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**The Research of Regional and Local Economic Development  
in Intraprovincial Inequality**

**-- A Case Study of Chongqing**

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## **Abstract**

Regional and local economic development has become a major global socio-economic problem since 1950s. Because of natural conditions, history, preferential policies and some other reasons, the problem of imbalanced regional and local economic development is worldwide common. However, the research about intraprovincial inequality is limited in both worldwide and China. So I chose Chongqing as my object to do the research, and mainly focused on the gap between urban and rural areas and the ecological environment, and I also came up with five propositions that refer to the influences of policy supports from national and local governments, construction of infrastructure, development in education and technology, optimization of industrial structure, and environmental protection for the coordinated development in a specific region. I also paid attention to the whole western region in China, and I hoped that this research in Chongqing could be a good example for the western China and draw more attention to the economic and social development in this area. We can seen from the thesis that the supports from national and local government, development in education and technology, insisting on sustainable development and balancing the gap between economic development and environmental protection and adjustment of industrial structure are important for improving imbalances in Chongqing and any other provinces in the west of China.

**Key words:** intraprovincial inequality, Chongqing, gap between urban and rural areas, protection of ecological environment, the western region of China.

## 1. Introduction

Because of differences in natural conditions, history, preferential policies and some other factors, the problem of imbalanced regional and local economic development is worldwide common. This problem has drawn many scholars' attention, and these scholars have achieved many exhibitions in regional and local economic development, but the most of theoretical and practical researches focus on the western countries, largely ignoring the contexts of China and other developing countries. Although the research about regional and local economic development is increasing in China due to the rapidly economic and social development after implementing the policy of market economy in 1978, Scholars pay more attention to the nationwide and large regional economic development in China, and they pay little attention to the development of the small area, such as provinces, municipalities or below levels. So in this article I chose Chongqing as my object to do the research of intraprovincial inequality, and raised and checked the propositions about how to improve the imbalanced problems in aspects of policy supports from national and local governments, construction of infrastructure, development in education and technology, optimization of industrial structure, and environmental protection. I hope that this article can make contributions to the research of intraprovincial inequality and the experience of Chongqing may set an example for other poor regions in the west of China to get the efficient, balanced and sustained development.

Regional and local economic development is a participatory, action-oriented and holistic approach (Anja and Gabriele, 2007). The practice of regional and local economic development around the world is both dynamic and diverse. Since the 1950s, regional and local development has become a major global socio-economic problem. Scholars from different countries engaging in the research are growing continuously. And they have achieved many exhibitions in the process of solving practical problems of socio-economic development. Accordingly, regional science, regional economic, social and economic geography and other disciplines developed actively because of meeting the needs of the regional and local socio-economic development. Regional and local economic development problem has become the forefront of the field of the development of these disciplines (Zhong, 2009).

Regional and local economic development refers to the process in which local authorities and organizations purposefully engage in activities to maintain business and employment, to stimulate business or new product development, and to stimulate job retention or creation in the area (Zlata and Ana, 2003). Regional and local economic development embraces strategies and actions designed to advance the economy or well-being of a locality. Amongst other things, local or regional economic development initiatives aspire to reduce unemployment, increase regional income levels, raise Gross Regional Product (or Gross State Product), improve the competitiveness and profitability of businesses within the region, stimulate business

start ups, improve average quality of life, reduce income differentials within the region/locality or across regions, attract inward investment, find new markets for the businesses of the region/locality, enhance the infrastructure of the region (Andrew and Alaric, 2002).

The theoretical and practical development of regional and local economic development has dramatically changed. In the early stages of regional and local economic development, activities focused mainly on the marketing of locations to external investors, often linked with incentive systems such as tax breaks and/or reduced costs of public services (such as water and electricity) and infrastructure development. In the second phase, attention was shifted to endogenous economic potentials, striving to support the competitiveness of existing firms, promoting entrepreneurship and business start-ups (Anja and Gabriele, 2007). It was often reached via entrepreneurship development and training programmes, business support and business linkage mechanisms, providing access to finance, skills development, rural development and sectoral development approaches.

Since the late 1990s, a more comprehensive approach to regional and local economic development has become prevalent. The third and latest phase of local economic development enhances the individual business support and sectoral development approaches of the second development phase by making the entire business and community environment more conducive to economic development. The focus of the third phase is therefore on providing a competitive local business environment, encouraging and supporting networking and collaboration between businesses and public/private and community partnerships, facilitating workforce development and education, focusing inward investment to support cluster growth and supporting quality of life improvements (Anja and Gabriele, 2007).

Throughout the evolution of regional and local economic development, scholars have combined elements from a variety of disciplines such as economic geography, urban planning, economic sociology, public administration and decentralisation, systems thinking, regional economics and so on. The development reflects the fact that the economy of a local area is more than a collection of individual firms and markets (Anja and Gabriele, 2007). It is a composition of networks and dynamic systems of interactions that shape individual decisions and actions.

However, theoretical development of regional and local economic development is heavily situated in Western contexts, largely ignoring the contexts of China and other developing countries.

After implementing the policy of economic reform in 1978, the speed of economic development in China has increased rapidly. The levels of both domestic economic development and international trade are higher and increased continuously. China has been an economic power which is ranked only second to the USA according to



the GDP from 2011 even without adequate capital, sufficient resource and perfect institutions. However, because of differences in history, policies, natural resource distribution, geography, transportation and some other factors, the gap between the rich and the poor is larger in recent years between eastern coastal areas and western areas. The gap will exert negative influences on the quality of living standards, the stability in society and sustainable development in China, especially in the relatively impoverished western regions. And the gap has drawn many scholars' and administrators' attention to do the relative researches and try to reduce it. In order to bridge this gap and keep the sustainable development, the Chinese government has implemented strategy of developing the western region of China from the end of 1999.

Chongqing, which is located in the west of China, has been one of the four municipalities from 1997 and is also the only municipality in the west of China. Chongqing, the largest city in the upper reaches of the Yangtze River region, is the economic center in the upper reaches of the Yangtze River region. And it is also one of the six olden industrial bases in China. Chongqing is the only city in the western region that owns the three-dimensional traffic network system of railway and highway, golden waterway and aviation, and is the integrated transport hub of the southwestern region. Because of the strong industrial base and technological strength, convenient transportation, and policy support, Chongqing is the largest industrial and commercial city in the western region of China. However, the development in Chongqing is accompanied with some imbalanced situations for geographic, political and historical reasons. In recent years the local government and enterprises in Chongqing formulated some policies and took actions to solve these imbalanced problems. The situations are improved gradually and the competitiveness of Chongqing is increasing rapidly. Although the imbalances cannot be solved in a short time, the situations in economic development and ecological environment are much better than those before.

Chongqing is in an important strategic position in promoting coordinated regional economic development and the reform and opening up strategy in China. Speeding up the urban and rural reform and development in Chongqing is the need for in-depth implementation of the western development strategy, and sets a good example for the national urban and rural reform, and is helpful for the common development of eastern coastal and central and western inland regions, and is the need for protecting the Yangtze River ecological environment. After realizing the imbalanced problems in the process of development, Chongqing implemented the strategy of common development "circular-shaped" and "two wings" regions, and the comprehensive strength of Chongqing was increasing year by year. So I think Chongqing is an interesting choice for the coordinated regional and local economic development in intraprovincial level. Meanwhile, the process of development in Chongqing may be helpful for other western cities to improve the level of economic and ecological development and solve the imbalanced problems, so I chose

Chongqing as my object to do the research. Similar to some other western cities, Chongqing is an inland city in the west of China, which leads to the relatively inconvenient transportation, and its ecological environment is also fragile compared with eastern coastal regions, thereby leaving behind the coastal region in economic and social development and leading to imbalanced problems more easily. The experience of Chongqing may set an example for other poor regions to get the efficient, balanced and sustained development in the future (Sigurdson and Palonka, 2008).

Scholars paid more attention to the nationwide and large regional economic development in China within the previous research, such as the eastern, central and western, the Yangtze River Delta, Pearl River Delta, Chengdu-Chongqing Economic Zone and other regional research. The previous researches mainly focused on the general gap between the rich and the poor between these areas, and what reasons lead to imbalances and how to improve these balances. However, they paid little attention to the development of a small area, such as provinces, municipalities or below levels. This article focuses on a specific municipality and tries to explore a way to change the imbalance in other poor communities which are similar to Chongqing through analyzing the imbalances, reasons, and solutions during the economic development of Chongqing in recent years.

Because the most of theoretical and practical researches about regional and local economic development focus on western developed countries and ignore China. And most of the research objects of regional and local economic development within China are about nationwide and large regions. In this article, I analyzed the imbalances and reasons, and how to deal with these imbalances in Chongqing, a specific municipality, and how can these solutions be used to change the imbalance in other poor communities in detail in order to contribute to the theoretical gap that less researches about regional and local economic development focused on China, especially on the intraprovincial level.

The main conclusions of this thesis are listed as follow: **Firstly**, the intraprovincial inequality is an important field of researches in regional and local economic development, and the intraprovincial inequality is needed to draw more scholars and economists' interests. **Secondly**, supports from national and local government, development in education and technology, insisting on sustainable development and balancing the gap between economic development and environmental protection and adjustment of industrial structure are important for improving imbalances in Chongqing. **Thirdly**, the development in any other western provinces is more backward compared with that in Chongqing, so the experience of Chongqing can be a good example for the social and economic development, and the balanced and sustained development also needs to base on its own characteristic in the west of China.

This thesis is organized in the following sections: The second part is the literature review, in which the situations of regional and local economic development in China and Chongqing are briefly introduced, and propositions are raised. The third part is the methodology and data collection. In this part, the relative data is collected to measure the propositions. The fourth part is the results and discussion, in which the results of testing propositions and how the development of Chongqing in recent years can be used to help the coordinate social and economic development in any other western provinces in China are discussed. The last part is the conclusion of the whole thesis.

## **2. Literature review**

### **2.1 Regional and local economic development in China**

The Plenum of the 11th Central Committee of the Communist Party in December 1978 marked the beginning of the economic reforms and the close of collectivism in the People's Republic of China (Eyferth, Ho and Vermeer, 2003). The whole world witnessed the rapid increase in economic development and improvement in comprehensive national strength. However, unprecedented economic development, industrialization and urbanization in China have been accompanied with imbalanced situations such as environmental pollution, regional inequality of economic development, gap between rich and poor, and gap between urban and rural areas and so forth. The imbalance exerts negative influences on the quality of living standards, the stability in society and sustainable development in China, so the imbalance in China has attracted considerable scholarly interest. Given its size, diversity, history, and identity as a transitional, developing country, China is one of the best laboratories for studies of regional and local economic development. The mere size of the country and its population (9.6 million km<sup>2</sup> and almost 1.37 billion people in 2010) automatically imply a wide regional diversity in sociological, economic, political, ecological and ethnic terms (Eyferth, Ho and Vermeer, 2003). Most of these researches focus on the inequality between eastern coastal regions and central and western regions, and inequality between rural and urban areas in China. The regional inequality is shaped by the complex interplay of globalization, institutions, and region-specific factors (Wei, 2000). Wei's (1999) piece on regional inequality in China reviews mostly publications from the 1980s to the mid-1990s, and since then, the literature has grown substantially (Wei, 2007).

