

# The Innovation Strategy of the Industrial Transformation : Evidence from Pearl River Delta in China<sup>1</sup>

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**Abstract:** With the Reform and Opening-up public policy, the Pearl River Delta Region in China achieved tremendous development in the past years. Entering a new stage, the Pearl River Delta region urgently needs the economic and social transformation to meet the shift towards industries and labors. This paper aims to draw lessons from the development experiences of Pearl River Delta and deduce the possible path for future development. Based on the framework of Advantages Integration, the paper proposes policy suggestions about how Pearl River Delta could avoid “Comparative Advantage Trap”, and how it should promote development by exploring, operating, integrating and accumulating internal and external advantages.

**Keywords:** Pearl River Delta, industrial transformation, Integration

## 1 Introduction

With the Reform and Opening-up public policy, the Pearl River Delta Region (hereinafter referred to as ‘PRD’) in China achieved tremendous development in the past years. Too many politicians, scholars and researchers have made significant theory contributions to PRD’s miracles. However, after the international financial crisis, the traditional development model in PRD now is facing many great challenges, such as constraints of natural resources and energy, conflict between environment and development, increasing pressure of inter-regional competitions, continuous rising labor cost, and so on. These new situations remind us that PRD urgently needs to accelerate the pace of economic and social transformation. It is the time to carry out scientific adjustment and strategic shift towards industries and labors problems.

## 2 The Possibility and Necessity of the Transformation in PRD

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The traditional development of PRD mainly depends on “China Price” which processing and compensation trade in global market. We can clearly see PRD’s growth shows extensive economic growth pattern. The core of this development model is emphasizing the heavy using of nature endowments and comparative advantages. Frankly speaking, It is a rational choice for promoting economic growth when the PRD is in an early stage of development and internationalization and the PRD economy is still not strong enough (See figure 1).

**Figure.1 insert here**

When different national markets with different rules for the internalization of external costs merge into a single market, then the different rules of cost accounting present a big problem. Globalization has various aspects which affect the world in several different ways. Because the core of comparative advantage strategy is that advanced player exerts high-end advantages and relatively backward player exerts low-end advantages, the result will be larger gap between them. Over on comparative advantage strategy bring lots of problem to China, for instance, environment destruction, over exploitation of natural resources, backward industrial structure, and other social problems. The comparative advantage strategy will not lead PRD to achieve the economic targets of “Intermediate Developed”.

As these worldwide structures grew more quickly than any transnational regulatory regime, the instability of the global financial infrastructure dramatically increased, as evidenced by the Financial crisis of 2007–2010. Thus, the comparative advantages in PRD mainly derive from lower costs in labor, management, environmental, natural resources and land. Now, this model is facing great challenges and tremendous impacts.

From the internal environment aspect, comparative advantage strategy brings PRD a series of problems. The strategy caused low speed transformation of labor-intensive industries. 2008, Guangdong’s population approximates 1 billion, and there were nearly 3,000 million floating population

live in less than 20 million square kilometers (see Figure 2). Since less than 2% of the total land area carries the more than 7% of population, the huge population not only dilutes the development achievement, but also brought many social problems: Education, employment, social security, medical care, housing in Guangdong has become more and more difficult to solve in face of huge population migration.

### **Figure 2 insert here**

Nowadays, lots of fundamental factors supporting economic high growth of PRD have changed, some of which are not existed, other of which are changing to the new forms. Accordingly, the growth model simply based on the comparative advantage is facing great transformation pressure.

First, Labor cost and land cost are continue rising. Affected by the New Labor Law, the skilled labor wages are rapidly improving, traditional durable migrant worker source is shrinking.

Second, PRD is suffering the shortage of land resources. Per capita of land resources in PRD is only equivalent to 1/3 of that of national average, far less than the United Nations' accepted alarm level. Consequently, the land price of bidding is rising and weakens the low-cost comparative advantage, which will further bring severe industrial restructuring, and overall growth rate will be slower.

Third, energy and other important resources become significant constraints. The extensive form of growth displays as lags in transformation of natural resources oriented and environment unfriendly enterprises. These enterprises often focus on high inputs and high investment, consuming huge energy, lacking of industrial pollution treatment, and having high external effects. As a result, the resources and environment of Guangdong province and PRD are not able to be sustainable to support these enterprises. (see figure 3). The water quality and air quality of Guangdong is not in satisfaction and still deteriorating. Therefore, it is urgent to restructure the industry to improve the living environment, and establish the sustainable economic

growth model comply with the resources constraints.

**Figure 3 insert here**

Fourth, the new economic growth points are rare in Guangdong province. Heavy demands for housing and vehicle have been released these years, burst of economic growth triggered by which is difficult to continue. By nearly 20 years of the housing reform, people's living demand is met in a large extent. Promoted by stimulating domestic automobile industry policy, many cars have been consumed these years and demand for car consumption now has trend of reduction.

