

# Why Are China's Regional Economic Development in Provinces so Different?

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In 1978, China under Deng Xiaoping's reform and open-door policy, China's gradual establishment of state-owned enterprises (SOEs) are dominant and diverse forms of ownership developing economic system in China. Nowadays, with Taiwan and China following different development paths, foreign direct investment (FDI) and capital accumulation playing being the core aspect of these paths. With the enhancement of national work division, FDI becomes the critical force to implement economic globalization and economic development in different countries. Since the implementation of economic reform and liberation, the influence of foreign capital and technologies on economy in China becomes an important issue. According to the economic figures of the provinces (cities) in China from 1998 to 2012, this study constructs an open inner growth model. Infra-structure affects FDI in both direct and indirect ways. If the construction is more perfect to ensure that the production and transport of a large number of products, Enhance more consumption and market demand; on the other hand, manufacturers and thus increase production, these two aspects can attract more FDI. Research findings show that human capital, research and development (R & D) investment and capital in China have grown and significantly contributed to economic development.

*Keywords:* open-door policy, FDI, capital and technological, infra-structure, economic development

## Introduction

In recent years, the opening of China has attracted increasing amounts of foreign direct investment (FDI), spurring on its economic growth. The achievement of China's economic development has led to worldwide attention. Industrial capital, human capital, and technological progress play a pivotal role in economic development, along with scale and distribution of investment. Advances in production technology can bring an increase in output, contribute to sustained economic growth. Countries that do not have the capacity for research and development (R & D) and innovation must obtain foreign technology to maintain competitiveness and achieve economic growth. However, the relative lack of domestic capital can be offset by the introduction of FDI. FDI can ease resource constraints, potential for breaking the cycle of poverty, can improve the market, and thus, improve the overall productivity of the country. With the deepening of the international division of labor, FDI has become a driving force for economic globalization, and within individual countries, an important

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for economic development.

Unlike the failed Soviet-style economic “shock therapy”, China’s economic reforms in 1978 marked the beginning of the importance of FDI in economic growth. Mainland China’s implementation of economic reform and opening up attracted a large amount of investment from Hong Kong, Macao, and Taiwan, accompanied by a large influx of capital and foreign technology. Thus, China’s economic development has become the focus of world attention. Based on data from provincial data 1998-2012, this article uses of regression analysis and an endogenous economic growth model which includes human capital accumulation, domestic R & D as well imported technology. The study found that the quality of human capital in China, domestic R & D investment, capital accumulation all increased and had a significant impact on economic development. The study looks at the effect of infrastructure on FDI. The effect of improvements in provincial infrastructure include increasing economies of scale resulting in lower transportation costs, improving market demand, and reducing costs, thereby increasing the productivity of firms, which attracts more FDI. This study can help readers understand that the introduction of FDI combined with strengthening the infrastructure of a region can enhance competitiveness and productivity, and thus, improve the country's economic growth and national well-being.

Recalling the past century, the turbulence China experienced during the late Qing Dynasty, the territory ceded to foreign powers, feuding warlords, and other dramatic events resulted in hostility towards imperialism. People in China desired a strong central government to achieve national unity and stability. After eight years of Republican rule, intellectuals led by the May Fourth Movement, looked to foreign ideologies in the hope of finding a suitable development model for China. Mainland China and Taiwan’s economic development differ from Western experiences, and the application of Western growth theories to China’s development seems out of place. Because of China’s long history, population and lifestyle update its internal, non-real achievable in the short term. Before the Opium War in the 1840s, China’s policy of seclusion and xenophobia caused Western powers to arrive and ravage China, which produced a series of problems. Understanding these issues is essential to comprehending modern Chinese history.

Liberalism argued that if Third World countries were improved their own domestic internal problems, and sooner or later, they would be able to catch up with the developed Western countries. In 1960’s and 1970’s, Western countries began attaching requirements to financial assistance obligating recipient countries to make structural adjustments. The international experience of the late 1950s to the 1990s indicates the growing role of FDI in a country’s economic growth, and thus, a new complex foreign economic growth theory must be introduced to analyze the results. 1980 was a turning point in terms of FDI theory. During the previous two decades, various theories of FDI theories formed which can be broadly classified as “non-perfect market theory of structural school” (structural market imperfection). The post 1980s period saw an acceleration of global economic integration and regional economic grouping process. FDI theory evolved to reflect these changes, mainly through the “non-perfect market theory of natural school” (nature market imperfection) and later “eclectic” (eclectic theory) becoming the mainstream. Dependency theory explained why the periphery economies cannot be developed. According to dependency theory, under the international economic system the core and the periphery countries are linked in a relationship in which the periphery countries cannot escape, and the core press for complete control of natural resources, multinational corporations is a good example. However, as the role of FDI in promoting economic development in host countries becomes increasingly significant, more and more scholars will be introduced to FDI on economic growth and international expansion of the theory, the

study of FDI will gain greater notoriety.

Most existing studies have focused on the motivation of economic factors in FDI. Economists test size and other characteristics of the host country markets, and the nature of multinational companies or overseas investment factors to explain the decision making process. Their research shows that within host countries, the size of the potential market, the level of economic development, as well as economic growth have an impact of FDI. Previous studies rarely focus on domestic political instability, national institutions, international politics, etc. Until recently, bilateral investment treaties have attracted sustained attention, so the author focused on international factors, especially trade agreements. Mao Zedong and the Soviet Union adopted a five-year plan for industrial development, rural agricultural support, and, industrial development of the city. After the Chinese/Soviet split in the 1960s, in addition to a number of Eastern European countries and from the outside, China transformed into a closed economic system. In recent years, China has opened its economic system to multinational companies to come and invest, with the hope it will spur economic growth. The achievement of China's economic development has led to worldwide attention. Unlike the failed Soviet-style economic "shock therapy", China's economic reforms started in 1978 marked the beginning of the importance of FDI in economic growth. The main purpose of this paper is to test the open doctrine's contribution to China's economic development by examining contemporary inward investment into China and local infrastructure. This paper begins with an overview of the history of China's opening up and economic reform, followed by an examination of the empirical model used to analyze the resulting data and statistics during the opening up period, and finally the paper will conclude with a summary of the findings.