Since the late 1990s, scholars have advanced the study of regional inequality by unfolding recent developments, down-scaling, and using more vigorous methods. New evidence suggests the coastal-interior divide continuously rise of despite the efforts of the central government to develop interior China, such as implementing the Great Western Development Strategies in 1999. Heilig (2006) has determined that China's provinces encompass the full scope of income differences that exist between developed and developing countries. Interprovincial inequality has also rebounded, with the recovery of Shanghai and the further advance of coastal provinces that are replacing traditional industrial provinces as new engines of regional growth (Lu and Wang, 2002; Yu and Wei, 2003).

Moreover, foreign investment is heavily concentrated in coastal China, especially in the coastal cities enjoying preferential policies and agglomeration economies (Gong, 1995; He, 2002). Such coastal stickiness is a manifestation of the gradual opening up of China to the outside world and the locational advantages of coastal cities. The establishment of development zones, mainly coastal in location, is a major state effort to use external resources and prepare for global competition (Wang, 2004).

However, because of the natural conditions and policy preference, the economic development in the west of China lags behind that in the eastern coastal regions of China in a long period. And because of the limitation of these conditions, the level of openness in the west is relatively lower. So the gap between eastern coastal region and western region is widened. China's poorer western region faces even greater challenges, and has lagged further behind the coastal region in development. China must walk the fine line between strengthening agglomeration and competitiveness of the coastal city regions on the one hand, and improving the development of poor regions in the interior on the other hand (Wei, 2007).

During the early stages of economic construction, the whole productivity in China lagged behind, the government decided to implement the strategy of industrialization to get rid of poverty and backwardness. For a long time, rural residents were mainly engaged in the primary industry; urban residents were engaged in the secondary and tertiary industries, so the urban economy developed preferentially. Due to the natural advantages and policy preferences, the urban infrastructure is more and more perfect, and the levels of education and technology are improved continuously. The urban economy has been further developed. In addition, China's rural development had to start from a weak resource base: the average amount of farmland per capita is only one-third of the world average, while its overall traditional, agrarian society features high hidden unemployment, low levels of education and healthcare, rural poverty, and large shortages in water and energy (Eyferth, Ho and Vermeer, 2003). So the level of the overall development in rural areas is far behind that in urban areas. The gap between rural and urban areas is an important problem of the regional inequality and is needed to solve as soon as possible.

Most economists and scholars working on China deal with regional inequality at the regional and provincial level, with limited studies on intraprovincial inequality, while much of the work of geographers on local development is rarely connected with the study of regional inequality.

## **2.2 Regional and local economic development in Chongqing**

### **2.2.1 Introduction of Chongqing**

The Chongqing municipality was officially established by central government of China in 1997. Chongqing City was merged with the neighboring Fuling, Wanxian, and Qianjiang that had been governed by Chongqing City on behalf of the province since September of the previous year. These four prefecture-level entities were all abolished as distinct administrative divisions and formed one new Chongqing Municipality to spearhead China's effort to develop its western regions as well as to coordinate the resettlement of population from the Three Gorges Dam project. Thus, the site was excluded from the jurisdiction of Sichuan province and has got the status

of province reporting directly to central government in Beijing (Sigurdson and Palonka, 2008).

The geographical position and demographic condition of Chongqing municipality make it quite unique in the western China. It has 31 million population, 82 thousands square km area, and population density of 379 people per km<sup>2</sup> and location at the upper reaches of Yangtze River. This makes it the gate of Southwest China on the water route and major site of transport since the airport connects the city with over 50 destinations in China and other parts of the world. The city itself with metropolitan area population of ca. 4 million people is a closest administrative centre to the world's biggest construction site-Three Gorges Dam (TGD). Chongqing Municipality territory includes most of previous east Sichuan province and its establishment is specifically justified by special requirements of TGD project (Sigurdson and Palonka, 2008).

Chongqing played an important role during more than 2000 years of its history (in 1981, for example it became first inland port in China open for foreign commerce). In 1940s, Chongqing was national capital during the Second World War and Japanese invasion (Nationalists government). Since then it enjoyed higher political status and economic independence than any other cities in whole western China. After 1949 it was still separately administered until 1954 when it was downgraded to a sub-provincial city in Sichuan province. From that time until 1997 Chongqing and Chengdu (capital of Sichuan) had very turbulent relationship. There was the constant competition and Chengdu benefited from considerable subsidies of provincial government to improve its political and economic significance. The leaders of Chongqing expressed their feeling that the city development is sacrificed to support the capital of the province (Sigurdson and Palonka, 2008). As a result the municipality "changed hands" in different times and as a matter of fact more often it was under direct administration of national government than Chengdu.

The initiatives by central government and the extraordinary task of Three Gorges Dam project required among other great tasks relocation of over 1,2 million people, and the rebuilding of two cities, eleven county towns and one hundred sixteen townships from the site of Three Gorges Dam water reservoir. Until 2005 there were already almost one million residents resettled. Less than 20 percent moved outside Chongqing municipality and the majority was to be accommodated within the region of Chongqing Municipality.

### **2.2.2 Imbalanced developmental situations**

Since the beginning of the 21st century, the economy in Chongqing has made remarkable achievements and considerable progress in each region. But at the same time these developments were accompanied with the obvious non-equilibrium, especially the contrast between the inter-regional resource advantages and

economic development advantages become more prominent, and the gap grows larger (Zhong, 2009).

Now the development stage of Chongqing is not conducive to the regional economic coordinated development. Productive investment rate of total investment from the national income of Chongqing accounted for more than 10%, which has been formed Pillar industries, and the regional development of Chongqing has been in a take-off stage (Shi, 2009).

In 2007 the range of the Per capita GDP of Chongqing was from 1200 U.S. dollars to 2,400 dollars, and the Primary industry dropped to below 20%, the Proportion of Secondary industry was higher than that of tertiary industry, so Chongqing entered the intermediate stage of industrialization. The ratio of Hoffman reached 2.0 in Chongqing in 2007, and it was at the junction of the second and third Phases of industrialization. The urbanization ratio of Chongqing exceeded 30% in 2007, which entered into the 30-70% of the internationally recognized period of accelerated development. But the level of urbanization lagged behind the level of industrialization, and there was a growing gap between the trends in Chongqing. The gap of well-off society between Chongqing and the national average was not narrowed significantly according to the statistical monitoring results about building a moderately prosperous society in Chongqing; for example, it lagged 3.4% behind the national average level in 2007. In accordance with the experience of developed countries, the regional development of Chongqing was in the stage of the expansion of regional economic disparities, obvious regional contradictions from many fields, and the big pressure from resources and the environment to withstand the most stress in 2007.

There was much uncoordinated of the regional economic development in Chongqing. The differences of the “circular-shaped” region and the northeast or southeast region of Chongqing were wide, and the regional disparities had been fluctuating, but the overall trend was continuous expand. The gap of relative value of Per capita GDP between “circular-shaped” region and the northeast or the southeast Chongqing was more than that of the national eastern, central and western. The location quotient often changed, the general trend was that the location quotient of “circular-shaped” region rose while that of the northeast and southeast Chongqing fell in 2007; the location quotient of all of the counties in the two wings of Chongqing were less than 1, which all fell into the less developed areas. At the same time, there was an obvious gap in regional and local economic development. In Chongqing, the economic differences between urban and rural areas were higher than the national average level, and the trend was gradually widened. The degree of the relative coefficient variation (Cv) of the “circular-shaped” region and the northeast or southeast region of Chongqing hovered at 0.5, the difference of the Engel coefficient of urban and rural residents was far higher than the 5%, which was higher than the degree of national average difference. The industrial strength of

Chongqing was 6.56, far greater than the highest level of developing countries in the world and has increased year by year.

## **2.3 Reasons for imbalanced problems**

Henderson develops a general equilibrium model of an economy composed of a system of cities, towns, and an agricultural sector. This model allows for different sizes and types of cities, economic growth, development and technological change, international trade, and national resource deposits; it identifies patterns of wages, prices, production, trade, investment, and residence. Using this paradigm, urban development compiles a set of facts and econometric conclusions about production patterns and technology, the demographics of high-skilled and low-skilled workers, the determinants of urban concentration in larger versus small cities, and urban decentralization (Henderson, 1991). And in the Handbook of Urban Studies, authors put forward three elements that best distinguish urban areas: the ecological, the economic and the social (Paddison, 2001). And these three elements also influence each other. In addition, nearly three decades of rapid economic growth in Mainland China has fundamentally impacted its population and redefined international political, economic and environmental relationships. The rise of China as a heavyweight economic power is being accompanied by the grandest urbanization process in human history (Wang, 2009). However, economic development enabled cities in China to manage some imbalanced issues, especially in western region with fragile ecological environment, and relatively backward developmental level. Chongqing has the population of 31 million and 82 thousands square area. As a municipality, there are many factors in the research of urban development. Considering the influential factors in urban development, I summarized and analyzed several reasons of imbalanced economic and social development in Chongqing.

The coordinated development of regional economy in Chongqing has been affected by multiple factors. The external factors mainly come from the new trends of regional development in global and the policies of national regional development. And internal factors mainly come from the strict ecological restrictions in the Three Gorges reservoir area and lack of mineral resources, water resources, and energy constraints. So the aim to promote the coordinated development of regional economies in Chongqing should draw national, regional and local attentions.

### **2.3.1 Globalization**

From the view of regional and local economic development, the influences of economic globalization are different according to different regions, and these influences depend on the level of opening up and industrial structures in different regions. The level of openness in Chongqing is far lower than that in the eastern and central regions of China. And the levels of openness are even different within Chongqing; the level of openness in “one hour economic circle” region is much



higher than that in “the two wings” region. Therefore, on the one hand, the influences of economic globalization promote the level of openness in some regions, and accelerate the speed of integration into the world economic system, thereby helping speed up the regional economic development. On the other hand, economic globalization will enable regions to face increasing competition, so reducing regional differences and the gap between urban and rural areas have become more complex and difficult to resolve.

### **2.3.2 Differences in “circular-shaped” region and “two wings” region**

The main important reason for the uncoordinated economic development within Chongqing is that the development in “two wings” region lags behind the development in “circular-shaped” region in Chongqing. There are three incentives. The first one is that the inadequate development of secondary and tertiary industries in “two wings”, especially the secondary industrial development is not sufficient; the second one is that the lagging process of urbanization, which is highlighted in southeast Chongqing; the third one is the low level of import, and there are 90% or more of the export and actual use of foreign direct investment concentrating in the “circle”.

The deep-seated reason for the lagging economic development in the northeast of Chongqing is that the state restrictions on this region during the process of building the three Gorges Dam project; while the reason for the lagging economic development in the Southeast of Chongqing is the backward infrastructure. The most seriously problem caused by the lagging development in “two wings” is poverty particularly the concentration of urban poverty and the social stability are under great strain. The urban-rural economic disparities of Chongqing are caused by multiple factors: Firstly, the development of agriculture does not develop in itself sufficient due to the poor natural conditions, thereby forming a low level and the vicious circle. The second factor is the division of urban and rural areas due to the long period of urban and rural household registration system. Thirdly, the strong state-owned economy and the slow development of private economy in Chongqing exacerbate the gap between urban and rural areas. The fourth factor is the industry segmentation between urban and rural. The industrial system of urban and rural areas in Chongqing does not interact with each other, thereby leading to the widening gap between urban and rural areas (Shi, 2009).

On the one hand, the regional economic development in Chongqing has entered the accelerated development period of industrialization and urbanization, and it means that a variety of new regional economic developmental contradiction will be appeared; On the other hand, the level of well-off society in Chongqing is still far below the national average level, and it means that regional economic development in Chongqing also accumulated a variety of contradictions which need to be resolved urgently.