From external environment aspect, Guangdong province is important beneficiaries of economic globalization. Two international industrial transfers caused by globalization made Guangdong province become a major acceptance place which helped Guangdong achieve high economic growth. However, in the past 30 years, Guangdong was mainly passively drawn into globalization and mainly undertook low-end production in the international industrial chain. (See figure 4). First, The comparative advantage Guangdong exerted was still relatively low, relying on the labor cost advantage, one important root of which is low RMB exchange rate. In the short-term, this advantage could be effective in promoting economic growth and improve industrial efficiency. However, in the long-term, on one hand, Guangdong province might be subject to 'technology lock' of foreign capital; on the other hand, the capability of facing external risk and fluctuations will be reduced, which will impose adverse effect on the long-term benefit. Second, comparative advantage strategy cannot realize innovative economic growth, and the gap between PRD and regions in developed countries will be larger.

Therefore, growth strategy must be changed and Advantages integration Strategy should be considered to apply.

**Figure 4 insert here**

### **3 The Opportunity of PRD's Advantages Integration**

The Pearl River Delta is at a golden stage of the economic and social development. In 2003, President Hu visited Guangdong and proposed scientific concept of development, asked Guangdong to accelerate, lead and coordinate the development. Nowadays, the Pearl River Delta, regarding as forefront of China's economic development, have resources and ability to implement Advantages integration Strategy, promote industry restructuring and enhance the capability of independent innovation.

First, the PRD's Reform and Development Plan become a good guide for future development.

Lots of existing international industry clusters retains influential centre cities and core industries. Guangdong occupies significant regional advantage in PRD but failed to provide obvious positive radiation effect, resulting in a certain degree of regional difference (see Figure 5). Centre government pays high attention to Guangdong issues, and the National Development and Reform Commission issued 'the pearl river delta region reform and development plan (2008-2020)' in December 2008, which clearly pointed that pearl river delta area is forefront area of China's Reform and Opening and is China's important economy center. The can be viewed as a long-term strategy to promote the innovation advantage of PRD and exert its leading role influence to the whole China's economic development. Therefore, Guangdong must seizes the opportunity by effective implementation of this plan, setting up a soft platform in southern China to implement Advantages integration Strategy, constructing information, traffic and energy infrastructure, stimulating the formation of industry cluster consists of low carbon industry, electric automobile industry, biological technology industry and opto-electrical industry.

**Figure 5 insert here**

Second, it is more possible to integrate international advanced industrial resources under financial crisis.

With the global financial crisis sweeping through the world, traditional economy power such as United States and United Kingdom were greatly impacted. The financial crisis also impacts the China's economy, and as the forefront of the domestic economy, PRD faces great pressure for development. However, the financial crisis also brings rare opportunities. Firstly, it is good for attracting international human resources. One direct consequence of financial crisis is large-scale layoffs in developed countries which provide PRD great opportunity to get high-end talents in financial sectors with lower cost. PRD provides good living conditions and flexible favorable policy for domestic and foreign financial talents, especially for those Chinese who used to work in top financial firms and were laid off due to financial crisis. Secondly, financial crisis promote PRD to efficiently gather overseas financial capital. The financial crisis caused great impact on capital market in developed countries, sharply reduced the return of investment, while many financial institutions facing great loss and considering where capital should to be transferred. Compared with other economy entities, China still retains significant growth rate and have relatively reasonable institutional design. It is possible for PRD to strengthen credibility of capital safe and absorb overseas overflow capital. Thirdly, the spread of aging trends and increasing environment pressure of developed countries, combined with gradually improved investment environment of developing countries, pushes the developed countries deliver high value part of industry chain to developing countries. It is possible that the new international economic environment offering the Pearl River Delta great opportunity gathering international advanced industrial resources for further development.

Third, The Asian Games stimulate the Integration of PRD regional economy.

The 2010 Asian games not only provide the catalyst for Guangzhou development but also for the regional economic integration of PRD, which will benefits people in PRD and Guangdong province. Guangzhou Asian Games give more than glory itself, furthermore, it will also promote the economy fusion between Guangzhou and PRD. In Asian Game, boxing will be held in

Foshan, weight lifting in Dongguan, yachting in Shanwei, plus University Games in Shenzhen at 2011, all brings new opportunities for metropolitan development in PRD. More importantly, the correlations and economy interactions among urban agglomeration will be further strengthened. "Asian Games economy" is expected to stimulate the development of Guangdong and south china region.

Fourth, the ideological liberation enhances the soft power for PRD Advantages integration.

Guangdong is the pioneer of China's reform and opening up, and a hometown of China's theoretical innovation. Since the China's reform and opening up, many landmark theory innovations were put forward for the first time in Guangdong. Under the guidance of these theories, Guangdong led the reform and development in China and realizes the historical great leap. Currently, Guangdong has arrived at a crucial period for scientific economic and social development in the future.