### **Literature Review**

Zhou Zhenhua et al. (2012, pp. 311-333) believed the regional economic growth problem is derived from following factors:

1. Non-homogeneity of space;
2. Transportation costs are greater than zero;
3. The restricted production scale of rewards;
4. Scarce resources on how to achieve the optimum distribution;
5. Different geographic regions reflect different economic growth.

Hope and Hu (2006) pointed out since the reform era began in 1978, steady progress has been made in transforming the financial system, despite which some core problems of the financial system remain unresolved.

Huang (2003) detailed three prominent institutional characteristics of the Chinese economy shape FDI patterns in China. Firstly, China's financial system allocates resources according to a political rather than an economic pecking order of firms. At the top are the inefficient state-owned enterprises (SOEs) and at the bottom are the most efficient private firms. Secondly, China's legal system offers poor protection to private firms. Thirdly, there is substantial fragmentation in the Chinese economy. Local governments restrict trade of goods and flows of capital to other regions. Domestic capital mobility across regions is especially low. These three characteristics have affected China's FDI patterns profoundly.

Professor Brantley Womack's research focused on investigating and exploring different themes in China's economic development, trade, and decentralization since 1978. This includes foreign trade, import and export, FDI, three to fill, retention, and other broader issues. Womack's analysis of the main issues in China is as

follows (Womack & Zhao, 1994):

1. The economic development of economic decentralization saw increased regional autonomy, fiscal management rights, and responsibility for the economic development of the provinces. Still, some areas are limited by the central government however most have felt the effect of increased autonomy.

2. Decentralization resulted in the diversification of economic activities between provinces. Under the previous plan, there was no diversity among provinces; all economic activity was planned where each province's behavior was uniform. It was as if 31 provinces acted as 31 countries. Increasing provincial autonomy allowed for differences to emerge.

3. Varied provincial economic behavior, focused on foreign trade, with political implications reflecting decentralization. The author believes this will not cause division in the short term future of China.

Professor Shigeru Ishikawa (1983) pointed out that Western economists interested in economic analysis of contemporary post-Mao era China no longer use the Mao era centralized planned economy model, instead their analysis are characterized by non-centralized and market-oriented (referred to as "reform" policy) features.

Cheng-Gang Xu (2011, pp. 10-21) believed solving the structural problems of the Chinese economy can only be done through reforming the system. He thought institutional issues are at the root of poverty and underdevelopment, whether long-term development of China's economy can continue to depend on China's ability reform or not.

Wu Jin and Li Zhaohui (2009) thought that the interests among the various sectors within a country are similar among socialist countries and are determined by the institutionalized socialist system. Contradictory policies, lack of development is largely caused by the inappropriate direction of development. Through in-depth political and economic reform effective changes to the modes of economic development can be made, and only through this method can these conflicts can be resolved. The growing dependence on foreign trade to China's economy is placing increased significance on the transformation of China's foreign trade development strategy to build an innovative and harmonious society, particularly in the context of the current global economic crisis. Since the reform and opening up, China's export-oriented economy has attracted FDI in pursuit of higher gross domestic product (GDP) under the new economic growth model. This export-oriented economy has greatly enhanced China's economic development and brought a prosperous Chinese economy. From the perspective of sustainable development, China should not rely on foreign trade, but should change the development model to further promote the "science and technology are enhancing trade" strategy. This includes improving innovation capability, optimizing trade structure, accelerating the transformation of foreign trade, and using technology and innovation to improve the economy.

Professor Lin Teh-Chang explored how the globalization process has gradually dismantled the barriers to trade and capital flows between countries. Advances in technology, transportation, communications, and the decline of other expenses have gradually formed a global village. Globalization has brought worldwide economic growth; improve living standards, economic innovation, a diffusion of technology, and management skills, as well as new economic opportunities for individuals and nations. However, these benefits and new opportunities have been highly concentrated in a few countries. The result has been the expansion of urban-rural wealth gap (Lin & Wang, 2007, p. 8). Lin also pointed out political, economic, and social factors associated with the working environment of the Danwei system of the SOEs since the 1950's. In politics, party ideology was indoctrinated and monitored rigorously through the Danwei system. Economically, staff wages by working to obtain compensation. In society, Danwei units served the function of providing social security for

workers and welfare. In the political and social aspects, the impact of the Communist Party of China cannot be ignored (Lin, 2001, pp. 473-505).

Using Chinese provincial and municipal economic data between the years 1998-2008, Lin Chi-lin constructed an open endogenous economic model incorporating human capital, capital accumulation, domestic R & D investment, as well as multinational corporate capital stock. By implementing human capital as a measure of domestic technical capacity, linear regression models were used to examine the effect of foreign investment and its relationship with China's economic development. This paper extends that study by using the People's Republic of China's (PRC) economic data for the period 1998-2012. The economic growth model contains human capital, capital accumulation, domestic R & D investment, multinational corporations capital stock (Lin & Weng, 2011, pp. 79-93).

Since the 1980s, educational reforms in China have decentralized administration and finance and privatized costs. These changes have emerged in the context of rapid economic growth and rising regional economic disparities. The reforms have mobilized new resources in support of education, but they have also exacerbated regional disparities in funding for schools (Hannum & Wang, 2006). Their results attest to the enduring significance of geography as an educational stratifier in China. More broadly, results suggest the importance of regional inequalities in conditioning the relationship between development and educational stratification.

Zhang and Kanbur (2005) used data from different sources to presents some basic facts on the evolution of spatial inequalities in education and healthcare in China over the long run. In the era of economic reforms, as the foundations of education and healthcare provision have changed, so has the distribution of illiteracy and infant mortality.

Heckman discusses human capital investment in China. China's policies favor physical capital investment over schooling and urban human capital investment over rural human capital investment. Migration policies discriminate against children of migrants. A more balanced investment strategy across rural and urban regions and types of capital is appropriate. Private funding for education through tuition and fees should be encouraged and can supplement government funding and make schools more financially self-sufficient. Heckman's (2005) view pointed out, if this policy is enacted, capital markets for financing education need to be developed to avoid discouraging students from poor families from attending school.

From the literature, we found that economic development of FDI includes:

1. Through stimulating investment, import, and export ... and other demand-side factors;
2. Push technology externalities, supply-side factors, such as labor....