Chongqing is a special municipality, which is the combination of big city and large rural area. The proportion of agricultural industry is high and rural population accounts for almost two-thirds of the city's population which is 31 million in all, and rural areas are the strong backing of the economic development of Chongqing. Therefore, the economic development in rural areas plays an important role on the economic constructions in Chongqing. But the status quo is that the rural population is high, living standard of farmers is generally low, the structure of agricultural industry is irrational, and the economic development is slow. The main reasons of the gap between urban and rural areas of Chongqing are slow growth of the labor income of rural residents, the metastatic income of rural residents is low, and the differences in social security and welfare between urban and rural residents are too large. Uncoordinated development between urban and rural areas is growing mainly due to the influences of traditional urban-rural development strategies in Chongqing which pay more attention to urban area and the second industry.

Chongqing not only has large rural areas, but also has a significant number of the urban economically developed regions. The economic structure of coexistence of "large urban areas" and "large rural areas" in Chongqing means the coexistent economic structures of "the developed urban economy" and "the backward rural economy", which is determined by the level of economy and structural characteristics in Chongqing. The level of the economic development in large rural areas in Chongqing is not high, and there are a considerable number of poverty-stricken counties. When the Fifth Session of the Eighth National People's Congress (NPC) decided to set up Chongqing municipality, 21 of the 40 counties in Chongqing were poverty-stricken counties, and the poor rural population was 366 million, accounting for 12% of the total population in Chongqing, and the proportion was far higher than the national average proportion. After several years of development and the overall conduct of the work of poverty alleviation, the rural population of Chongqing got rid of poverty as a whole. However, because of the weak infrastructure, relatively backward production conditions, and the relatively lower quality of the population in poverty-stricken areas, the current level of development of counties which implemented strategies of getting rid of poverty was still low and instable. The living standard of 140 million people, accounting for 4.5% of the total population in Chongqing, was still below the poverty line in 2007, and the level of economic development was still very backward and badly needed further development even though some counties had get rid of poverty.

In the process of economic construction in Chongqing, especially during the early period of economic construction, capital, labor, information and personnel, technology and other factors spontaneously flowed from the relatively backward areas to the more economically developed regions; after a period of construction, the economy of the relatively developed regions increased rapidly, but the economic development of backward areas were stagnant, or even be reversed due to the lack of production factors such as capital investment, personnel, information and

technology, and the vicious circle gradually formed at the same time, thereby widening the economic gap between the backward regions and developed regions.

Poverty is one of the reasons for the regional economic disparities in Chongqing, and is one of the problems that must be addressed in order to the overall development in Chongqing. Three Gorges reservoir area and the minority areas in Southeast Chongqing were the main poverty-stricken areas in Chongqing, such as Wushan, Wuxi, Qianjiang, Xiushan, chengkou, pengshui and youyang, and the area of these regions are about one third of the total area in Chongqing. Chongqing is a special municipality which is coexistent of big cities and rural areas, and the rural population accounts for more than 80% of the total population. Other counties are relatively impoverished and less developed except for some counties near the main urban districts. In addition, the economy of minority regions in Southeast Chongqing is very backward and the transportation is also very inconvenient. The economy in these regions is more undeveloped, because the environment is not conducive to economic cooperation and trades with foreign companies; but the main city is rich in resources, capital investment and all kinds of information and human resources, and coupled with the support of state and government, so the economic development increased rapidly, and the gap is more widened due to the original economic differences among different regions. In addition to the constraints of its own economic development conditions, the poverty in these counties was also closely related to the national macro strategies, for example, because of a variety of historical and economic reasons, the development in the Three Gorges Reservoir region received less investment and development of the major national construction projects, thereby seriously impeding the economic development in this area.

Moreover Chongqing has not started to build these counties, which were parts of Sichuan but belong to Chongqing now. Or the investment in construction of these counties has not yet been successful, and the implementation of preferential policies in urban area in recent years in Chongqing.

### **2.3.3 Unreasonable industrial structure**

The level of regional economic development is related to the regional industrial structure, and the more advanced industrial structure, the higher the level of economic development. So the difference in Industrial structure between different districts and counties in Chongqing is one of the reasons that caused the difference in the level of economic development in different districts and counties.

The agricultural industry in Chongqing is still quite backward, and there are a lot of difficulties and problems of the agricultural economic development. Some deep-seated contradictions and problems have not been fundamentally resolved, and there are varieties of problems, for example, poor agricultural structure, lack of improved varieties, poor agricultural production facilities, the low level of

agricultural industrialization, underdeveloped agricultural product processing industry, imperfect development of the market system of agricultural products, and many other problems. These difficulties and problems impede the economic development of the rural areas in Chongqing, and exert negative influences on reducing the economic gap between rural areas and developed region in Chongqing.

Chongqing is one of the olden bases in China, so the level of development in the secondary industry is relatively higher and proportion of the secondary industry is still increasing in recent years, but the level of development in tertiary industry is lower. This kind of industrial structure brings much pressure for the ecological environment and jobs creation, so it is not benefit for the sustained development in Chongqing.

#### **2.3.4 Educational gap**

The difference in educational investment is one of the main reasons of larger gap in the urban-rural income under the condition of a market economy since implementing the reform and opening up policy from 1978. The special situation in Chongqing of the coexistence of "big city, big rural area, and big reservoir" results in particularly obvious gap in education between the "circular-shaped" region (1 hour economic circle in Chongqing) and "two wings" region (the northeast and southeast region in Chongqing), and the gap also exists between urban and rural areas within the "circular-shaped" region. This gap is mainly reflected in the investment of education funding, school conditions, teachers and other aspects.

#### **2.3.5 Environmental limitation**

For a long time, Chongqing views coal as the main energy, the urban air pollution is serious because of continually expanding the scale of the main city and the construction of the main city, as well as the rapid growth of the motor vehicle ownership. If the authorities want to reverse the current situation, it need take a long time to improve. After the water storage of the Three Gorges Reservoir, the velocity of flow became slow, the water self-purification capacity is reduced, the shore of pollution is widened, and the water environmental capacity is smaller. Meanwhile, the main secondary rivers are also contaminated, resulting in watershed pollution and regional pollution. In the main city, the large number of emissions of industrial sewage and life sewage cause a big trouble to the residents' lives, and made the environmental pollution is more serious. And Chongqing take treatment in the end as the main way to govern the environment, this kind of governance is difficult to fundamentally ease the pressure on the environment. On the one hand, enterprises are lack of the enthusiasm to sustain because of large investment, high costs, long construction period and low economic returns. On the other hand, the way of treatment in the end tend to make the pollutants from one form into another one, such as governing emission will produce wastewater, governing wastewater will

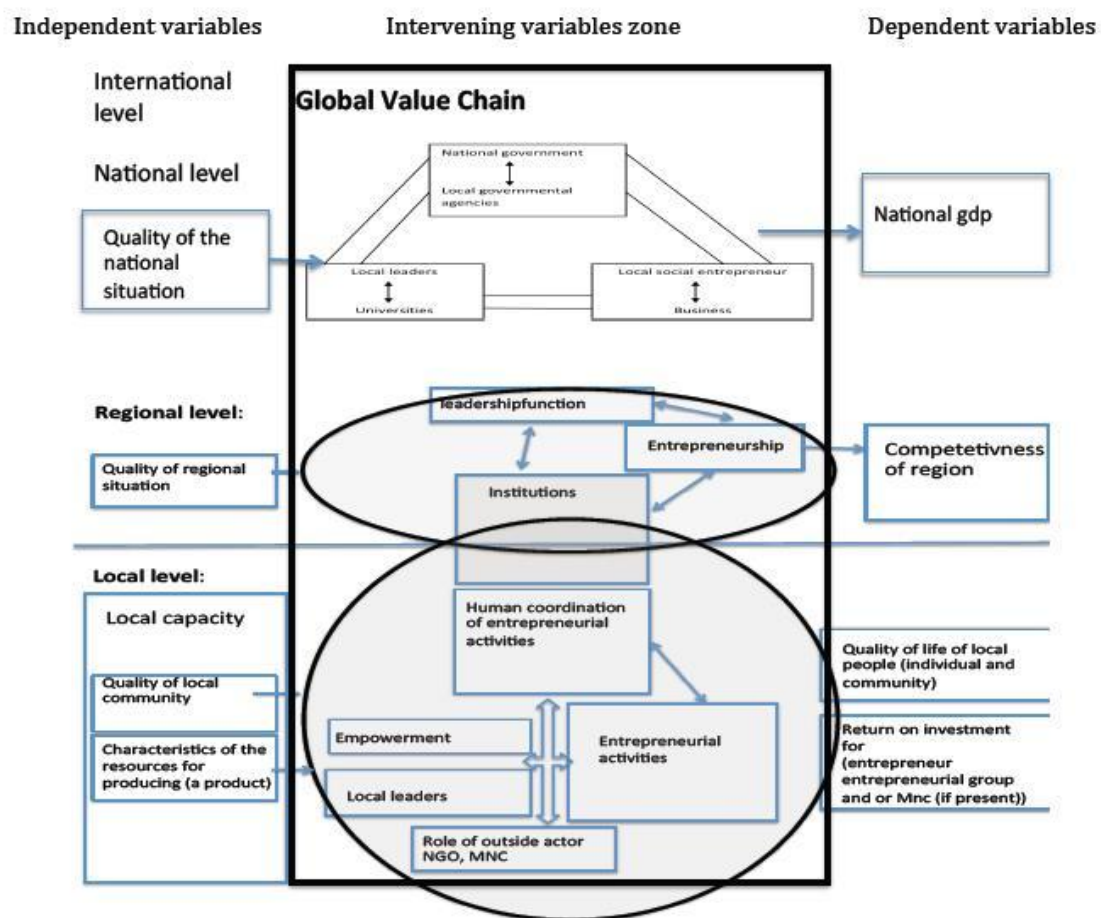
produce sludge, and governing solid waste will produce emission and so on, so it's difficult to fundamentally eliminate pollution (Li and Wu, 2012).

## **2.4 Current solutions for imbalanced problems**

The core problem of implementation of coordinated regional economic development strategy is to control and reduce the gap between the levels of economic development in different regions. The primary goal in Chongqing is to achieve economic growth, and to coordinate the regional inequality and to coordinate the gap between urban and rural areas and to protect the ecological environment of the Three Gorges Reservoir.

The model of Stimson et al. (2009) focused on endogenous variables for achieving regional economic development. In order to elaborate the internal and external factors, Pennink (2013) added local and national level and even international level. In Pennink's (2013) research of dimensions of local economic development, national, regional, local level and interaction of these factors are considered. All of the elements and relationships in Pennink's (2013) research are shown in the figure 1 below. In my research of solutions of how to improve the imbalanced problems in Chongqing in recent years, I divided these reasons into different levels according to this model, and paid more attention to the government of national and local level, and the enterprises activities for environmental protection, investment on R&D, and optimization of industrial structure. And I also raised propositions that were related to aspects of policy supports from national and local governments, construction of infrastructure, development in education and technology, optimization of industrial structure, and environmental protection according to these solutions.

**Figure 1.** Multi--level, multi--actor model for Local Economic Development



### 2.4.1 National level

Research on China, as well as East Asia, has long embraced the role of the state, embedded with the broad notion of the developmental state. East Asian development is institutionally driven and the role of the state is instrumental, even determining the pathways of economic development (Amsden, 1989; Brohman, 1996). In East Asia, the market is “governed,” and state capacity lies in policy instruments and institutional links with private enterprises (Wade, 1990). The state is a critical agent of economic and regional development in China, and is considered essential to the growth, transformation, and globalization of Chinese cities under notions of the growth machine, the entrepreneurial city, the global city, and urban governance (Lin and Wei, 2002; Ma, 2002; Wu, 2003; Li, 2005; Wei and Leung, 2005).