The "ideological liberation" provides strong support for implementing Advantages integration Strategy. Firstly, integration of "thought advantage". The new ideological liberation emphasizes that Guangdong province should learn the experience and practice from other provinces and other countries with broad mind and open vision. This will help to integrate the advantage of thought, break thought routine, and have mind of activeness and sense of responsibility. Secondly, integration of institution advantage. The new round of ideological liberation activity promotes all kinds of work. As the forefront of China's economy, PRD could implement advantages integration Strategy, becoming a pilot project in transformation of regional economic growth. Thirdly, integration of culture advantage. "Ideological liberation" explicitly pointed out that it is important to use the view of scientific development and build harmonious culture, which will be good for integrate culture advantage. By introducing and learning advanced culture, influencing every sector in the society, educating the entrepreneurs and government officials, cultivate people with good moral sentiment, the social development and economic transformation could be speeded up.

#### **4 The principles for Advantages integration Strategy in PRD**

The advantages integration of Pearl River Delta means: Under the guidance of a developmental objective and strategy, PRD makes effective use of its resource endowment and improves its soft factors such as institutions and leadership, so as to improve its integration capability and create an attraction effect for external resources; then, through the connection of geography, information, investment and trade, the economy explores, operates, and integrates the internal and external Developmental Factors Advantages (DFA) from all over the world through different methods, while gradually accumulating crucial advantages and promoting the realization of the coordination effect of advantages. Through this process, the PRD and its cooperative partners improve its competitive capacity to realize high-quality and high-speed development.

**Figure 6 insert here**

**Table 1 insert here**

Normally, the process of advantages integration is: First, excite the inner core of integration (composed of resources endowment, institution, strategy and leadership), build up economic field effect, to achieve inner attraction to global developmental factor advantages. Second, overcome the barrier of resource utilization and achieve integration creation by artificial integration. Third, promoted by market power, initially improved advantages (financial advantage, for example) will pull other advantages to achieve integration increment. If the pulling-up effects of advantages are strong enough, the nation can even obtain continuous power for development. On the other hand, however, if the effects are not so strong, the nation must take active and continuous actions to excite the inner core, and carry out new rounds of advantages integration (see fig.6). We think that scientific development is not simply exploiting its own comparative advantage, but integrate advantages actively from worldwide. Although the initial resource endowment does have

effect on economic development, this is not dominant. In the case of Pearl River Delta, the main method for advantages integration is shown in fig.7. First, upgrade leadership of advantages integration; second, formulate the strategy and plans; Third, mobilize main economic powers to implement advantage integration; Fourth, seek for the optimal partner; Fifth, build evaluation indexes of advantage integration; Sixth, carry out whole-society advantages integration process.

### **Figure 7 insert here**

In the future, the advantages integration in PRD should follow principals below.

First, 'advantage' rule. The advantages integration in Pearl River Delta must focus on high-end advanced resources, instead of common or low-end resources; Second, 'integration' effect. By Advantages Integration, PRD should ultimately build up an advantage structure which is much more superior to original comparative advantage. Third, multi-winning and sustainable development. The advantages integration of Pearl River Delta must not rely on predatory and blind competition, but should rely on bidirectional and multidirectional integration which are based on cooperation and multi-winning. While PRD utilizes others' advantage resources, the others should also integrate PRD's advantage resources, just like the two sides of a coin. For example, when PRD integrates high-tech from the world's top 500 companies, it can also create huge economic profit to these companies, accelerating their development and realize mutual benefit. Fourth, comprehensive 'integration'. Since PRD is a complete economic and social system, it is crucial to integrate advantages in every aspects of the development.

## **5 Conclusions and Suggestions**

These new situations require us to implement the view of Scientific Development, government report and PRD reform and development plan, and build a world-class metropolitan region, so that inject new vitality and power

to PRD's development. According to the principle of Advantage Integration, this article suggests that PRD should form a platform to absorb international resources, establish independent innovation system, promote core cities to become important international windows, such as Guangzhou, Shenzhen and Foshan, build multi-level industries group, and try to become a leading powerful engine for the whole nation's economic development.

For the aspect of integrating advanced industrial resources, firstly, PRD should give priority on the modern service industry, supporting the deeply cooperation of modern service industry among regions of PRD, Hong Kong and Macao, focusing on exhibition industry, logistics industry, IT industry, business services industry, outsourcing services industry, cultural and creative industries, headquarters economy and tourism industry. Government should support Guangzhou and Shenzhen to construct regional financial center and multi-level capital market system. Secondly government should speed up the advanced manufacturing industry. Take advantage of the existing infrastructure and port condition, the PRD should focus on modern equipment, automobile, steel, petrochemical and shipbuilding industries, and go along a road of new industrialization. Establish large-scale petrochemical industry base, general-purpose aircraft industry, new energy industry, fine chemical industry and pharmaceutical industry to form new economic growth points. Third, coordinate the development of old and new industries. On one hand, it is important to develop independent innovative industry, establish important high-tech industry cluster in the world, and guide the resources to the advantage region and industry bases; on the other hand, it is also very crucial to upgrade the traditional advantage industry. The value of export products should be improved and the proportion of self-brand products should be enlarged. We should also accelerate low-end and high resource and energy consumption industries to quit from the market by raising entrance threshold. It's also quite important to develop modern agriculture industry. According to the requirement of high-yield, high-quality, high-efficiency, ecology and safety, speed up the transformation of agriculture development mode, optimize agriculture structure, and build urban and export oriented and agriculture

system.