Most of the early research started from the first level, utilizing growth models containing output, consumption, investment, import. But as human capital increases, the growth of technology, and the advancement of new biochemical industries impact theory, more and more research has focused on exploring the technology spillover effect of FDI.

### **Privatization**

After three decades of reform, China's economy has experienced the world's most prosperous period. Although most of the privatization of agriculture and light industry, the state still controls some heavy industry. Despite the dominance of state ownership in financial, telecommunications, private entrepreneurs continue to expand powers previously reserved for the public sector enterprises.

Before the reform, China's poor agricultural performance, food shortages usually happened. After Deng Xiaoping implemented the household responsibility system, agricultural output increased. Increase agricultural productivity allows workers to be released to the industrial and service-sector, while agricultural production has also increased. Agricultural trade is also allowed and China become food exporter, and great contrast to former famine and shortage age. Before the reform, industrial severe stagnation and the socialist system had few incentives to improve quality and productivity. With the dual-price system and greater autonomy for enterprise managers, productivity increased greatly in the early 1980s.

Foreign enterprises and township and village enterprises established newly by the local government and private enterprise, in fact, competing with the SOEs successfully. Up to the 1990s, large-scale privatization not only reduces the market share of township enterprises and SOEs but also to increase private sector market share. Foreign capital controls China's industrial and play an important role gradually.

### **Uneven and Unequal Development**

There are 31 provinces in mainland China. Whether the production division of labor between provinces or not? Whether economic integration? Have comparative advantage in production process or not? Kumar accorded to two aspects and made conclusions, after mainland China's reform and open-door policy, and had no economic integration between those provinces. Kumar (1994, pp. 99-130) pointed out that after 1978 in China, the mainland's economic reform and the internal division of labor, in view of the market economy, the forces of liberal market work through economic integration, the market has a comparative advantage in production is the cheaper labor in China.

1. The production structures: Regional specialization on comparative advantage and regional production division;

2. Domestic trade between provinces;

3. The result is that there is not economic integration in China.

In terms of the production structure, industrial structure is very similar between the provinces, or is very high homogeneity. There is a provincial interval competition, but not production division in China. Only competing with each other, and no specialized production, cellular structure as the nucleus of the same production structure, similar products, resemble production of the product content. Between provinces, to pursue their own economic development, there is only competing, but no specializing in production.

Yang (2012) pointed out, China's raw materials concentrated in inland provinces, factories and industries are mainly located in the coastal provinces. Allocation of resources is cyclic pattern, and is a planned economy way. Foreign trade can make rapid economic development in provinces, exporting production to earn foreign exchange. Under the early planned economic system in China, the internal allocation of resources is cyclical. Raw material exported from inland provinces to coastal provinces, while coastal provinces made finished products, and then, sold back to the inland provinces. Profits are left in the coastal provinces. Government made adjustment; by the way, companies could not make profits. Central government controlled economic development through the planned economy.

But the situation changed after the reform. Development of coastal provinces getting better and better, and inland provinces could not keep up with the development of and coastal provinces. Inland provinces have to develop the economy; of course, there are still domestic trades in China. The coastal provinces provided help to build factories further more could develop industry in inland provinces.

Since 1978, every provinces entrance foreign trade under the circumstances. Pursuit of industrial production, inland industry also began to develop. Provinces appear cellular structure of the production structure, products' homogeneity are also very high. Competition among provinces was the industry characteristics in China. This is the Kumar's first variable operation.

The second operation variable is China's domestic trade. Domestic trade and economic integration related is that when domestic trade higher, representatives of regional economic integration, the better. When the domestic trade was lower, representatives of regional economic integration were worse. Kumar pointed out that China's domestic trade were low. Industrial products were high homogeneous. Representatives of regional economy were not integrated and provinces' industry was not specified in production.

Competition among province set up barriers to protect their own industrial development. Domestic trade is less and less, and to increase in foreign trade volume. When the domestic trade is high, displaying that there is relative advantage in production. Industry has a labor division and complementary products. If the product is not complementary but substitutive, economic between provinces are mutually conflicting. Industry homogeneity is high, low domestic trade, and on behalf of the provinces of economic integration did not succeed. Five southwestern provinces and seven cities did not integrate successfully before. But from a planned economy to market economy, every provinces continue to attract foreign investment and formed competitive situation to each other between provinces in China.

Regional inequality is an important issue, since the PRC was founded in 1949, primarily as a result of its role in the debate on centralized control and regional local autonomy and resource allocation problems. Since the 1978, economic reforms, China-led development policy have changed from the foundation of self-reliance policy on the basis of comparative advantage and to the open-door policy. Rapid economic growth has eliminated the poverty in urban and rural areas in China; in fact, greatly increase the standard of living than the pre-reform era. After the economic reform, China has been sharply wealth inequality. The income gap between regions, especially one of the major problems faced governments, because it reflects the unequal opportunities between regions and could endanger national unity and social stability. Exacerbate inequalities due to the disappearance of the welfare state and the differences between coastal and inland provinces, the state-owned sector of the inland provinces saddled with larger social responsibility budgets.

Issue of labor migration, resource allocation, and intense relationship between the local government has prompted policy arising importance of considering regional inequalities. Changing patterns and since the establishment of the PRC in 1949, through the reform period, focusing on the basic factors of regional development and inequality in China. When the founding of New China, Chairman Mao Zedong and the Chinese Communist Party (CCP) is facing the problem of uneven development of China's poverty. Mao Zedong affected socialist ideas and the concept of equality, trying to develop the backward inland regions to reduce regional inequalities. He also emphasizes the internal regional development, while encouraging the development of coastal areas.

Since the late 1970s, China has undergone dramatic reforms and profound changes. Gradient theory—a Chinese version of the growth pole and inverted U-shaped theory, government encourages some areas “get rich quick” effect, which emphasizes the development of coastal areas. China's centralization and specialization requirements to accelerate economic growth, the more developed coastal areas from spillover to neighboring provinces, to stimulate the overall prosperity of the country reached. China's reform policies, such as in the 1980s, the policy of reform and opening up and coastal development strategy to provide more preferential

policies in some coastal areas. Supporters of uneven development policies argue that these policies stimulated rapid economic growth without incurring huge regional disparities, as opposed to reforms, including rising income gap between regions and social problems arising from social unrest in China. Millions of rural workers migrated to the coastal cities chasing up employment and the pursuit of better living conditions, this phenomenon makes China's economic reform and considerable attention to spatial policy. Between the central and local governments in the allocation of resources and the development of policy negotiations became very extreme, partly due to poor areas of China consider themselves so careless by the central government.