In 1999, the state government decided to implement the western development strategy to ensure the balanced regional economic development. There are two main aspects about the policy of the western development strategy. One is the domestic enterprises and foreign-invested enterprises, which are located in the western region and belong to the industries that are encouraged by government, would be collected enterprise income tax at a tax rate of 15% within a certain period. Some enterprises

would be reduced or exempted from corporate income tax after being approved by the local government. The second policy is to increase capital investment and increase financial transfer payments.

The national government declared the three positioning of future development of Chongqing on March 8, 2007. The government would effort to accelerate the construction of Chongqing, thereby making it a very important example in the western region, and the economic center of the upper reaches of the Yangtze River region, and the municipality of common development in urban and rural areas in the western region. The government hoped that Chongqing could take the lead in comprehensive construction well-off society of western region. Chongqing also became a national pilot area of urban and rural comprehensive reform in 2007. The introduction of the "a number of opinions of the State Council about the promotion of urban and rural reform and development in Chongqing" (hereinafter referred to as the State Council Document No. 3) on January 26, 2009 made the regional economic development strategy of Chongqing as a national strategy.

At present, Chongqing enjoys many preferential policies including: preferential policies for the development of western and ethnic minority areas, and preferential policies for industrial development of the Three Gorges Reservoir Area, and the preferential policies given by the State Council Document No. 3, which includes more than 100 financial support policies, as well as a number of industries development policies. These policies provide a strong support for the coordinated regional economic development in Chongqing.

#### **2.4.2 Regional and local level**

In November 2006, the Chongqing government decided to implement the strategy of common development of "Circular-shaped" and "two wings" regions to improve the regional economic coordinated development in Chongqing. "Circular-shaped" refers to the 23 districts and counties that are around the main city, and the "two wings" refers to the 11 districts and counties that view Wanzhou and the Three Gorges reservoir area as the main body in Northeast of Chongqing, and the six counties which are around Qianjiang and minorities inhabited areas in southeast of Chongqing.

From then on, the Chongqing government arranged special funds for the development of "two wings" regions. The local government implemented the fiscal and tax preferential policies, especially for ethnic minority areas and the Three Gorges Reservoir Area. The government reduced or exempted from corporate income tax or returned part of tax according to the situation of different enterprises. Moreover, the government also deepened the financial reform, improved financial services, and optimized the credit structure, thereby vigorously supporting the development of high-tech industries, enhancing the development of skill in the

Industrial enterprises, easing the difficult problem of corporate liquidity loans, and further increasing the support for small and medium-sized enterprises, especially for the technology SMEs. Since Chongqing became the municipality, the local government constantly optimized the tax sharing system, and implemented the distribution pattern that less than 25% of the total fiscal expenditure would be used for urban areas, and more than 75% of the total fiscal expenditure would be used for the counties and rural development, especially focused on investment in remote mountainous areas and poor areas. And at the same time the government paid attention to improve rural credit environment and guaranteed loans to support agriculture and rural economic development.

**Proposition 1:** The policy supports from national and local governments are positively related to improve the imbalance in a specific region.

The government continued to strengthen the construction of three-dimensional transportation network, and created a convenient transportation environment for economic development. In order to build up a three-dimensional integrated transport network system that consists of waterways, railways, highways, and aviation as soon as possible, the government increased investment in speeding up the construction of highways, railways, airport expansion project and other transport infrastructures. Chongqing and other cities along the Yangtze River jointly developed the "Golden Waterway".

**Proposition 2:** Improving the transport system and other infrastructure is important for the balanced development.

The development in Chongqing need to rely on education and training of personnel, rely on the innovation and technological improvement, and rely on science and technology for economic development. However, the number colleges and universities, the number of students, and the number of state-level key disciplines and Key Laboratory in Chongqing are relatively less than many other cities. And the investment in R&D is also insufficient. The development in Chongqing must focus on the principal of "people-oriented" and sustainable development, and continue to implement the strategy of rejuvenating the country through development in science and education. The government has gave priority to the development of basic education, steadily developed the higher education, strengthened the development of key disciplines, dominant disciplines and specialty disciplines, vigorously promoted the construction of educational information, accelerated the pace of scientific and technological innovation, and promoted the combination of science and technology and economic. And vigorously promoting the process of commercialization and industrialization of technological achievements with independent intellectual property rights, technological content and high added value and improving the effective policy of protection of intellectual property rights are important measures to accelerate the development of high-tech industries.



**Proposition 3:** Development in education and technology are positively related to improve the imbalance in a specific region.

The first industry still accounts for a higher proportion, the second and tertiary industries are still not excellent in Chongqing, and the proportion of industrial structure is not good compared with the eastern region as a whole. So the government and enterprises of Chongqing needs to base on the guiding principles that “firmly entrenching primary industry, optimizing and improving the secondary industry, and accelerating the development of tertiary industry” when adjust the structure of industry; and the government and enterprises need to put efforts to strengthen the pillar industries, and accelerate the development of high-tech industries. The government and enterprises have to vigorously develop the number of labor-intensive industries, and create more employment opportunities according to the actual situations in Chongqing at the same time. Chongqing is famous for its beautiful natural scenery, rich cultural heritages and the delicious cuisine. And the tourism industry is also benefit for easing the pressure of ecological environment and creating more jobs. So the local government encouraged the development of the tourism industry and invested in the maintaining of attractions.

**Proposition 4:** The adjustment and optimization of industrial structure are positively relation to improve the imbalance.

Developing low-carbon economy is helpful for Chongqing to achieve national strategy, and alter the extensive economic growth mode. Been formally proposed the term “low-carbon economy” by the British government in 2003, the State governments have taken measures to achieve its low-carbon development, and have proposed and implemented fiscal and taxation policies to promote low-carbon economic development which are suitable for their own country’s development. Chongqing responded to the national call, it proposed some low-carbon economic policies which were suitable for its areas’ development by itself in addition to implement country’s policies. Chongqing is a low-carbon economy pilot city designated by the State, and itself also proposed a goal to developing into the country’s first low-carbon city. The local fiscal and taxation policies promoting low-carbon economic development of Chongqing mainly focused on: developing a detailed low-carbon tax system, expand saving sectors’ taxes preferential scope, such as VAT, corporate income tax, giving personal income tax relief for their acts of low-carbon, increasing financial subsidies to support the development and utilization of new energy, enhancing public awareness of low-carbon and start universal low-carbon (Li and Wu, 2012).

**Proposition 5:** Insisting on sustainable development and balancing the gap between economic development and environmental protection are important for improving imbalances.

### **3. Methodology and Data for testing propositions**

I collected data from aspects of economic development, ecological environmental development, investment in R&D, and adjustment of industrial structure in Chongqing in recent years in order to test the propositions mentioned before. The data about economic development from 1997 to 2011 was used to test the first proposition about the effects of government; the data about investment on R&D was used to check the third proposition about influences of education and technological development; the data about adjustment of industrial structure was related to the fourth proposition; and the data about environment in Chongqing was related to the last proposition. However, there was not too much useful data about construction of infrastructure, so the effects of construction of infrastructure for the coordinated development in Chongqing were not discussed in this part. The data is from the Statistical Yearbook of Chongqing and China, Report on the Work of Government of Chongqing and China, news and press, the relative thesis of master and PhD, and other related literature. So the authenticity and validity of the data can be guaranteed. It can be seen the level of social and economic development in Chongqing in recent years through sorting out and analyzing these data.

#### **3.1 Data of economic development**

The data I collected about the economic development in Chongqing is from two phases. The first one is from 1997 to 2006 – the period of 10 years from Chongqing becoming the fourth municipality in China and the only municipality in the western region of China; and the second phase is from 2007 to 2011 – the period from the local government implementing the strategy of the common development of “circular-shaped region” and “two wings region”. The data was related to the important effects of strategy of common development of “circular-shaped” and “two wings” regions.

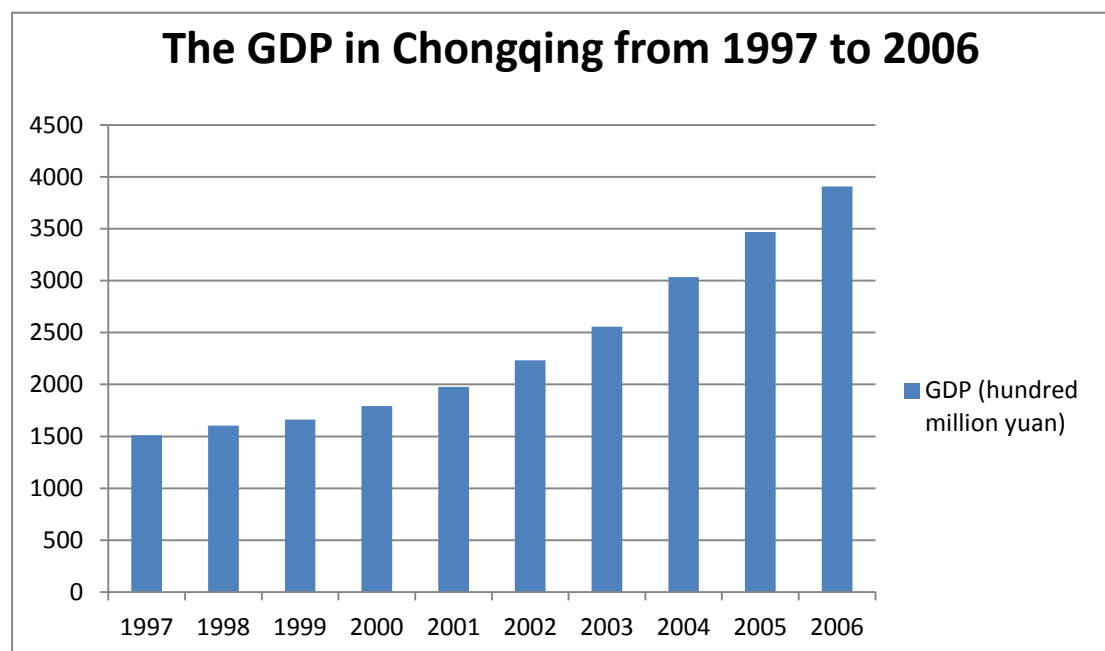
##### **3.1.1 The first phase**

After becoming the municipality, Chongqing has entered a stage of sustained and rapid economic development. The GDP and growth rate were increasing year by year, and the average growth rate was 10.2% in these 10 years, which was 1.1% faster than the national average growth rate, and per capita average annual GDP growth rate was 10.5% in Chongqing.