In summary, according to regional development characteristics, the following five Advantages Integration actions must be done.

First, integrate advanced industrial resources. We should put priority on the growth quality and efficiency. Since Guangzhou and Shenzhen have significant competitive advantage, these two cities should integrate the advanced industries (advanced manufacturing and modern service industry) from developed counties, by which upgrade traditional advantage industries, transform the backward industries and enhance the international competitiveness. Integrate international financial advantage and develop small and medium-sized enterprises, promote the upgrading of the industrial structure. Change the passive development minds to more active and innovative minds, try to innovate development mode. Strive to build resource-conserving and environment friendly society, achieve the requirements of clean, safety and sustainability.

Second, integrate the best technology resources. Science and technology is the first productive force. Advantage Integration Strategy emphasizes independent innovation and technology transfer, and put technology as a prior position for development. PRD should integrate the most advanced technology resources, integrate the universities and colleges resources, and promote university-industry cooperation, employee education, distance learning and various kinds of innovation.

Third, integrate the best international resources. We should integrate resources from overseas, implement internationalization strategy, improve the degree of opening up, promote the coordination domestic and international economy, and enhance the effectiveness of "bringing in" and "going out" strategy with a global vision. PRD should integrate resources of the multinational companies, provide attracting policy for their headquarter and R&D centers, further strengthen cooperation with Macao, Hong Kong, ASEAN Free Trade Area, focus on value distribution of international industry and undertake the high value-added industries' shift, such as software industry.

Fourth, integrate the best optimal environment conserving resources. PRD should develop high quality real-estate industry, and promote high-tech environmental industry. For example, PRD should promote suitable residential projects, such as ‘Pearl River New City’, ‘Travel City’ and ‘Orient Charming City’, attract external resources and foster green energy industry and cycle industry, promote natural ecological environment system, and improve sustainable development ability.

Fifth, integrate the best culture resources. PRD should promote southern culture industry, guide healthy consumption and entertainment habit, pay more attention on the social development, strengthen the social management and social interest coordination, care people's life, safeguard social fairness and justice, carry forward the national spirit, promote extension of spiritual civilization activities, and improve the urban civilization. Keep stability of the society, and build a PRD of “Rich, Fair, Active, and Safe”.

Nowadays, PRD has entered a new era to transform the economic growth mode. With the right guidance of CPC and government, PRD should get rid of Comparative Advantage Strategy and implement the Advantage Integration Strategy, seeking for high-level partners, introducing top multinationals, developing high-end projects, absorbing high quality human resources, cultivating high-level self-brands, finally realize scientific development, harmonious development, and high-quality-speed development.

Figure 1 The economic take-off in Guangdong Province (1978-2008)

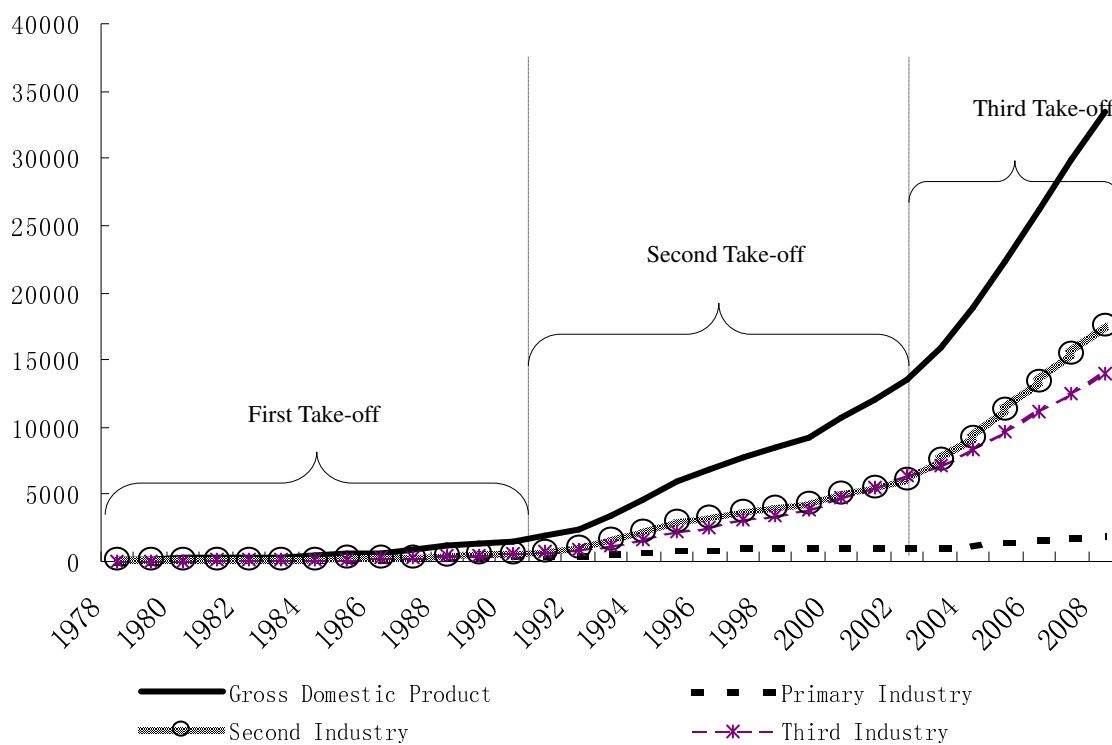


Figure 2 Consider the demographic factors of the Guangdong Provincial Economic Indicators