China's analysis offers other transition economies and developing countries are experiencing similar economic transition process and globalization, provide useful lessons. In China, the central government still plays an important role, global and local forces have also become important forces in shaping regional development. Global, national, and local forces behind the development of regional inequality over time, with different historical and geographical regions have different effects and outcomes. China's transition from a planned economy to a socialist market economy, often compared with a similar transformation in Eastern Europe.

Performance of China's reform has been praised for avoiding Eastern Bloc's major shocks and inflation problems. This success is attributed to the Chinese government's gradualist and decentralized approach, making China's development trend of replacing the planned economy to the market economy. In contrast, the "big bang" approach to rapid employee buyouts privatization of the state sector of Eastern Europe, but retained the earlier, inefficient management. Other factors could explain these differences, including differences in the greater urbanization, social welfare systems, and other institutions. Another argument is that the economic changes, political changes in Eastern Europe, it is impossible to reform gradually, so the shocks and inflation were inevitable. China's economic growth has been compared with other developing countries, such as Brazil and India. GDP growth in China goes faster than all other developing countries.

Scholars generally believe that high rates of investment, in particular to increase the per capita funding, contributing China's superior economic achievements and performances. China's relatively liberal economic system, with less government intervention and regulation, are also important factors compared to other developing countries respectively (see [http://en.wikipedia.org/wiki/Chinese\\_economic\\_reform#Effect\\_on\\_inequality](http://en.wikipedia.org/wiki/Chinese_economic_reform#Effect_on_inequality)). Regional academic point of view on the temporal pattern of inequality, the role of regional development and the driving force system are very different. Neoclassical economics, the dynamic growth pole, and inverted U-shaped theory that elements tend to flow and spread between the average regional income disparities, while the differences and the effect of structural theory that the jet stream and capital accumulation tends to strengthen inter-regional income disparities. Diversity and plural debate is theoretical characteristics of regional inequality.

Neoclassical growth theory emphasizes the importance of equilibrium and market conditions in the allocation of resources, and that the regional inequalities are transient phenomenon. Emphasis is on supply-side factors, such as the impact of labor, capital stock, technological innovation, that the process of regional economic growth, and reallocation of resources, namely, capital and labor mobility. Growth pole and inverted U-theory may be the most influential in regional development and planning of developing countries. Area under the capitalist system of inequality has been regarded as the result of the accumulation of capital necessary to actively create the capitalist mode of production, intensified, and maintain regional inequality, capital will move to the core, has a high rate of return. Recent work by economists advocated incremental revenue, industry

clusters, and the process of cumulative causation. Endogenous growth theory, capital-rich countries, a highly education, the accumulation of knowledge through learning by doing or technological innovations have led to faster growth. Spatial processes and patterns vary across time and space (vertical and horizontal axis), and caused widespread social, economic, and political evolution of different processes. Although some homogenization of the world, the advantages of global cities, as well as the “global village” appears, people have speculated, others found in the ground of the existence of indigenous globalization and the emergence of new industrial settlements. As we all know, the task of socialist ideology is to reduce social and spatial inequality, especially in the three major differences between urban and rural, industrial and agricultural, physical and mental labor to work. According to orthodox Marxism’s view, in all capitalist countries, there are contradictions and conflicts in these social elements. In such a case, industrial development in the city and is owned by the capitalists. The rural labor force in rural areas called physical labor; they are always exploited by mental capitalists. In view of Marx and Engels, in all regions of a country, all people should have the same opportunity to share resource and development. The less unfairness can be seen as the more developed countries. Unbalanced regional development is considered to be the problem; the policy should be amended to more balanced development pattern. Balanced regional development is often seen as an important symbol of socialism and only under the socialist system can only be achieved. Soviet balanced growth strategy of balanced regional development is a failure case. Instead, compared the China’s gradual approach, Eastern European countries have stressed the “shock therapy” privatization, from socialism to capitalism strategy. This strategy views that free markets and central planning are mutually exclusive, the transition to capitalism, radical reform is necessary. However, the economic reforms in Russia cause significant economic recession and high social costs.

Regional inequality is a big problem, related to ethnic relations, social stability, and political unity. China has undergone significant restructuring and inequality between regions has attracted scholars and government considerable attention. A basic feature of globalization in developing countries, including China, is to increase foreign investment. Foreign investment for regional development, will play an increasingly large impact, and worthy of analysis in China. Regional or provincial inspection conditions, including changes in local and spatial elements, such as the development path, ownership structure, resource allocation, interregional linkages and so on. For the analysis of national policy, including fiscal policy, investment policy, open-door policy, and other policies affect China’s investment distribution and regional development.

Some Western scholars have suggested that the implementation of the revitalization of the welfare state redistribution of income, the income tax system is necessary in order to reduce inequality. Scholars have also stressed the importance of analyzing the impact of economic reforms on economic, political, and inter-provincial spatial range, the study of inequality in intra-province can improve our understanding of regional inequalities in China (Wei, 2013).

### **Foreign Investment**

The socialist market economy of China is the world's second largest economy by nominal GDP and after the United States by purchasing power parity. China is one of the world’s fastest-growing major economy with growth rates averaging 10% over the past 30 years. Since 1980, it has established special economic zones that spread successful economic experiences to other areas in China. China’s investment environment has changed dramatically with more than three decades of reform. In the early 1980s, China restricted foreign investments to

export-oriented operations and required foreign investors to form joint-venture partnerships with Chinese firms.

Encouraged industry clearly listed allowing foreign participation in various industries. From the beginning of the legalization of foreign investment reforms, capital inflows increased year by year until 1999. Since the early 1990s, the government has allowed foreign investors to invest manufacturing sector and sell a wide range of goods in the domestic market in China, the establishment of joint ventures and eliminate time limits in the same time, providing some assurance in de-nationalization of enterprises, allowing foreign partners to become Co-Chair of the Joint Venture Company and to authorize the establishment of wholly foreign-owned enterprises, FDI, the current favorite form.