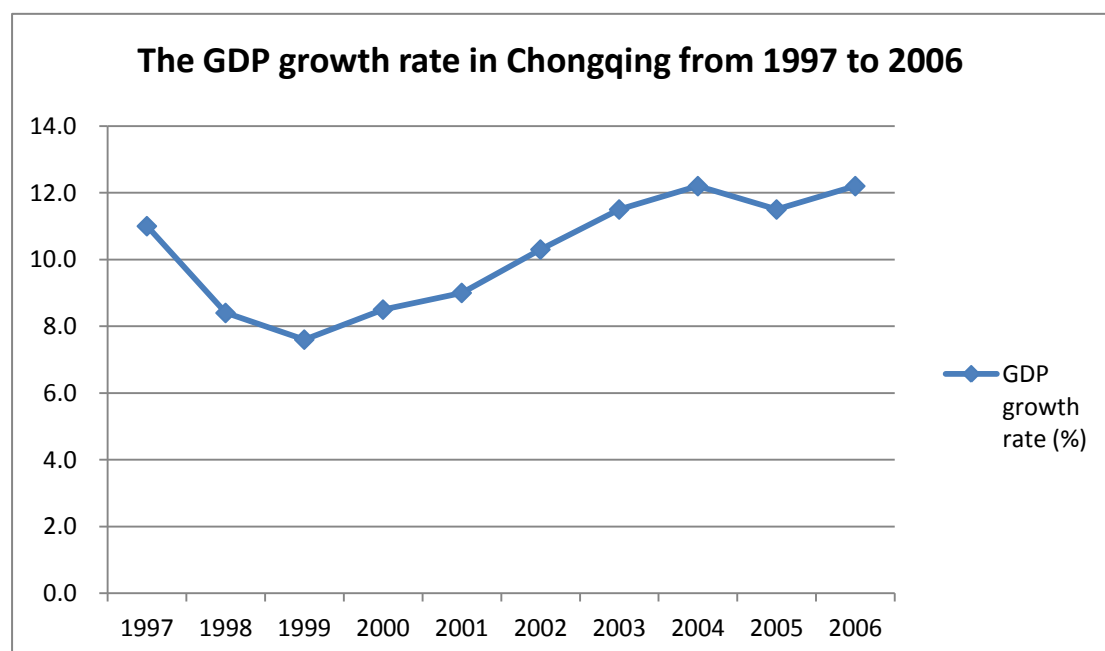
**Table 1.** The GDP and GDP per capita in Chongqing from 1997 to 2006

Year	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
GDP (hundred million yuan)	1510	1602	1663	1791	1977	2233	2556	3035	3468	3907
GDP per capita (yuan)	5253	5579	5804	6274	6963	7912	9098	10845	12404	13939

**Figure 2.** The GDP in Chongqing from 1997 to 2006



**Figure 3.** The GDP growth rate in Chongqing from 1997 to 2006



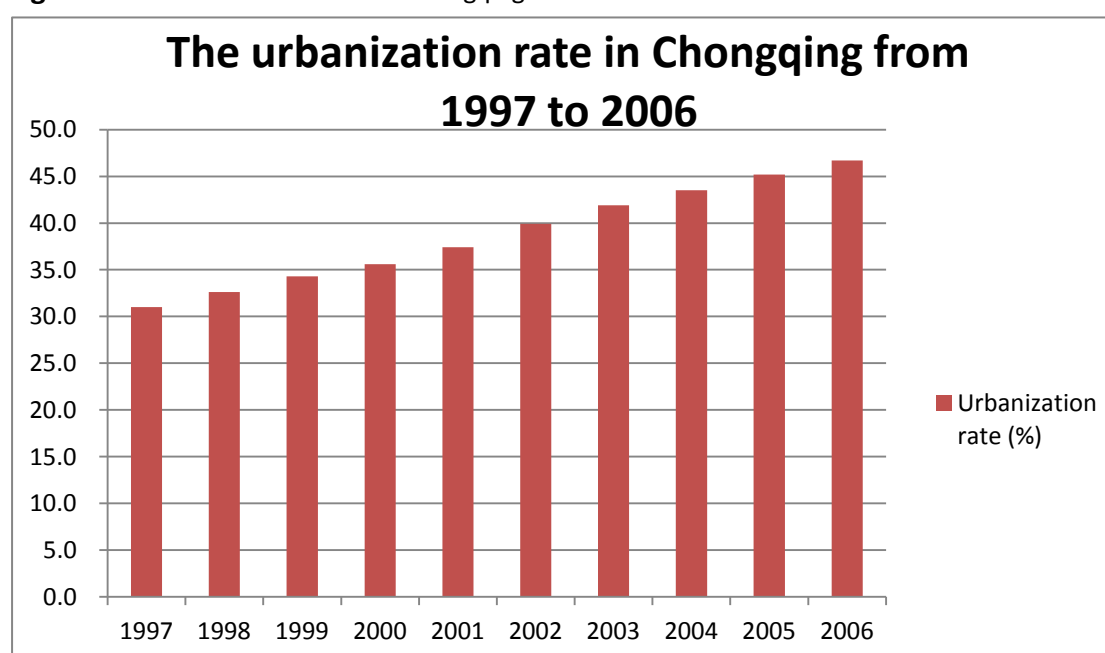
The level of investment in fixed assets of urban and rural areas in Chongqing also improved steadily. The total fixed asset investment increased from 37 billion yuan in 1997 to 245.18 billion yuan in 2006, and the total fixed asset investment in 2006 was 5 times more than that in 1997; the levels of investment fixed assets in urban and rural areas were increased year by year.

**Table 2.** The levels of fixed assets investment of urban and rural in Chongqing from 1997 to 2006

Year	1997	1999	2001	2002	2004	2006
Investment in fixed assets in urban area (Ten thousand yuan)	2747402	4504619	6720308	8568780	14771164	22914581
Investment in fixed assets in rural area (Ten thousand yuan)	962083	1124060	1297920	1387865	1448039	1603770

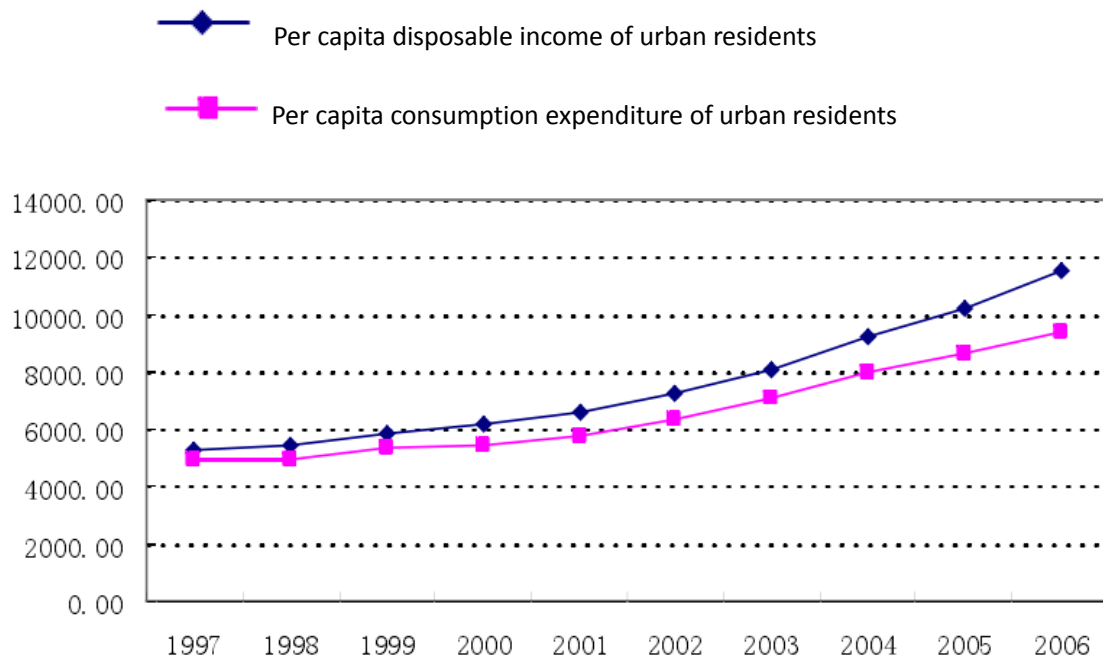
At the beginning of becoming municipality, Chongqing was a typical combination of the big cities and big rural areas. The contradictions of urban-rural dual structure were existing obviously. The total population in Chongqing was 28.73 million at that time, of which the rural population was 19.82 million, accounting for about two-thirds of the total population. After the development during 10 years, the current urbanization rate increased from 31% in 1997 to 46.7% in 2006, which was higher than the national average urbanization rate. The continuous development of the urban economy and rural modernization promoted the transfer of the rural surplus labor force from rural areas to urban area, thereby increasing urbanization rate in Chongqing. As can be seen from the figure, the urbanization rate of Chongqing increased steadily from 1997 to 2006.

**Figure 4.** The urbanization rate in Chongqing from 1997 to 2006

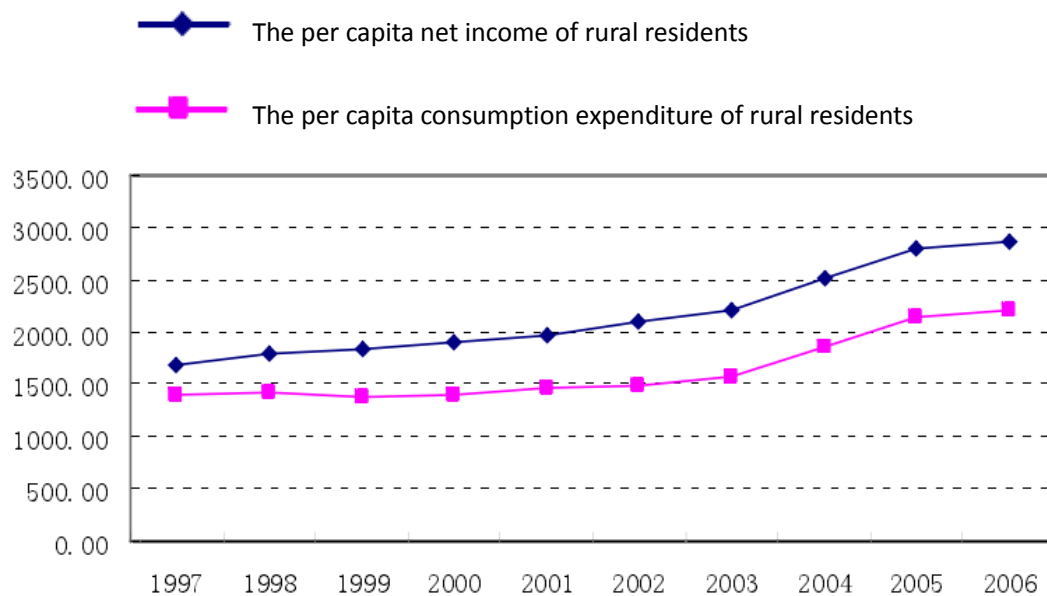


The per capita disposable income of Chongqing urban residents increased from 5,302 yuan in 1997 to 11,570 yuan in 2006, and the per capita disposable income in 2006 was doubled that in 1997; the per capita net income of farmers in 2006 had also nearly doubled compared with that in 1997. In addition, the level of consumption of urban and rural residents significantly improved, and the consumption structure tended to be more reasonable. As can be seen from figures below, the levels of incomes and consumption of urban and rural residents in Chongqing increased rapidly. The Engel coefficient of rural households decreased from 65.8% in 1997 to 52.2% in 2006, and the Engel coefficient of urban residents decreased from 46.7% in 1997 to 36.3% in 2006.

