai increased at a faster pace but its economic strength is much lower. Therefore, it is not difficult to see that Shanghai will face problem of insufficient labour for the knowledge-based economy. Although Shanghai has a high proportion of floating population, low skills migrants in Shanghai still fail to provide qualified labour force for the future economy.

In terms of quality, low educational qualifications of Shanghai's working population as well as the shortage of skilled personnel will become obstacles for the economic development in Shanghai. Although the educational qualification of Shanghai's population is improving and also has a leading position in China, however,

compared with the international standards, the education levels of Shanghai's population are still lower. For example, the proportion of population attained university level in Japan was 20% in 1990 and it was 46% in United States in 1994. But in Shanghai, there was only 12% of working population reached university level in 1998. In addition to the problem of low education level, the quantity of qualified personnel in Shanghai also lower than existing world cities. For instances, there were 806 scientific and technical personnel in Shanghai in every 10,000 employees while Japan had 3,182 scientific and technical personnel in every 10,000 employees in 1982. Moreover, the proportion of qualified personnel in sectors of finance, business, food industry and telecommunication also lower of that in existing world cities. For example, there were only 6.4%, 2.5% and 2.9% of total professional personnel engaged in business, finance and telecommunications sectors respectively. Therefore, in order to live up to the international standards, Shanghai should invest more in developing education, especially institutions of high education and the other specialized technical schools.

We then examined Shanghai in terms of enabling infrastructures. With massive inflow of FDI in 1990s, this dimension has made a dramatic progress. Since 1990s, Shanghai government has put tremendous effort to improve its port, airport and telecommunication infrastructures, particularly the development of new port and airport in Pudong New Areas. With the development of new port at Waigaoqiao, the cargo handling capacity has greatly improved. At present, the first six berths at Waigaoqiao port have already in operation, adding 1.6 million TEU to Shanghai's handling capacity and the new port is expected to handle up to 9 million TEUs by 2005. Currently, Shanghai port becomes the seventh busiest container port in the world and handled 5.6 million TEUs of containers. The development of Waigaoqiao

port therefore effectively reduces the burden of Shanghai port at Huangpu River and provides a good potential for Shanghai to accommodate growth of container traffic in the future.

In addition to the port development, with the opening of Pudong International Airport, Shanghai becomes the first city in China with two civil international airports. This new airport is designed to handle 20 million passengers and 750,000 metric tons of cargo a year. The improvement on airport facilities and services can increase Shanghai's ability to establish external linkages with existing world cities and provides a good opportunity for Shanghai to become an international air transportation hub. In addition to the goal of becoming an international shipping and air transportation hub, Shanghai government also aims to develop Shanghai as an international information and communication port. Since the mid-1990s, massive domestic and foreign capitals were invested in building of telecommunications infrastructures such as the construction of world's largest Asynchronous Transfer Mode (ATM) municipal local area network (LAN) and the expansion of Internet and mobile networks etc. The improvement on telecommunications facilitates can allow Shanghai to develop better information and communication networks with the other parts of the world.

Generally speaking, Shanghai is weak in its "software" environment, particularly the low efficiency in port and airport operation systems, poor management, low level of internationalization and lack of qualified personnel in information technology sector etc. Therefore, Shanghai still has a lot to improve in order to live up to the requirement as international shipping, air transportation and information hubs.

We then examined the transformation of regional economic policies on Shanghai's development in chapter 5. We have found that in a large city like China, the role of the Central government and its national policies can never been ignored. Therefore, the politico-economic circumstance still has predominant influence on the development of Shanghai. To retain Shanghai's role as an international economic, trading and financial center, we believed the adoption of Pudong development strategy in the early 1990 is a major step to realize this goal. Preferential policies and the development of special zones in Pudong New Area have strengthened Shanghai 's ability to attract foreign investment. Huge amount of FDI inflow is in turn being the major impetus to the economic growth since 1990. However, we believed that after China's entry into World Trade Organization (WTO), the role of the Chinese government would eventually erode. Therefore, phasing out of all preferential policies in the future will eliminate Pudong's advantage over the other regions and Shanghai will face much more real challenges to realize its goal of becoming a world city.

Analysis on the living environment in this chapter has shown that policy of urban redevelopment and the opening up of Shanghai since 1990s have contributed to the improvement on living environment in Shanghai. While the adoption of urban redevelopment policy has successfully improved the efficiency of housing systems and has reduced the inner city congestion problem in Shanghai, the opening up of Pudong also increased foreign investment in the development of housing, urban amenities and urban internal transportation. In addition, the opening up of Shanghai also encouraged the inflow of advanced foreign production facilities and waste treatment technologies, which greatly improved the environmental quality.

We found that Shanghai has great improvement on living environment and which in turn imposed positive impacts on the overall urban image of Shanghai. The

improvements on living environment and enabling infrastructures have successfully transformed Shanghai's negative image from the industrial past. The mushrooming global symbols including all those creative building design, logo and advertisements of multinational products have shown the effort of Shanghai's government as well as foreign investors in changing the physical appearance of Shanghai and marked the beginning of reinventing a new image for Shanghai.