In 1991, China has given foreign-owned enterprises, cooperative enterprises and foreign enterprises more favorable tax treatment; these companies invest in special economic zones or invest in projects encouraged by the state, such as transportation, energy, and communications. China has also approved a number of foreign banks to open branches in Shanghai and allowed foreign investors to buy some of the company's shares listed on the Shanghai and Shenzhen Securities Exchanges, so-called "B" shares.

These "B" shares of company stock sold to foreigners, but they do not have ownership of the company. In 1997, China approved over 21,000 foreign investment projects and received over \$45 billion in FDI. China also revised significantly its laws on Wholly Foreign-Owned Enterprises and China Foreign Equity Joint Ventures from 2000 to 2001.

Foreign investment is an important driving force in China could rapidly expand their world trade, and also is an important factor of urban employment growth. In 1998, foreign-invested enterprises produced about 40% of China's exports, and foreign exchange reserves summed about \$145 billion. Foreign-invested enterprises today produce about half of China's exports (most of China's foreign investment is from Hong Kong, Taiwan, and Macau), China will continue to attract significant investment inflows.

However, the Chinese government over the boot of FDI into the manufacturing sector, leading to market saturation in some industries, while resulting in early China's service sector underdeveloped. From 1993 to 2001, China was the world's second-largest recipient of FDI after the United States. China received \$39 billion FDI in 1999 and \$41 billion FDI in 2000. China is now one of the leading FDI recipients in the world, receiving almost \$80 billion in 2005 according to World Bank statistics. In 2006, China received \$69.47 billion in FDI (see [http://en.wikipedia.org/wiki/Economy\\_of\\_China#Foreign\\_investment](http://en.wikipedia.org/wiki/Economy_of_China#Foreign_investment)).

As part of the accession to the World Trade Organization, China has promised to eliminate certain trade-related investment measures, and opened up previously closed areas for foreign investment regulations. New laws, regulations, and administrative measures implement these commitments. The remaining major obstacle is foreign investment opaque and inconsistent implementation of laws and regulations, the lack of a legal rule-based facility.

A major development was the establishment of the Shanghai Free Trade Zone in China, the history of foreign investment in September 2013. The Zone is considered to be a testing ground, make a number of economic and social reforms. Importantly, foreign investment through the "negative list" approach control. Allow FDI in all sectors, except the negative list published by the Shanghai Municipal Government expressly prohibited. Shanghai will depend in part on the old center of the city, the successful reconstruction of dilapidated houses and scattered industrial uses will no longer be tolerated. Renaissance Shanghai is also dependent on the effective development, Pudong New Area, and several new city, which will benefit the development of growth in industrial activity and the third industry (Wu, 1999). In Shanghai, in the development

of modern industry began late 19th century, with the Western invasion settlements. The decision by the economic forces at that time Shanghai's urban culture involves the formation of socio-economic growth of both institutional and cultural activities in new forms in modern literature. Shanghai also received a complex character with a strong merchant and e-commerce services as a major sport community (Wu, 2004).

Poncet, Steingress, and Vandenbussche (2010) found three points:

1. Private Chinese firms are credit constrained while state-owned firms and foreign-owned firms in China are not;
2. The geographical and sectoral presence of foreign capital alleviates credit constraints faced by private Chinese firms;
3. Geographical and sectoral presence of state firms aggravates financial constraints for private Chinese firms ("crowding out").

### Theory and Analysis Structure

The concept of the Endogenous Economic Growth Model Constant returns to scale on capital is one of the important characteristics of endogenous economic growth model. When we do not assume diminishing returns, our production function is:

$$Y = Q = AK, 0 < A \quad (1)$$

Where  $Y$  is output,  $K$  is the capital stock, and  $A$  is a positive constant representing the level of technology, which is used to measure the amount of  $Y$  produced by each unit of  $K$ . In contrast to the Solow growth model which assumes diminishing returns on capital this model assumes that that regardless of the amount of capital stock, each additional unit of capital will be able to produce more units of production. To compensate for the unrealistic nature of this assumption, so we can broaden our definition of capital to include physical capital and human capital together, which act as substitutes. This broad definition of capital likely has diminishing returns. Thus, Barro (1990) was assumed to be of the formula:

$$Y = AK^\alpha H^{1-\alpha}, \text{ and } K = H, 0 < \alpha < 1 \quad (2)$$

Where the  $K$  is physical capital and  $H$  is human capital, which includes investment spending on education, training, and child rearing costs. When  $K$  and  $H$  are perfect substitutes, this is known as a single sector model. Alternatively, when they are not perfect substitutes, it is a two-sector model. Looking at (1) Labour ( $L$ ) has been omitted and we can see that:

$$y = Ak \quad (3)$$

Where  $y = Y/L$  is the average output per person (income),  $k = K/L$  is the average per capita capital stock. As  $A$  is constant, therefore from (1) and (3), we can determine the marginal product of capital and the average yield are all, namely:

$$MP_K = \frac{\Delta Y}{\Delta K} = \frac{\Delta y}{\Delta k} = AP_k = \frac{Y}{K} = \frac{y}{k} = A > 0 \quad (4)$$