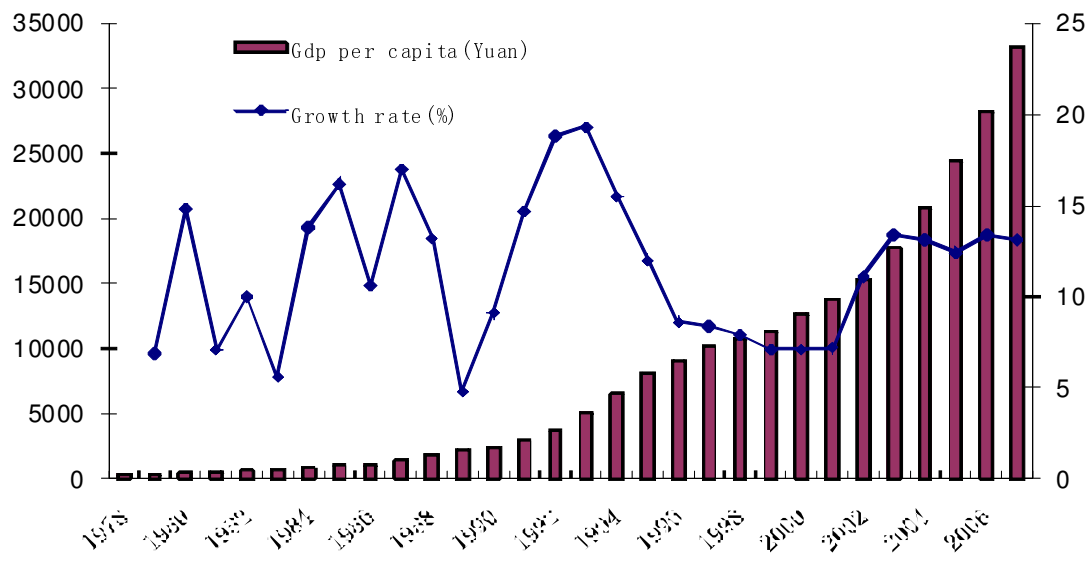


Figure 3 The main energy consumption statistics of Guangdong Province(daily average)