As the command and control center of the world economic system, we believed that overall economic power of a city is more critical to determine its status in the world system. In chapter 6, we have examined the opportunities and limitations of Shanghai in striving to become an international economic, trade and financial center. We have found that since the opening up of Pudong, Shanghai has an outstanding achievement on the economic growth. In 2000, the city had a GDP of 4551 billion yuan and per capita GDP of 34,547 yuan, the highest in the mainland and five times of the mainland average. In addition, since the adoption of economic restructuring strategy, tertiary sector in Shanghai has expanded rapidly since 1990s. In 2000, the value of tertiary industry reached 2304 billion yuan, which accounted 51% of its GDP, of which financial and insurance industries have the most impressive achievements. By 2000, the value added by the financial and insurance industries was 690 billion yuan, which represented 12% of the municipality GDP. In addition to the achievement on Shanghai's internal economy, its external economy also has remarkable growth. By 2000, the number of signed contacts already increased to 2,375 with contacted foreign capital of US$80 billion. In the period of 1990-1999, the city's foreign trade also expanded by over 20% per year. However, when compared to the other world cities, Shanghai is still far from an international economic center in terms of major economic indicators. In case of Hong Kong, its per capita GDP already

reached US$14,370 in 1991 and the ratio of service sector also reached 73%. It is believed that Shanghai still require at least 20 years to catch up with the economic power of existing world cities.

Through analyzing Shanghai's opportunities to become an international financial center, we found that its financial industry has made great progress and it becomes the largest capital center and foreign exchange center in China. The total output of Shanghai's financial industry jumped from 245 billion yuan to 685 billion yuan in 2000 and there are 153 representative offices of foreign financial institutions, 51 foreign bank braches and 16 foreign insurance companies in Shanghai. Combined with the improvement on infrastructures and management systems of Shanghai Stock Exchange, Shanghai will have great potential to become the largest financial center in China. However, to become an international financial center, Shanghai still facing lots of limitations such as the inconvertibility of RMB, high concentration of inefficient SOEs and the limited number of headquarters of foreign financial institutions etc. All of these problems will hinder the pace of internationalization of its financial market. Therefore, we have concluded that Shanghai still play the role as a domestic financial centre and will at least take another three decades to develop as a truly globalized financial center.

Lastly, we have updated the statistical data of Cai's six-dimension assessment on Shanghai in order to give an updated measurement on its present status in the world urban system. From the result of the quantitative assessment, we noticed that Shanghai still lag behind existing world cities in terms of general economic strength and economic controlling power. Compared with Cai's measurement in 1997, Shanghai has slightly improved her status in the world urban system in terms of middle school attendance ratio and port container handling volume. However, low

scores in GDP per capita and stock value represented low economic controlling power of Shanghai in the world economy. In the future, we believed that Shanghai should learn the experiences from Hong Kong and Singapore by putting more investment in infrastructure development to achieve the goal of becoming an international transportation hub. With a modern infrastructure foundation, Shanghai can have potential to become a key location for MNC headquarters and can thus build up its economic controlling power in the world economy.

8.2 Significance of the study

In our study, we shifted the focus of study from existing world cities to cities that have large potential in becoming world cities. Because of the varieties paths of world city formation, through studying potential world cities in large and rapidly developing countries such as China, can gave us a better understanding how Shanghai responds to the dynamics of globalization and can identified its strength and weakness in comparison with existing world cities. Our study also put forward useful guidelines for city's planners to formulate relevant policies. Therefore, our research has provided a practical implication that fulfills primary aim of world city research.

Based on Cai Jianming's six-dimensional model and methodology, we have updated the statistical data of his quantitative assessment. This can help us to identify the present status of Shanghai in the world city formation process as well as to find out the strength and limitations of Shanghai by comparison with existing world cities.

In addition, through analyzing Shanghai's status according to the six key dimensions, we gave out a thorough qualitative assessment on Shanghai that can cover different aspects in the formation of world cities. As our study has provided a wider coverage than existing studies that only focus on economic dimension in the

world city formation process, therefore, it has provided a new case for existing world city research.

8.3 Strategies and guidelines for Shanghai's development as a world city

For our case of Shanghai, we may put forward the following strategies to help the city in striving to become a world city in the future:

1) To increase the economic controlling power of Shanghai, the city should take some measures to create favourable conditions to attract regional headquarters of foreign financial institutions to locate in Shanghai. Strengthening the co-operation with financial sector in Hong Kong will be the best way to improve Shanghai's financial market. First, Shanghai should draw on Hong Kong's expertise and experience in reforming the financial system particularly the development of an internationally compatible regulatory framework for Shanghai's insurance markets. Second, Hong Kong should help Shanghai to develop market infrastructure for Shanghai's financial market. More investment should further put into the Internet and electronic commerce development, in order to promote a fully computerization financial system in Shanghai. To accelerate the internationalization of Shanghai's financial market, the city should put more effort to attract domestic corporations to become listed on the Shanghai's B Shares and should gradually allow Chinese citizens to invest their foreign currency in the B Shares. These measures will gradually unify A Share and B Share so as to maximize the degree of opening of China's economy. Furthermore, Shanghai should gradually liberalize the

interest rates in different markets of financial industry as well as to allow fully convertibility of Renminbi to become a true international financial market.