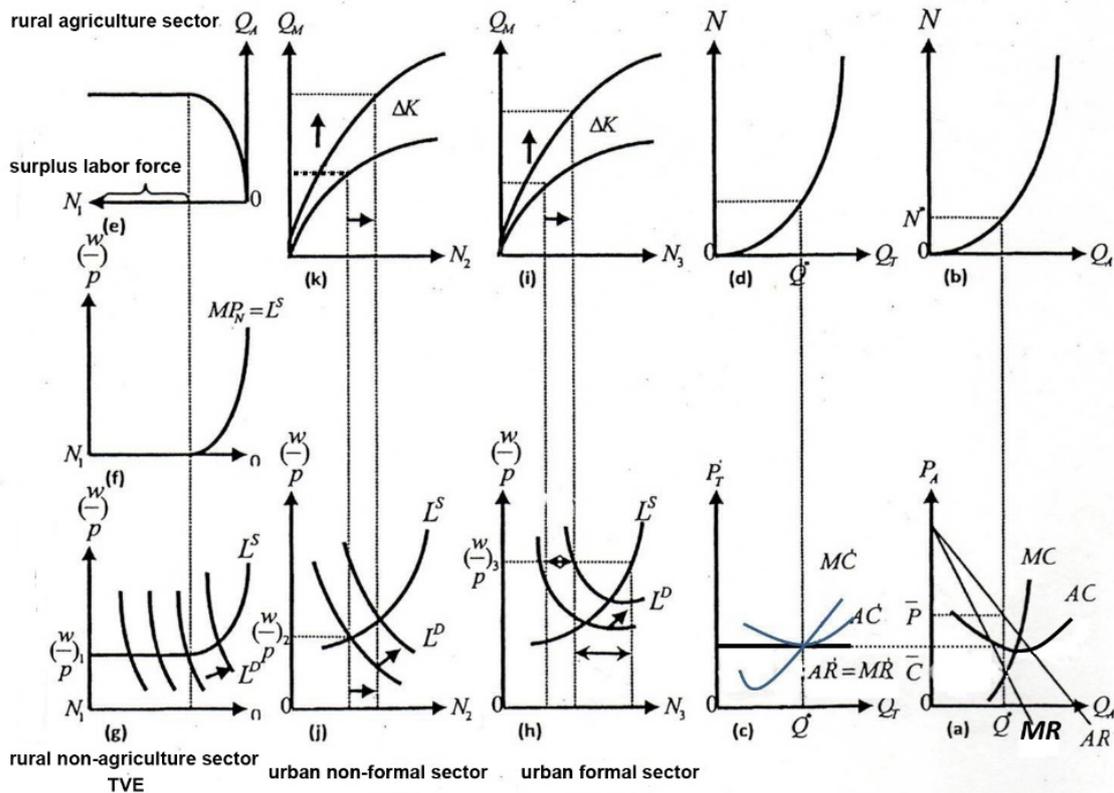


Figure 1. Smith-Ricardo-Chambellin-Robinson-Lewis-Fei-Ranis-Harris-Todaro model.

The author wishes use Smith-Ricardo-Chambellin-Robinson-Lewis-Fei-Ranis-Harris-Todaro model, the architecture will link up to explore the status of labor, production, supply chain, and international markets in mainland China. And explore how China adjusts the industrial structure between provinces. Multinational companies operating in the international arena, it normally takes to face Chambellin-Robinson model in imperfectly competitive market. Multinationals will investigate its market share, and then, formulate pricing policy, estimated production capacity to maximize profits, as Figure1 (a) and (b).

When the product designed and market research work is complete done, according to the principle of comparative advantage Ricardo multinational companies, and are open to OEM vendors to bid for contracts. Since the bid foundry capacity is usually no bargaining, that is the face of Smith's perfectly competitive market, as Figure1 (c) and (d). So, multinational enterprises can make cost to lowest.

The subject of contract manufacturers in order to increase their profits will build factories in developing countries rich in human capital, the expansion of production equipment to joint ventures and local state-owned enterprise co-operations. See Figure 1 (h) and (i), or sole proprietorship (initially difficult) in local production, as Figure 1 (j) and (k).

Rural agricultural sector in developing countries, often have like Lewis-Fei-Ranis model alleged a large number of rural surplus labor, as Figure 1 (e) and (f) show, these surplus labor can stay in rural non-agriculture sector, as Figure 1 (g), can also be indicated as Harris and Todaro model, can go to town looking for a high salary jobs, as Figure 1 (k) and (j).

China has about 80 million to 120 million migrant workers between rural and urban, where the majority of people engaged in overtime working hours, and for very low income. With the change of central policies,

mainland China is gradually reducing the rights of rural cadres and relaxed family planning policy (one child policy), which is to be able to maintain long-term improvement in living standards. Another threat is the deterioration from the environment, particularly air pollution, soil erosion, and reduces groundwater level in some areas. Due to the deterioration of the economic development and soil erosion environment, China's arable land is being gradually reduced. The government is spending as much as possible to increase the infrastructure, such as water and electricity and communications construction, and reduces rural poverty and reform the tax system.

Since 1978, mainland China's reform and open-door policy, leaders in the industrial sector have greater autonomy. SOEs have gradually become the former sector in the city, allowing private operators as well as light industrial services, and open the door, attracting a lot of foreign investment. This economic system in 1992 called "With China's characteristics socialist market economic system".

China after the reform, attracting many international companies to established factories in China for cheaper labors, Foxconn is a good example in China. Let surplus labor in rural areas, attracted by higher wages and moves to the city for works. Increased demand for urban labor market, wages will increase, labor hours increases, and increase the production. Capital investment in production technology and the introduction of Foxconn, promoting China's economic growth. Driven by China's economic growth rate increased, workers' salary increased and their consumption increased, the purchasing power increases, GDP will also increase in China. High growth of GDP, supporting of the Communist Party and legitimacy and win the more support from the people.

### **Empirical Results**

We usually consider fixed capital as a factor of production, because the adjustment of capital, including plant construction, purchase of machinery, and capital allocation, etc., is not a short time can achieve. Governments did not dare to launch a number of construction and development of policies to stimulate the economy, the economy of a country or explore a region from the starting point to develop the optimum path between the final goal, as long as the economic policy planning have enough time to make the capital to follow this path and quickly development of the country economy, and therefore, easy to accumulate capital in priority to the development industry is a viable strategy, which is a shortcut to development.

Before 1978, the planned economy system as production incentives are distorted resulting in a lack of willingness to work for the people; agriculture, light industry, heavy industry are of serious configuration imbalance, coupled with inefficient use of resources more over living standards cannot be improved. After 1978, China is to address the problem of economic reform and opening up foreign investment, improve production management and technology, and accelerate to attract foreign investments.

General discussion on methods of economic growth adopted broadly divided into three categories:

1. The cross section analysis;
2. Time series analysis;
3. Horizontal—vertical data (panel data) analysis.

Problem when using cross-sectional data analysis is often faced with explanatory variables heterogeneous variability (hetero-skedasticity), prone to measurement error problem (measurement error), and Omissions variable bias (omitted variable bias). Time series analysis prone to error term self-related (autocorrelation) problem, parameter heterogeneity variability problems may also exist. Making the regression estimation error

term rendered non-random process (non-stochastic process).