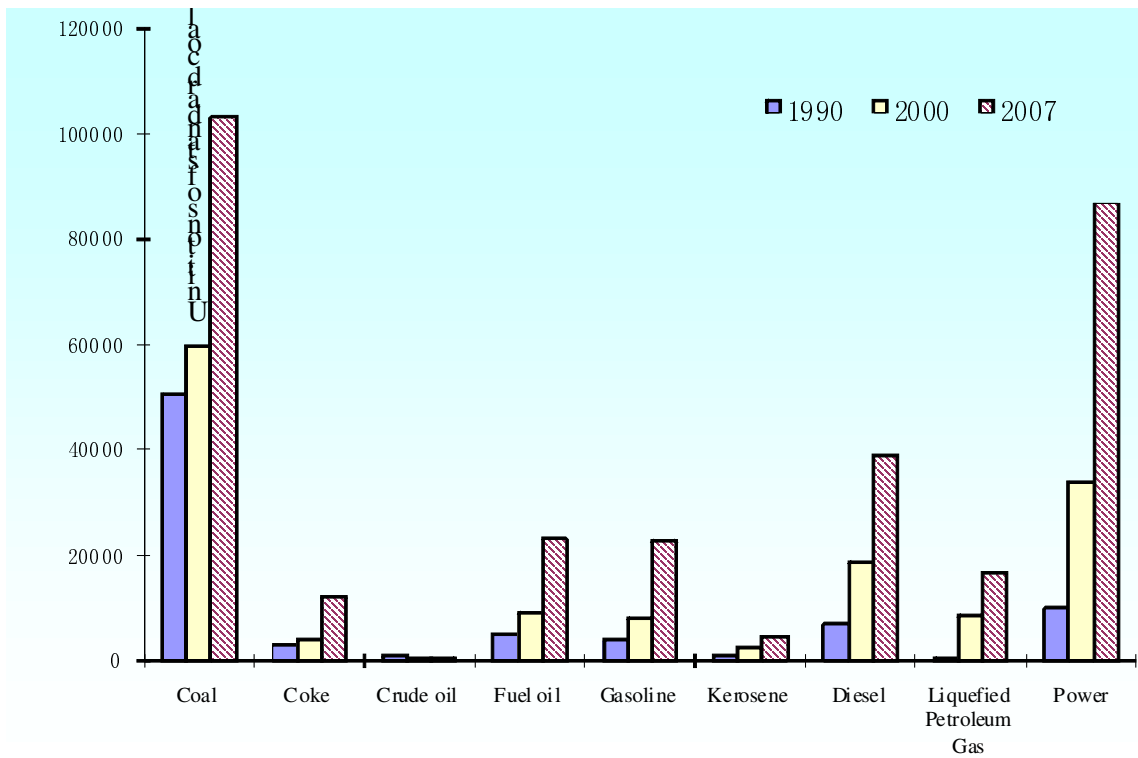


Figure 4 the value jumped map of the international industrial chain

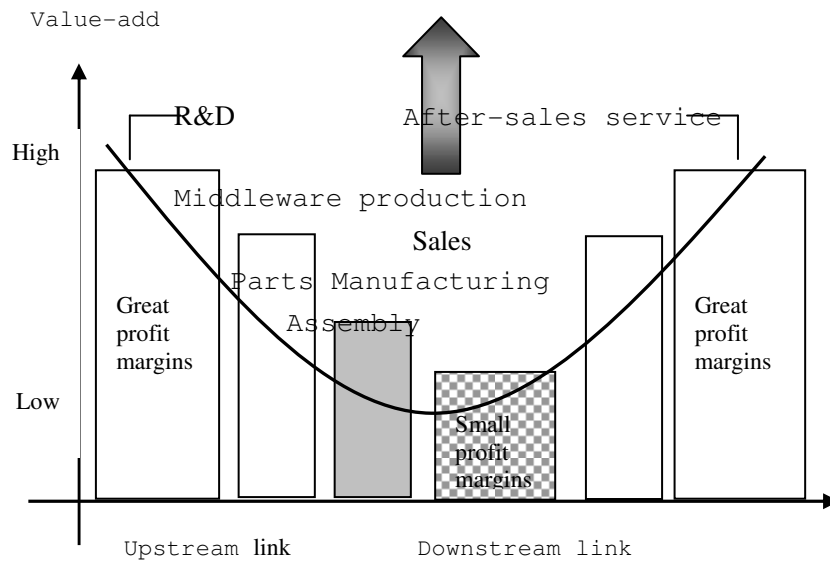
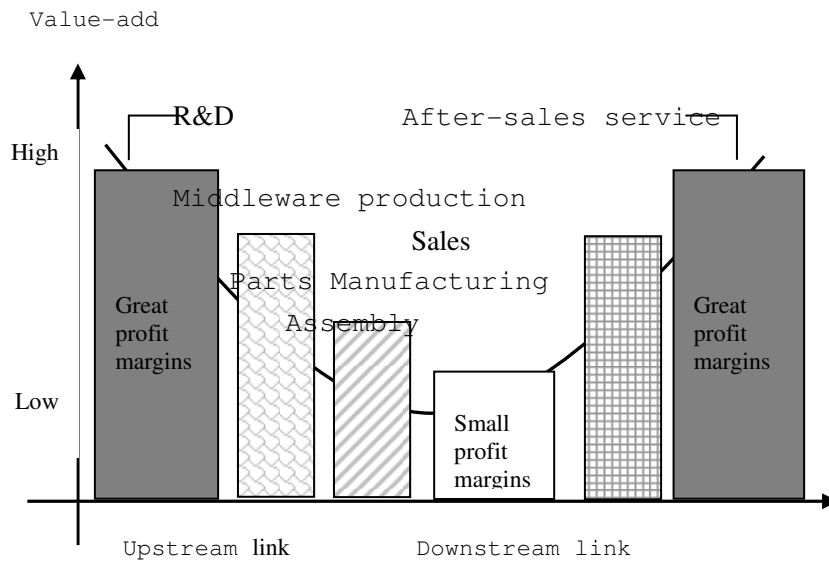


Figure 5 The Scatter indicators of the regional economic differences in Guangdong Province