**Figure 5.** The growth trend of urban residents' per capita disposable income and per capita consumption expenditure in Chongqing from 1997 to 2006



**Figure 6.** The growth trend of rural resident's per capita net income and the per capita consumption expenditure in Chongqing



**Table 3.** The Engel coefficient of urban and rural residents in Chongqing from 1997 to 2006

Year	1997	2000	2003	2006
the Engel coefficient of urban residents	46.7%	42.2%	38%	36.3%
the Engel coefficient of rural residents	65.8%	53.6%	52.5%	52.2%

### 3.1.2 The second phase

At the end of 2006, the local government decided to implement the strategy of common development of “circular-shaped region” and “two wings region”. This strategy is important for reduce the gap between urban and rural areas in Chongqing. The “circular-shaped region” refers mainly to the "one-hour economic circle" that is around the main city district; the "two wings region" covered 17 districts and counties in northeast and southeast of Chongqing, including the Three Gorges reservoir area, ethnic minority areas, and poverty-stricken areas.

Firstly, the economic development of “circular-shaped” region increased continuously. In 2011, the GDP of “circular-shaped” region was 776.269 billion yuan, which was 16.1% more than that in 2010. The average annual increase of GDP in “circular-shaped” region was 15.42% since 2007. Meanwhile, the economic development of the “two wings” region increased rapidly in recent years. The “two wings” region took advantages of to its resources and demographic characteristics, and focused on the development of labor-intensive and resource exploiting industries. The GDP in 2011 was 224.844 billion yuan, which was 17.2% more than that in 2010 and was 1.1% faster than the growth rate of GDP in the “circular-shaped” region. Moreover, the growth rates of GDP in “two wings” region were higher than

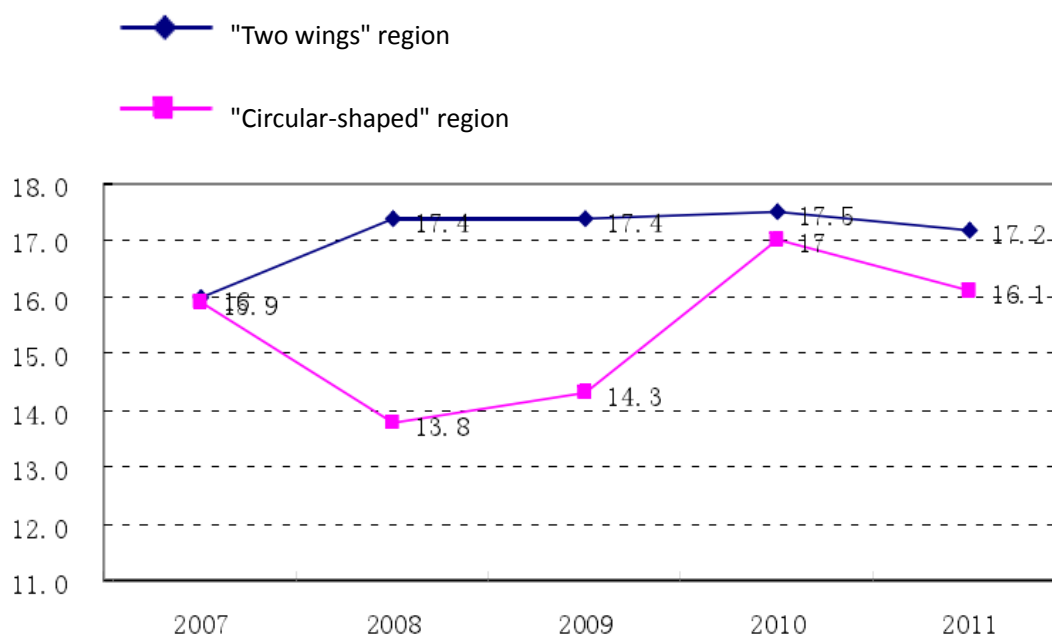
that in “circular-shaped” region in five consecutive years. The average annual GDP growth of Northeast of Chongqing was 17.5%, which was 1.4% higher than that in the "circular-shaped" region; and the average annual GDP growth in southeast of Chongqing was 16.0%, which was almost same as the growth rate in the "circular-shaped" region.

The economies of urban and rural areas developed rapidly as a whole in Chongqing, and the gap of per capita GDP ratio between "circular-shaped" and "two wings" regions was reduced year by year; the growth rates of GDP in “two wings” region were higher than that in “circular-shaped” region in five consecutive years because of the sustained and rapid development in “two wings” region, thereby narrowing the gap between "circular-shaped" and "two wings" regions gradually, and further enhancing the coordinated regional development of urban and rural areas.

**Table 4.** The GDP ratio and the per capita GDP ratio of "circular-shaped" and "two wings" regions in Chongqing from 2007 to 2011

year	The GDP ratio of "circular-shaped" and "two wings" regions	The per capita GDP ratio of "circular-shaped" and "two wings" regions
2007	3.55	2.44
2008	3.48	2.34
2009	3.48	2.27
2010	3.45	2.21
2011	3.45	2.16

**Figure 7.** The GDP growth rate in Chongqing from 2007 to 2011 (unit: %)



The revenue growth of "two wings" region was also slightly higher than that in the "circular-shaped" region. In 2011, the local fiscal revenue of "circular-shaped" region

reached 112.856 billion yuan, and the average annual growth rate was 41.9% for the past five years; the local fiscal income of "two wings" region was 27.221 billion yuan, and the average annual growth rate was about 49.8%. The fiscal revenue of these two regions increased simultaneously, and the financial income gap was gradually narrowing because of the growth rate in "two wings" region is slightly higher than that in "circular-shaped" region. The rapid growth of fiscal revenue has effectively promoted the acceleration of the economic and social development in Chongqing.

As can be seen from the tables, the ratio of per capita income of urban and rural residents has decreased year by year since 2007. The ratio decreased significantly in 2011, and it was 0.39 less than that in 2010. Meanwhile, the development of the social security of urban and rural residents increased the confidence of urban and rural residents, so the consumption level of urban and rural residents also increased rapidly.

**Table 5.** The per capita income and income ratio of urban and rural residents from 2007 to 2011 in Chongqing (Unit: RMB)

year	Per capita disposable income of urban residents	The per capita net income of rural residents	The ratio of urban and rural residents per capita income
2007	12590	3509	3.59
2008	14367	4126	3.48
2009	15748	4478	3.52
2010	17532	5276	3.52
2011	20250	6480	3.13

**Table 6.** The level of per capita consumption expenditure of urban and rural residents from 2007 to 2010 in Chongqing (Unit: RMB)

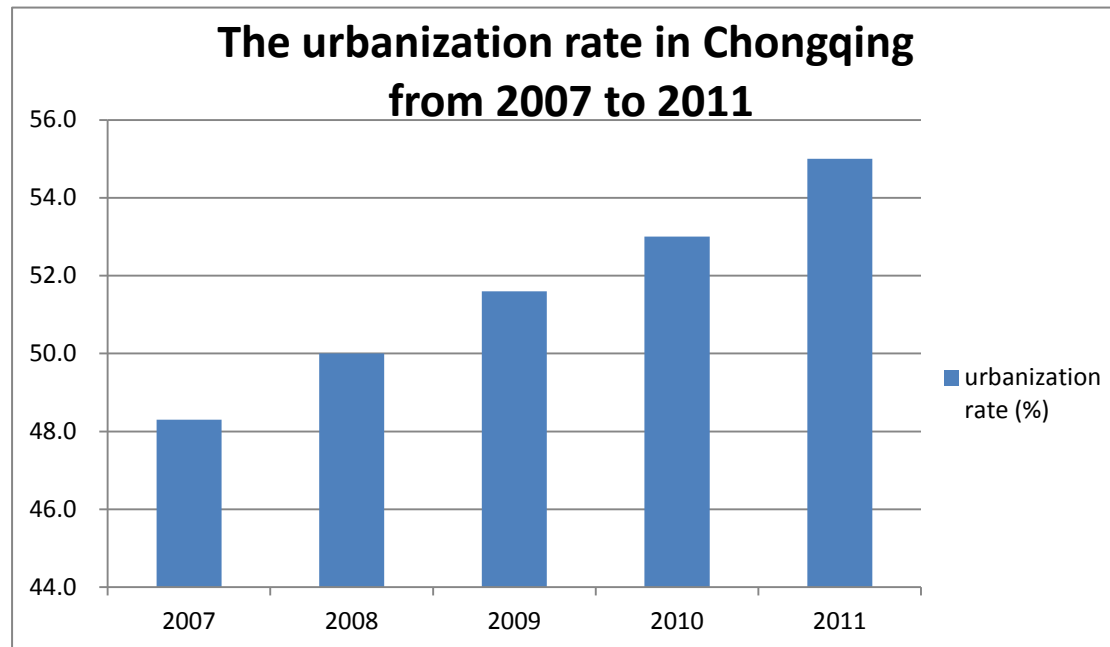
Year	Per capita consumption expenditure of urban residents	Per capita consumption expenditure of rural residents
2007	9890	2527
2008	11146	2885
2009	12144	3142
2010	13335	3625

The local government paid more attention to invest in the development of districts and counties that near the main urban area. The urbanization rate has grown steadily since 2007, and it reached 55% in 2011. And the urbanization rates were higher than the national levels in these years. The level of urbanization of "circular-shaped" region and "two wings" region developed simultaneously. In 2011, the urbanization rate of "circular-shaped" region was 66.24%, which was 5.0% higher than that in 2007; the urbanization rate of "two wings" region reached 36.84%, which increased by 7.8% compared with that in 2007. But the level of urbanization of "circular-shaped" region was 30% higher than that of "two wings" region, and there was still a considerable gap. In general, the reasonable ratio of urbanization rate and



industrialization rate was in the range from 1.4:1 to 2.5:1, but the ratio of urbanization rate and industrialization rate in "two wings" region was only 0.9:1. So the rate of industrialization was lower than the rate of industrialization, and the level of urbanization lagged behind the level of economic development.

**Figure 8.** The urbanization rate in Chongqing from 2007 to 2011



### 3.2 Data of investment on R&D

The data about the R&D expenditure and GDP and the number of R&D full-time staff from 2005 to 2010 was used to test the effects of educational and technological development.

The total R&D expenditure grew continuously in Chongqing from 2005 to 2010, and the growth rate increased more significantly from the 2007. The annual nominal growth rates of total R&D expenditure were significantly higher than the nominal growth rate of GDP in Chongqing, so the development of science and technology in Chongqing has maintained a strong strength, especially the implementation of the strategy of common development of "circular-shaped" and "two wings" regions exerted positive influences on the overall improvement of level of science and technology. The development of science and technology provided a strong guarantee for the economic and social development in Chongqing.

The enterprise R&D expenditures accounted for more than 75% of the total R&D expenditures in Chongqing, and the proportion was greater than the ratio of colleges and universities R&D expenditure to the total R&D expenditure and the ratio of research institutions R&D expenditure to the total R&D expenditure in Chongqing. So the enterprise is the very important force for growth of financial resources in science

and technology in Chongqing.

Although the ratio of R&D expenditure to GDP in Chongqing increased continuously from 2005 to 2010, the proportions were lower than ratio of R&D expenditure to GDP in China.