Since the tracking data used in this paper also has cross section, binary characteristics of time series. Set the model parameter estimation and directly determines the effectiveness. To avoid bias estimate occur, in this study, the author adopted the use of panel data analysis.

Model set using Cobb-Douglas production function (see [http://en.wikipedia.org/wiki/Cobb%E2%80%93Douglas\\_production\\_function](http://en.wikipedia.org/wiki/Cobb%E2%80%93Douglas_production_function)). In its most standard form for production of a single good with two factors, the function equation is

$$Y = AK^{\alpha}L^{\beta} \dots \quad (5)$$

The author modified it, as follow equation:

$$Y = AK^{\alpha}L^{\beta}R^{\gamma}F^{\delta}e^{u} \dots \quad (6)$$

The translog production function is a generalization of the Cobb-Douglas production function.

$$\ln Y = \ln A + \alpha \ln K + \beta \ln L + \gamma \ln R + \delta \ln F + u \quad (7)$$

Where  $\ln A$  is the intercept, to some extent, reflect the level of technology advancement,  $\alpha$ ,  $\beta$ ,  $\gamma$ ,  $\delta$  are the slopes, meaning that the output elasticity of capital, the output elasticity of labor, the output elasticity of R & D, and the output elasticity of FDI. The value of  $\alpha + \beta + \gamma + \delta$  means the return to scale. If  $\alpha + \beta + \gamma + \delta > 1$ , means that output-increasing returns to scale; if  $\alpha + \beta + \gamma + \delta = 1$ , means that output-constant returns to scale; if  $\alpha + \beta + \gamma + \delta < 1$ , means that output-decreasing returns to scale.

### Hausman Test

Hausman test can be also used to differentiate between fixed effects (FE) model and random effects (RE) model in panel data. In this case, RE is preferred under the null hypothesis due to higher efficiency, while under the alternative FE is at least consistent and thus preferred (see [http://en.wikipedia.org/wiki/Hausman\\_test](http://en.wikipedia.org/wiki/Hausman_test)).

Table 1

#### Correlated RE—Hausman Test

Pool: China data				
Test cross-section RE				
Test summary		Chi-Sq. Statistic	Chi-Sq. d.f.	Probabilities
Cross-section random		5.309883	4	0.2570
Cross-section RE test comparisons:				
Variable	Fixed	Random	Var (Diff.)	Probabilities
LNCAP?	0.488503	0.501721	0.000060	0.0880
LNEDU?	0.146703	0.134052	0.000102	0.2110
LNRD?	0.135277	0.131014	0.000040	0.5017
LNFDI?	0.068396	0.071278	0.000095	0.7680

Table 1-Part 1 gives the Hausman test results. Hausman test statistic value is 5.309883, corresponding to the probability value is 0.2570; description test results reject the null hypothesis of random-effect model.

Part 2 of Table 1 gives the Hausman test intermediate results compared the fixed effect model and the random-effect model parameter estimates, and the difference between the number of parameter variation corresponding estimate of distributed (Var [Diff.]).

The foregoing analysis, 1998-2012 China 31 provincial regions Cobb-Douglas production function panel data model should establish individual fixed-effects regression model.

**Unit root Test**

Table 2

*Null Hypothesis: Unit Root (Individual Unit Root Process)*

Date: 07/28/14 Time: 21:10		
Sample: 1998 2012		
Exogenous variables: Individual effects, individual linear trends		
Automatic selection of maximum lags		
Automatic lag length selection based on SIC: 0 to 2		
Total number of observations: 423		
Cross-sections included: 31		
Method	Statistic	Probabilities **
ADF: Fisher Chi-square	81.9007	0.0461
ADF: Choi Z-stat	-2.86907	0.0021

Note. \*\* Probabilities for Fisher tests are computed using an asymptotic Chi; square distribution; all other tests assume asymptotic normality.

Because Table 2 with the probability of ADF—Fisher Chi-square statistic is less than 5%, so  $\ln Y$  is a stationary time series.

**Residual Cointegration Test**

Table 3

*Kao Residual Cointegration Test*

Series: LNGDP? LNCAP? LNEDU? LNRD? LNFDD?				
Date: 07/28/14 Time: 21:31				
Sample: 1998 2012				
Included observations: 15				
Null Hypothesis: No cointegration				
Trend assumption: No deterministic trend				
User-specified lag length: 1				
Newey-West automatic bandwidth selection and Bartlett kernel				
			<i>t</i> -dstatistic	Probabilities
ADF			-6.323778	0.0000
Residual variance			0.003337	
HAC variance			0.003516	
Augmented Dickey-Fuller Test Equation				
Dependent Variable: D (RESID?)				
Method: Panel Least Squares				
Date: 07/28/14 Time: 21:31				
Sample (adjusted): 2000 2012				
Included observations: 13 after adjustments				
Cross-sections included: 31				
Total pool (balanced) observations: 403				
Variable	Coefficient	Std. error	<i>t</i> -statistic	Probabilities
RESID? (-1)	-0.249169	0.034423	-7.238494	0.0000
D (RESID? (-1))	0.035220	0.044388	0.793442	0.4280
R-squared	0.125983	Mean dependent var		-0.000377
Adjusted R-squared	0.123803	S.D. dependent var		0.060580
S.E. of regression	0.056706	Akaike info criterion		-2.896914
Sum squared resid	1.289456	Schwarz criterion		-2.877068
Log likelihood	585.7281	Hannan-Quinn criter.		-2.889057
Durbin-Watson stat	1.966353			

In Table 3 results, rejected the null hypothesis: variable  $\ln gdp$ ,  $\ln cap$ ,  $\ln edu$ ,  $\ln rd$ , and  $\ln fdi$  have no co-integration relationship. So, there is the existence of cointegration relationships of data from the test.

### Model Form Test

Establish panel data model, the first step is to test the parameters of the explanatory variables  $y_{it}$ . Whether parameters  $a_i$  and  $b_i$  for all sample points and for all time is constant or not? Test sample data actually belongs to which cases concerned by us. Thus, avoiding bias model set and to improve the effectiveness of parameter estimation.