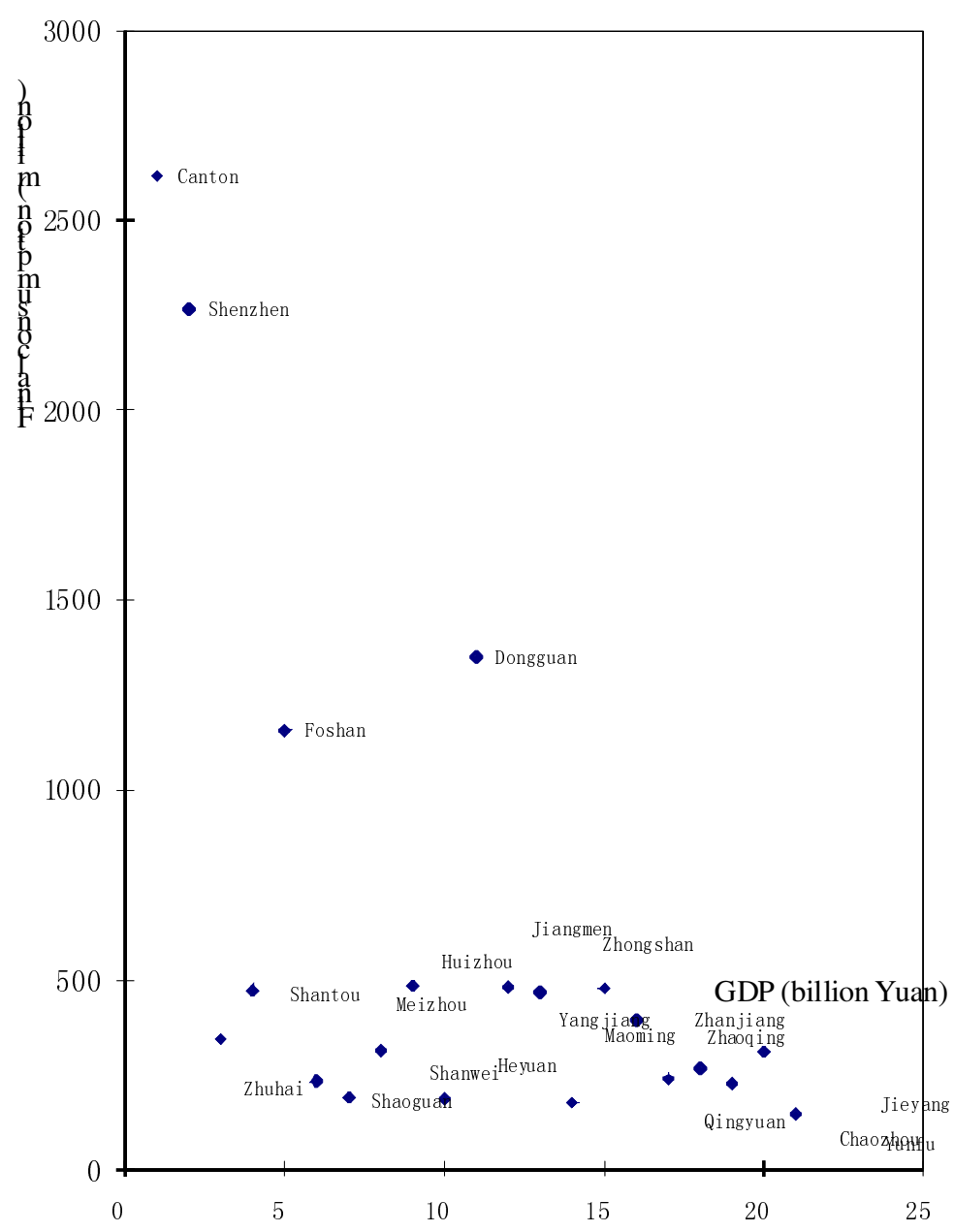
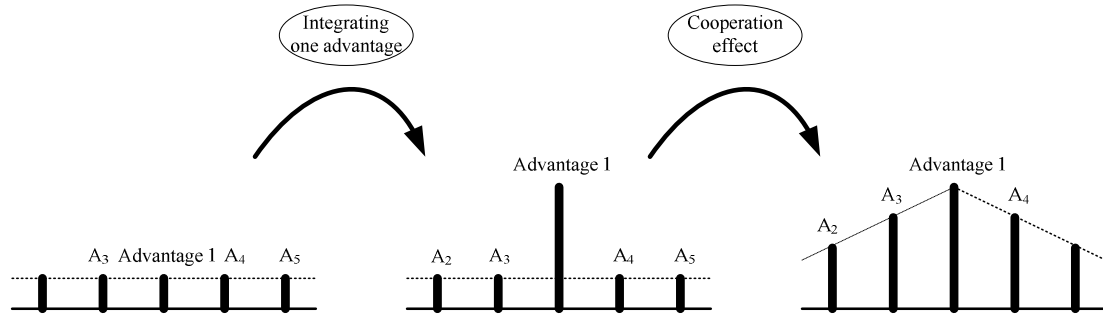