**Table 7.** The R&D expenditure and GDP data in Chongqing from 2005 to 2010

Year	2005	2006	2007	2008	2009	2010
R&D expenditure in Chongqing (100 million yuan)	33.12	38.10	47.07	60.89	79.46	100.27
Nominal growth rate (%)	--	15.04	23.55	29.35	30.50	26.19
GDP in Chongqing (million)	3070.49	3452.14	4122.51	5096.66	6530.01	7925.58
Nominal growth rate (%)	--	12.43	19.42	23.63	28.12	21.37
The ratio of R&D expenditure to GDP in Chongqing (%)	1.08	1.10	1.14	1.19	1.22	1.27
The ratio of R&D expenditure to GDP in China (%)	1.13	1.13	1.18	1.35	1.46	1.54
Enterprise R&D expenditure (100 million yuan)	24.97	29.81	37.30	48.12	60.64	75.56
The ratio of enterprise R&D expenditure to the total R&D expenditure in Chongqing	75.39	78.25	79.24	79.03	76.31	75.36
The colleges and universities R&D expenditure (100 million yuan)	5.49	5.79	6.59	9.30	10.79	14.34
The ratio of colleges and universities R&D expenditure to the total R&D expenditure in Chongqing	16.58	15.20	13.99	15.27	13.58	14.30
Research institutions R&D expenditure (100 million yuan)	2.42	2.23	2.95	3.23	6.75	9.06
The ratio of Research institutions R&D expenditure to the total R&D expenditure in Chongqing	7.29	5.86	6.26	5.31	8.50	9.04

The number of R&D full-time staff was increasing year by year from 2005 to 2010, and the nominal growth rate reached 13.35% and 10.33% in 2007 and 2008, respectively.

The number of R&D full-time staff in enterprises accounted for more than 66% of the total number of R&D full-time staff, the proportion was greater than the ratio of the number of colleges and universities R&D full-time staff to the total number of R&D full-time staff and the ratio of the number of research institutions R&D full-time staff to the total number of R&D full-time staff in Chongqing. So the enterprise is an

important force of the input growth of science and technology in human resources in Chongqing.

However, the annual nominal growth rates of the number of R&D full-time staff in Chongqing were still lower than the national average from 2005 to 2010.

**Table 8.** The R&D full-time staff data in Chongqing from 2005 to 2010

Year	2005	2006	2007	2008	2009	2010
The number of R&D full-time staff in Chongqing (10 thousand persons)	2.58	2.79	3.17	3.49	3.50	3.71
Nominal growth rate (%)	--	8.33	13.35	10.33	0.23	5.92
The R&D full-time staff in China (10 thousand persons)	136.48	150.25	173.62	196.54	229.13	255.38
Nominal growth rate (%)	--	10.09	15.55	13.20	16.58	11.46
The number of enterprise R&D full-time staff in Chongqing (person)	17973	18698	21877	25504	24764	25698.8
The ratio of the number of enterprise R&D full-time staff to the total number of R&D full-time staff in Chongqing (%)	69.72	66.96	69.11	73.02	70.74	69.31
The number of colleges and universities R&D full-time staff in Chongqing (person)	5215	6107	6828	6445	6489	7131.2
The ratio of the number of colleges and universities R&D full-time staff to the total number of R&D full-time staff in Chongqing (%)	20.23	21.87	21.57	18.45	18.54	19.23
The number of research institutions R&D full-time staff in Chongqing (person)	2009	2617	2410	2437	2470	2804
The ratio of the number of research institutions R&D full-time staff to the total number of R&D full-time staff in Chongqing (%)	7.79	9.37	7.61	6.98	7.06	7.56

### 3.3 Data of adjustment of industrial structure

The data in table 9 and table 10 reflected the changes in the proportions of three industries. The proportion of primary industry was declining from 9.9% in 2006 to 8.6% in 2010, and the proportion of secondary industry was increasing from 47.9% in 2006 to 55.0% in 2010, and output value of tertiary industry increased year by year, but the proportion has declined.

The annual GDP of Chongqing was 1.001113 trillion yuan in 2011, which was 16.4% more than that in the previous year. The added value of the first industry was 84.452

billion yuan, which was 5.1% more than that in 2010; the added value of the secondary industry was 554.28 billion yuan, which was 21.8% more than that in 2010; the added value of the tertiary industry 362.381 billion yuan, which was 10.8% more than that in 2010. The added value of the primary industry accounted for 8.4% of the total GDP in Chongqing, which was 0.2% lower than that in the previous year; the added value of the secondary industry accounted for 55.4%, which was 0.4% higher than that in the previous year; and the added value of the tertiary industry accounted for 36.2 %, which was 0.2% lower than that in 2010.

**Table 9.** The ratio of three industries from 2006 to 2011 in Chongqing

Year	Primary industry (%)	Secondary industry (%)	Tertiary industry (%)
2006	9.9	47.9	42.2
2007	10.3	50.7	39.0
2008	9.9	52.8	37.3
2009	9.3	52.8	37.9
2010	8.6	55.0	36.4
2011	8.4	55.4	36.2

From the aspect of industrial structure and layout, the process of industrialization of "circular-shaped" region and "two wings" region was significantly accelerated. And the developments of the industry in these two regions had their own characteristics. In recent years, the trend of industrial structure in "circular-shaped" region and "two wings" region was similar – the proportion of secondary industry increased year by year, and proportions of primary industry and tertiary industry declined gradually. The industrial added value in "circular-shaped" region accounted for 48.6% of GDP, which was 3.4% higher than that in 2007; the industrial added value in "two wings" region reached 41.0% of GDP, which was 6.7% higher than that in 2007, and the industrial added value in northeast of Chongqing accounted for 41.7%, which was 7.5% higher than that in 2007, and the industrial added value in southeast of Chongqing increased by 4.1% compared with that in 2007, reaching 38.7% of GDP.

**Table 10.** The ratio of three industries in 2007 and 2011 in Chongqing (Unit: %)

regions	2007			2011		
	primary industry	secondary industry	tertiary industry	primary industry	secondary industry	tertiary industry
"circular-shaped" region	7.8	52.2	40.0	6.4	56.4	37.2
northeast of Chongqing	19.4	44.5	36.1	15.2	52.4	32.4
southeast of Chongqing	19.7	46.3	34.0	16.9	50.6	32.5

### 3.4 Data of environmental protection

The data in this part reflected the natural conditions, the sources of environmental stress, and environmental improvement in these years. Chongqing is in karst regions with a total area of 32,038.14 square kilometers, accounting for 38.9% of the total land area. The karst regions located in the 34 districts and counties of Chongqing, and these districts and counties mainly concentrate in the mountain areas of northeast and southeast of Chongqing. It is estimated that the area of rocky desertification region in Chongqing is 6300 square kilometers, in which the area of mild rocky desertification region is 3300 square kilometers, and the area of moderate rocky desertification region is 2100 square kilometers, and the area of severe and very severe rocky desertification region is 900 square kilometers. Due to topographic and climatological reasons in Chongqing, the forest coverage rate is low, the problem of soil erosion is serious, and the natural disasters occur frequently. The water pollution is relatively serious and the quality and stability of water have been challenged. The “algae bloom” phenomenon is existing in some backwater areas. The problem of water pollution is more serious in “circular-shaped” region. It is obvious that ecological and environmental limitation is one of the important constraints in coordinated regional economic development in Chongqing.

Chongqing is a place which is rich in coal, less gas and short of oil. Affected by resource constraints, the energy structure of Chongqing is dominated by coal, and the selection of low-carbon energy resources is limited. The electricity, hydropower only accounted for about 20%, while thermal power accounted for more than 77%, “high-carbon” is absolutely accounting for the dominance place. Coal is an important resource for the development of Chongqing. This kind of high-carbon energy structure cored with coal is a constraint factor for Chongqing to transport to a low-carbon development model. Chongqing utilizes natural gas just accounting for 12% in total energy consumption, which has less pollution for air, not to say pollution-free energy – water energy, wind energy, solar energy and nuclear energy. If Chongqing wants to reduce energy consumption with high pollution and reduce emissions with harmful substances, it should increase the development and utilization of new energy.

With the rapid economic development of Chongqing and the continuous progress of industrialization, urbanization and modernization, Chongqing mainly develops infrastructure construction vigorously such as transportation, and together with the continuous improvement of living standards of urban and rural residents, so the demand of resources, especially energy, is increasing day after day. Especially after being a municipality, the energy consumption of Chongqing straight up, and the total energy consumption increased from 2119.46 tons of standard coal in 1998 to 7117.41 tons in 2010, increased more than three times, compared to 91.71 tons during 1949, increased more than 77 times. The energy demand increase directly results the enormous pressure of the ecological environment (Li and Wu, 2012).

At the same time, the Three Gorges reservoir area has the special requirements on the ecological environment. Three Gorges reservoir area plays an important role on the national strategic reserve of fresh water, so the requirements of the ecological environment in the reservoir area are particularly high. On the one hand, the reservoir area is in a special location, and the main function of the Three Gorges Reservoir Area is positioned as ecological protection area and restricted development zones. The state government formulated stringent environmental policy for the economic development in the Three Gorges reservoir area. On the other hand, the costs of protecting and improving the ecological environment are high due to the fragile ecological environment and stringent environmental policy.

The per capita GDP of Chongqing reached 27600 Yuan in 2010 from 5700 Yuan in 2001, and air quality rate rose to 85% in 2010 from 60% in 2001, and green coverage rate of built area was from 17% up to 39%, and particularly the treatment rate of life garbage was from 65% up to 96%. Therefore, from technical and economic indicators, air environmental indicators and urban construction indicators, we could get that Chongqing's economic level has improved, and the rate of enhancing was increasing year after year, and the ecological environment was better (Li and Wu, 2012).

The investment in environmental protection increased year by year, and it increased from 84.64 hundred million yuan in 2006 to 231.68 hundred million yuan in 2010; the investment in industrial pollution control project increased from 367 million yuan in 2006 to 775 million yuan in 2010, and the compliance rate of industrial wastewater discharge also increased year by year; the comprehensive utilization rate of industrial solid waste increased year by year, and the efficiency of utilization gradually increased; sulfur dioxide emissions, represented as the industrial air pollution index, reduced each year, and the reducing rate of average annual emissions was 4.42%; the forest cover rate increased from 32% in 2006 to 37% in 2010.

**Table 11.** Basic indicators of environmental conditions in Chongqing from 2006 to 2010

Year	Investment in environmental protection (One hundred million yuan)	Investment in industrial pollution control (One hundred million yuan)	The compliance rate of industrial wastewater discharge (%)	Comprehensive utilization rate of industrial solid waste (%)	Sulfur dioxide emissions (Ten thousand tons)	The forest coverage rate (%)
2006	84.64	3.67	93.9	73.7	71.08	32
2007	108.20	10.01	92.1	76.7	68.31	32
2008	126.42	9.74	93.5	79.1	62.72	34
2009	189.55	7.07	94.3	79.8	58.61	35
2010	231.68	7.75	94.7	80.4	57.27	37

The new completed green woodland area reached 245,000 hectares, and the forest coverage rate was 39.0% in 2011. The green coverage rate of main urban district reached 41.5%. The average concentrations of sulfur dioxide, nitrogen dioxide and inhalable particles were 0.038 mg / cubic meter, 0.032 mg / cubic meter and 0.093 mg / cubic meter in 2011, which decreased by 20.8%, 18.0% and 8.8% compared with last year, respectively. And the comprehensive pollution index was 1.96, which was 15.2% lower than that in 2010.

## **4. Results and discussion**

### **4.1 Results of measuring propositions**

From the relationship between data and propositions, we could see that the policy support from national and local government is very important for the coordinated economic and social development in China, especially in the relatively backward regions. In addition, the improvement of R&D, optimization of industrial structure, and protection of ecological environment are all related to the balanced economic and social development in Chongqing.