Test is frequently used analysis of covariance test (analysis of covariance); the main test follows two assumptions:

Hypothesis 1,  $H_2: b_1 = b_2 = \dots = b_N$

Hypothesis 2,  $H_1: a_1 = a_2 = \dots = a_N; b_1 = b_2 = \dots = b_N$

If we accept the hypothesis  $H_2$ , sample data can be considered as the same intercept, and constant coefficient model. If we reject the hypothesis  $H_2$ , we need to test the hypothesis  $H_1$ .

If  $H_1$  accepted, sample data is considered in line with variable intercept, constant coefficient model; on the contrary, it is considered the sample data are consistent with variable coefficient models.

Assuming we use  $F$  statistic test. Firstly, calculate the variable intercept and variable coefficient model, residual sum of squares  $S_1$ ; Secondly, calculate the variable intercept and constant coefficient model, residual sum of squares  $S_2$ ; Finally, calculate the constant intercept and constant coefficient model, residual sum of squares  $S_3$ .

Under the Hypothesis 2 condition, statistic  $F_2$  tested.

$$F_2 = \frac{(S_3 - S_1) / [(N - 1)(k + 1)]}{S_1 / [NT - N(k + 1)]} \sim F[(N - 1)(k + 1), N(T - k - 1)]$$

If the value of  $F_2$  statistic significantly less than the critical value of a given level. That is,  $F_2 < F_{\alpha}$ , not reject  $H_2$ . Sample data are consistent with the same intercept, constant coefficient model; on the contrary,  $F_2 > F_{\alpha}$ , we reject  $H_2$ . Continue to test the hypothesis  $H_1$ .

Under the Hypothesis 1 condition, statistic  $F_1$  tested.

$$F_1 = \frac{(S_2 - S_1) / [(N - 1)k]}{S_1 / [NT - N(k + 1)]} \sim F[(N - 1)k, N(T - k - 1)]$$

If the value of  $F_1$  statistic significantly less than the critical value of a given level, that is,  $F_1 < F_{\alpha}$ , not reject  $H_1$ , sample data are consistent with variable intercept and the same coefficient model. On the contrary,  $F_1 > F_{\alpha}$ , we reject  $H_1$ . We believe that the sample data are consistent with variable intercept, and variable coefficient model.

According to calculated results,  $S_1 = 0.052007$ ,  $S_2 = 3.780852$ ,  $S_3 = 8.989525$

$$F_2 = \frac{(S_3 - S_1) / [(N - 1)(k + 1)]}{S_1 / [NT - N(k + 1)]} = \frac{[8.989525 - 0.052007] / ((31 - 1)(4 + 1))}{0.052007 / (15 - 4 - 1)} \approx 11.46$$

$$F_1 = \frac{(S_2 - S_1) / [(N - 1)k]}{S_1 / [NT - N(k + 1)]} = \frac{[3.780852 - 0.052007] / ((31 - 1)(4))}{0.052007 / (15 - 4 - 1)} \approx 5.97$$

For  $F_2$ , significant at the 5% level, degrees of freedom is (150,310), value of F distribution is  $F_{0.05} (150,310) = 1$

$F_2 \approx 11.46 > F_{0.05} (150,310)$ , so we reject  $H_2$ . Continue to test the hypothesis  $H_1$ .

For  $F_1$ , significant at the 5% level, degrees of freedom is (120,310), value of F distribution is  $F_{0.05} (120,310) = 1$

$F_1 \approx 5.97 > F_{0.05} (120,310)$ , so we also reject  $H_1$ .

We should select to the fixed-effect model with variable coefficients sample model.

### Conclusion

According to the latest data of 2012 from the Bureau of Statistics, provincial and regional growth in China presents a clear “west higher than east” trend about incremental increase. Eastern Tianjin’s incremental growth rate is 9.34% in 2012, Shanghai, Guangdong and Zhejiang, the annual economic growth rate was 3.68%, 6.35%, and 6.99%. Their growth rate was slowdown, ranked the country’s economic growth after three countdowns. Hunan, Hubei, Jiangxi, and Shanxi those central provinces with this contrast, the annual economic growth rate were 11.90%, 12.91%, 10.27%, and 7.26% in 2012. Western Region 2012 annual economic growth rate remained at about 12%.

Since 1978, China has pursued an open economic policy with greater division of labor. This stems from liberalism, focusing on greater market integration dependent on utilizing comparative advantage of the market. Within the 31 provinces, has there been a division of labor and economic integration? Have they realized their comparative advantage? So far after the reform, the provinces have not. With regards to the production and industrial structures, the similarities among the provinces are too high resulting in internal with no division of labor. The coastal provinces of Guangdong, Fujian, Zhejiang, Jiangsu, and Shandong, in line with the central government’s trade development policy, have greatly increased the scale of foreign trade to American, Japanese, and European export markets. Coastal trade volume stands as the portion of trade. The export objectives of border provinces focus mainly on neighboring countries. The main trade partners of Liaoning, Shandong, and northeastern provinces are geographically closest: South Korea, Japan, and Russia. Guangxi trades mainly with Vietnam and Yunnan with Myanmar. To expand trade relations with neighboring countries in Southeast Asia the five southwestern provinces established the Southeast Asia Expo in Nanning in 1984. Comparing regional economic development differences we see that due to geographic locations the trade behavior is not the same. The Inland provinces’ main focus is on inter-provincial trade, while the coastal and border provinces concentrate on exports, but maintain different trade partners.

Observed in mainland China since the reform and opening up. After 30 years of economic development, we concluded that economic globalization is the external momentum of its development; and marketization will play an intrinsic catalyst role. FDI not only involves property system, enterprise system institution, and the distribution system institution. A Foreign-invested enterprise established in China to promote China's economic system reform and fewer central government economic interventions, China is engaged in a reform of government functions and economic institution. From the beginning of 1978, China's reform and opening up have gone through 30 years of history, through repeated practice and exploration, China's economic system has been achieved through by a highly centralized planned economy to a socialist market economy. Although economic reform but made a breakthrough, still lead to economic and social condition in the deep contradictions and problems are still not eliminated. Still has very arduous task of reform. The current economic reform tasks most closely related to the transformation of the government. If there is no fundamental change in the structures and capacities of government, these reforms would be difficult to achieve substantive progress.

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