Figure 6 The framework of the Advantages integration Strategy

(a) Integrate one advantage



(b) Integrate two or more advantages

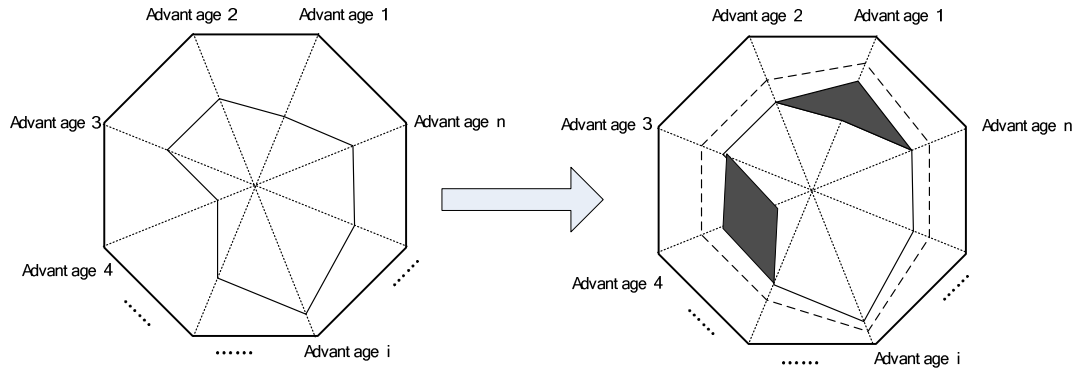


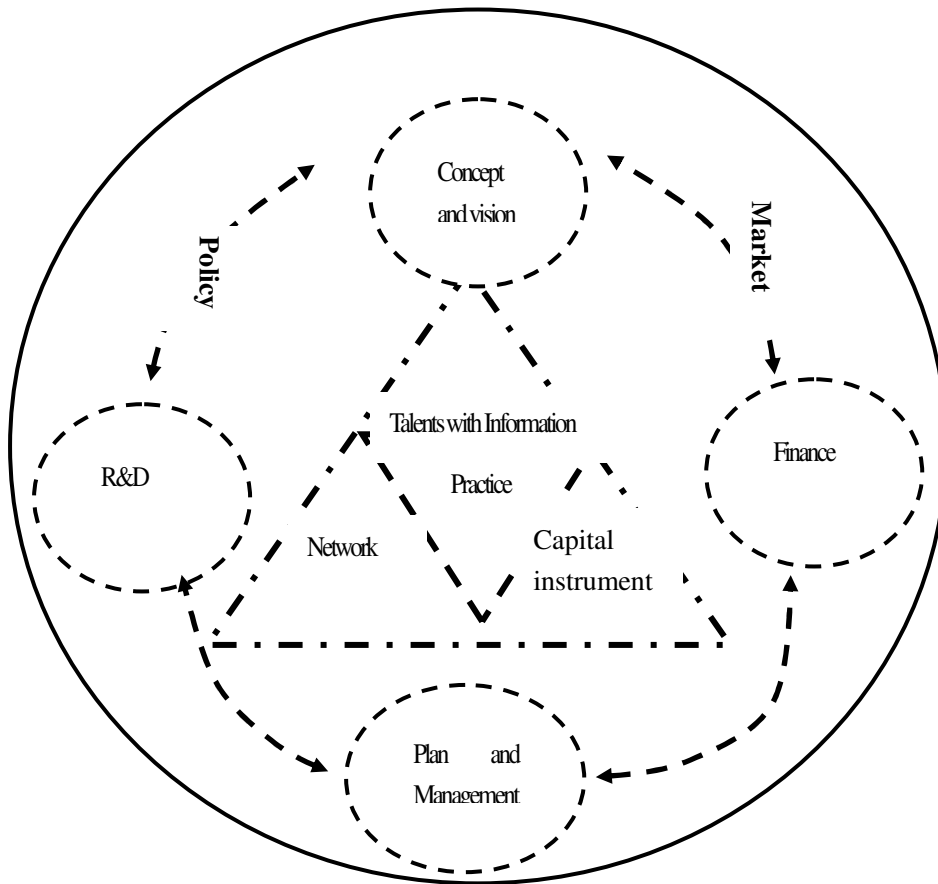
Table 1: The dominant industries in the Pearl River Delta region (2008)

Industry	Area	Industry	Area
Coal mining and coal industry		Chemical materials and chemical products industry	Guangzhou, Huizhou
Oil and gas exploration industry	Shenzhen	Pharmaceutical manufacturing	Zhuhai
Ferrous metal industry	Zhaoqing	Chemical fiber manufacturing industry	Zhuhai, Jiangmen
Non-ferrous metals industry	Zhaoqing	The rubber products industry	
Non-metallic industries	Jiangmen, Zhaoqing	Plastic products industry	
Other mining industry		Non-metallic mineral products industry	Foshan
Agricultural and sideline products processing industry		Ferrous metal smelting and rolling processing industry	
The food industry	Guangzhou, Jiangmen	Non-ferrous metal smelting and rolling processing industry	Foshan, Zhaoqing
Beverage manufacturing	Canton	Fabricated metal products	Jiangmen, Zhaoqing
Tobacco industry	Canton	General equipment manufacturing	
Textile	Jiangmen	Special equipment manufacturing industry	
Textile and garment, shoes, hat manufacturing	Zhongshan	Transportation equipment manufacturing	Canton
Leather, fur, feathers (down) and its products	Zhaoqing	Electrical machinery and equipment manufacturing industry	Zhuhai, Foshan
Wood processing and wood, bamboo, rattan, palm, grass	Zhaoqing	Communications equipment, computers and other electronic equipment	Shenzhen, Huizhou
Furniture manufacturing	Dongguan	Instrumentation and culture, office machinery	Zhongshan
Paper and paper products industry	Dongguan, Zhaoqing	Crafts and other manufacturing	
Printing and reproduction of recorded media		Waste of resources and waste material recycling industry	Jiangmen, Zhaoqing

Cultural and educational sporting goods manufacturing	Dongguan, Zhongshan	Electricity, heat production and supply industry	
Oil processing, coking and nuclear fuel processing industry		Gas production and supply industry	Zhuhai
		Water production and supply industry	

Source: Guangdong Provincial Bureau of Statistics website. <http://www.gdstats.gov.cn/>

Figure 7 The schematic diagram of the advantages agglomeration in Pearl River Delta



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