2) The success of Pudong development was heavily relied on the development strategy of the Central government. Preferential policies and the establishment of specialized zones have created a favourable environment to attract foreign investment for Pudong development. However, the declining trend of foreign investment in Pudong since mid-1990s has proved that it is not a sustainable way for economic development. Therefore, Shanghai should diversify the source of investment in developing infrastructure facilities. It should encourage big enterprises and district and county governments to raise fund for infrastructure development. In addition, sustainable economic growth should also achieve through developing a flexible market economy. Instead of direct control by the Central government, more autonomy should be given to district and county government in Shanghai. They should assume more responsibility and given more financial resources to manage their own communities.

3) To become a world city, Shanghai should speed up the reform of state enterprises and establish a modern enterprise system. The city should encourage international businessmen to participate in the reform process through taking over, revamping or acquiring equities in Shanghai's state enterprises. Shanghai should also implement some associate reforms in social security as well as economic adjustment system, so to improve the efficiency to adapt the changing market economy.

4) To build its strength in the knowledge-based economy, Shanghai should fasten the development of high and new technology sector particular the information

technology and the telecommunications industries. Although Shanghai has a good scientific and technological foundation, most of the technological developments are confined to the laboratories in research institutes and only a few of them can apply to industrial or commercial uses. Therefore, Shanghai should put more effort in developing applied and commercializing technologies, which can directly benefit enterprises and promote the transfer of technology to industrial production. In addition, even Shanghai has remarkable progress in developing telecommunication equipments and infrastructures, the development of high-margin software area of telecommunication sector will be more important to build the city into a leading high-technology center. Therefore, Shanghai should set up its own research and development (R&D) centers for designing and innovating high-end technologies.

5) To become a shipping and air hub, Shanghai on the one hand should develop international transport routes that link with the other parts of the world; on the other hand, it should also strengthen the connection of river, sea transport as well as expressway and rail mass transport with the cities along Yangtze River Delta. Convenient transport linkages with the Yangtze Delta will certainly strengthen the radiating effect of Shanghai to interior China and the vast Yangtze hinterland will form the backbone of Shanghai's metropolis.

6) Shanghai processes a relatively well-educated labour force, which is the key to economic development of a modern economy. However, shortage of professional personnel especially in sectors of finance, insurance, real estate and telecommunication is the major challenge of Shanghai in striving to

become a world city. In order to speed up the exchange of knowledge, culture and idea, Shanghai should attract international talents through adopting attractive policies and relaxing the control of international migration. In addition, Shanghai should also invest more resources in developing institutions of higher education as well as research institutions so to develop more specialized personnel for future economic development. Moreover, institutions of higher learning in Shanghai should further raise their lecturer – to-student ratios and also modify the content of education by establishing new programmes that fit the demand for the new economy. New subjects like information technologies, telecommunications and computer engineering etc should be taught in those higher learning institutions.

7) Modification of urban landscapes is not the only way to re-image the overall urban image for Shanghai. More important is to enhance the quality of the citizens and the degree of urban civilization. To achieve these goals, Shanghai should put more effort in developing education, culture, public health and sports etc. The development of spiritual civilization will be important for economic as well as social development of Shanghai.

8.4 Limitations of the study

Subject to time constraints, it is impossible for us to construct a new and more comprehensive world city database on our case study. We have recognized the need to improve and develop a quantitative methodology which should include more indicators for the measurement of world city formation, however, it is time consuming and difficult for us to establish a new methodology in such limited time.

We have also not included all potential world cities in our studies. Instead, we just focused on evaluating the status of Shanghai in the world urban system. Although our study fails to give a direct comparison on two or more cities in striving to become world cities, it can provide a new case for future comparative studies in this field. Based on Cai Jiangming 's six-dimension model and methodology, our study has able to update the statistical data of his quantitative assessment on Shanghai, which can better identify the present status of Shanghai in world city formation process.

For data collection, it is better to compare different world cities by using statistical data of the same year. However, international comparative data are often extremely difficult or even impossible to obtain. Statistical information is normally collated and presented to serve national rather than international comparative purposes. We found that most of the statistical data in UN publications are ordered by countries instead of using "city" as the form of data. Therefore, apart from the "city-states" of Singapore and Hong Kong, world cities are not objects of report for worldwide data. To update the statistical data of the quantitative assessment on existing world cities, we can find a lot of published statistics on the relations between two countries such as UK and US, but there are almost nothing on relations between two world cities such as London and New York. Therefore, we should point out that some of the statistical data in our quantitative assessment may come from different years and thus the result will be affected in a certain degree.

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