#### **4.1.1 Effects of policy support**

The municipality of Chongqing was officially established by central authorities of China in 1997. Chongqing is the fourth municipality in China and the only municipality in the western region of China. At the end of 1999, the state government decided to implement the strategy of developing the western region of China, and Chongqing, the only municipality in the west, played an important role in the process of developing the western region. In November 2006, the Chongqing government has decided to implement the strategy of common development of “Circular-shaped” and “two wings” regions. Chongqing also became a national pilot area of urban and rural comprehensive reform in 2007. The national government declared the three positioning of future development of Chongqing on 8 March 2007. The government would effort to accelerate the construction of Chongqing, thereby making it a very important example in the western region, and the economic center of the upper reaches of the Yangtze River region, and the municipality of common development in urban and rural areas in the western region. The introduction of the "a number of opinions of the State Council about the promotion of urban and rural reform and development in Chongqing" was published on 26 January 2009. And Chongqing also became the first inland duty-free zone in China in 2009. All of these policies from national and local government provide strong supports for the social and economic development in Chongqing.

As can be seen from the data, the national and local policies play an important role on the economic development in Chongqing. The economy developed rapidly after Chongqing becoming municipality. The GDP, per capita GDP, and the urbanization rate increased obviously. The living standard and level of income and consumption expenditure of urban and rural improved significantly. However, it is clear that the per capita income and the growth rate of rural residents are less than those of urban residents. In 2006, the gap of growth rate of per capita income was widened; the level of consumption expenditure of rural residents was far behind that of urban residents. Although the economic development in urban area increased rapidly, the gap between urban and rural areas was still gradually expanded. The rural development still lagged far behind the development of urban area, and the living



standard of rural residents was not high. The need of coordinated development of urban and rural areas was urgent.

After implementing the strategy of common development of “circular-shaped” and “two wings” regions and becoming the national pilot area of urban and rural comprehensive reform, Chongqing paid more attention to development of rural area. The economies of both urban and rural areas developed rapidly in Chongqing, and the gap of per capita GDP ratio between “circular-shaped” and “two wings” regions was reduced year after year; the growth rates of GDP in “two wings” region were higher than that in “circular-shaped” region in five consecutive years. So the gap between “circular-shaped” and “two wings” regions was narrowed gradually, and the coordinated regional development of urban and rural areas was further enhanced. Not only the economic development of both urban and rural areas increased rapidly, but also the urban-rural relations had also been a good interaction. The performances in the regional economic development, adjustment of industrial structure, public services, living standard and other aspects were better. So the first proposition about the effects of national and local government is supported.

#### **4.1.2 Effects of development in education and technology**

It can be seen from the data of R&D expenditure and the number of R&D full-time staff that the investment in science and technology of districts and counties in Chongqing promoted the economic and social development, and the input of science and technology in both human resources and technological resources played an important role in promoting economic and social development, especially in the “two wings” regions. The enterprise was the main body of investment in science and technology, and the positive influences of promoting economic and social development from the investment of science and technology in colleges and universities were also significant in Chongqing. However, the ratios of R&D expenditure to GDP in Chongqing were lower than ratio of R&D expenditure to GDP in China, and the annual nominal growth rates of the number of R&D full-time staff in Chongqing were lower than the national average. So in order to keep the sustained economic and social development, the government, enterprises, and colleges and universities need to invest more in R&D expenditure and R&D staff. So the third proposition about development in education and technology is supported.

#### **4.1.3 Effects of optimization of industrial structure**

As can be seen from the data, in recent years, the secondary industry dominated for most of GDP. The olden industrial base in Chongqing played an important role for the economic development. Overall, the proportion of primary industry was declining, the proportion of secondary industry was increasing, and output value of tertiary industry increased year by year, but the proportion declined. The adjustment of industrial structure is very important for the sustained and balanced economic

development in Chongqing. However, the first industry still accounted for a higher proportion, the second and tertiary industries were still not excellent in Chongqing, and the proportion of industrial structure was not good compared with the eastern region as a whole. So the government and enterprises of Chongqing need to continue to base on the guiding principles that “firmly entrenching primary industry, optimizing and improving the secondary industry, and accelerating the development of tertiary industry” when adjust the structure of industry; and the government and enterprises must put efforts to strengthen the pillar industries, and accelerate the development of high-tech industries. The government and enterprises have to vigorously develop the number of labor-intensive industries, and create more employment opportunities according to the actual situations in Chongqing at the same time. So the fourth proposition about the adjustment and optimization of industrial structure is supported.

#### **4.1.4 Effects of environmental protection**

Because of the location and climate conditions, resource distribution, increasing pressure from energy consumption and ecological environment in recent years, and the stringent environmental requirement of Three Gorges Reservoir Area, the ecological and environmental limitation is one of the important constraints in coordinated regional and local economic development in Chongqing. Chongqing is a low-carbon economy pilot city designated by the State, and itself also proposed a goal to developing into the country's first low-carbon city. The ecological environment is much better, and the enterprise and local government pay more attention to adjust economic structure, improve energy efficiency, develop new industries and construct ecological civilization for protecting the environment. From the data we can see that the local government and enterprises in Chongqing invested more in improving and protecting of ecological environment. In recent years, the energy efficiency was improved, the green coverage rate was increasing, air quality was better, and the ability of industrial pollution control was much higher; the overall ecological environment was much better than before. Developing low-carbon economy is become the key way to achieve sustainable development for a region, and is also the important way to deal with global warming. Low-carbon economy is under the guidance of the concept of sustainable development to reduce the energy consumption of coal, oil and other high-carbon as far as possible by technological innovation, system innovation, industrial restructuring, new energy development and other means, to reduce greenhouse gas emissions, and achieve a win-win economic development patterns between the economic-social development and the protection of the ecological environment in Chongqing (Li and Wu, 2012). Developing low-carbon economy is a realistic way and is the inevitable choice to achieve a win-win situation of economic development and environment protection to reject past development mode of pollution firstly, treatment later. So the fifth proposition about environmental protection is supported.

**Table 12.** The expected propositions and tested propositions

Expected propositions	Tested propositions
<b>Proposition 1:</b> The policy supports from national and local governments are positively related to improve the imbalance in a specific region.	<b>Proposition 1:</b> The policy supports from national and local governments are positively related to improve the imbalance in a specific region. - supported
<b>Proposition 2:</b> Improving the transport system and other infrastructure is important for the balanced development.	No enough data
<b>Proposition 3:</b> Development in education and technology are positively related to improve the imbalance in a specific region.	<b>Proposition 3:</b> Development in education and technology are positively related to improve the imbalance in a specific region. - supported
<b>Proposition 4:</b> The adjustment and optimization of industrial structure are positively relation to improve the imbalance.	<b>Proposition 4:</b> The adjustment and optimization of industrial structure are positively relation to improve the imbalance. - supported
<b>Proposition 5:</b> Insisting on sustainable development and balancing the gap between economic development and environmental protection are important for improving imbalances.	<b>Proposition 5:</b> Insisting on sustainable development and balancing the gap between economic development and environmental protection are important for improving imbalances. - supported

## 4.2 Discussion

The level of economic development in the west of China is far behind that in the eastern coastal regions because of natural conditions and policy preferences. The ecological environment is fragile and the infrastructures, capital, labor forces and other factors for production are insufficient in the west of China. Considering the limitations in the western regions, the state government decided to implement the strategy of developing the western region from the end of 1999 in order to guarantee the balanced and sustained regional and local economic development in China.

Among the 12 provinces located in the west, Chongqing is the only municipality. The natural resources are more sufficient and the infrastructures are better than those in the other 11 provinces, and the industrial development is more mature. However, there are many imbalanced problems during the process of economic development in Chongqing, and these problems cannot be solved in a short time, although the state government formulated and implemented many preferential policies to promote the economic development and protect the ecological environment in Chongqing. But the government hoped that the development in Chongqing can set a good example for any other provinces in the west of China and lead to the overall development in the western region.

Chongqing is the only municipality directly under the central government in the west of China. The integration of big city and big rural and the conditions of location and resources environment are not good enough; the dual structure of integration of urban and rural areas is obvious, and the regional differences between urban and rural areas and the contradiction of the imbalance are serious. These contradictions are the important factors in restricting the development of Chongqing. But the contradictions in the other 11 provinces in the west are more serious. The ecological environment is more fragile, the transportation and other infrastructures are more backward, and natural and human resources are more insufficient compared with those in Chongqing. The poverty is more extensive and serious in these provinces. The balanced regional and local economic development is more difficult and challenging in the western region.

It can be seen from the data that the policy support from national and local governments is very important for the regional and local economic development in China, especially in the western region of China. Because the infrastructure is backward, ecological environment is fragile, the overall quality of people is low, and the poverty is common and serious; the level of overall economic development is lower, so the development which only depends on its own resources is difficult, and it is also difficult to attract the investment from foreign enterprises. The support of policy and investment in capital, preferential tax, human resources, R&D and other factors is very important for the sustained development and improvement of economic level in the western China, otherwise the gap between the eastern coastal area and the western area would be widened. The support from national and local policies could bring massive funding for construction of infrastructure, education, exploitation of energy and resources, environmental protection, and the development of market economy in west, thereby attracting foreign investment and promoting the economic and social development.

The ecological environment is fragile in the west of China. The problems of soil erosion and rocky desertification are serious, the rate of forest cover is low, and water is scarce; because of topography and climate in western region, the natural disasters happened frequently. These problems limit the sustained development in the west of China. So investing in controlling environmental pollution, improving energy efficiency, and protecting ecological environment is very important for sustained and economic and social development in western region of China.

The overall level of education and R&D in the west is far behind that in the eastern coastal region of China. The number of colleges and universities and research institutions, the investment in education and R&D, and the commercialization of achievements in scientific research are less compared with those in the eastern coastal region of China. The development of education and R&D in the west could improve the productivity, utilize resources reasonably, protect the ecological environment, develop high-tech industries, and enhance the capability of

independent innovation, which is very important for the rapid and sustained development in the west. The ratio of added value in R&D to the total GDP in Chongqing is increasing in the recent years. It can be seen that the development in education and R&D is important for the economic and social development in Chongqing and the western region of China, and the development in education and R&D is also the key to keep the sustained development and reduce the gap between the western region and the eastern coastal region.

The industrial structure in western region has not yet been effectively adjusted and optimized. The proportion of primary industry is higher, and the proportion of tertiary industry is lower compared with that in the eastern coastal region. The industrial structure in the west is not benefit for the economic development, and brings much pressure for the ecological environment. In order to the sustained development in western region, the government and enterprises need to pay more attention to adjust the industrial structure, increase the proportion of tertiary industry and develop the high-tech industry. The adjustment of industrial structure could base on the characteristic of western region, for example, the western region is famous for its landscape of plateau and culture of minority, so the tourism industry is needed to draw more attention. And the tourism industry is also benefit for easing the pressure of ecological environment and creating more jobs. The adjustment of industrial structure is important for the balanced regional and local economic development.

## 5. Conclusion

Because of natural conditions, history, preferential policies and some other reasons, the problem of imbalanced regional and local economic development is worldwide common. And this problem drew many scholars' attention, but the most of theoretical and practice researches focus on the western countries, largely ignoring the contexts of China and other developing countries.

After implementing the policy of economic reform in 1978, the speed of economic development in China has increased rapidly. Given its size, diversity, history, and identity as a transitional, developing country, China is one of the best laboratories for the study of regional and local economic development. Regional inequality exerts negative influences on the sustained development and the improvement of living standard in China. Within these broad contexts, regional inequality in China is serious and has attracted considerable scholarly interest. Most of researches focus on large regional economic development in China, such as the eastern, central and western, the Yangtze River Delta, Pearl River Delta, Chengdu-Chongqing Economic Zone and other regional researches. Most economists working on China deal with regional inequality at the provincial level, but there are limited studies on the intraprovincial inequality. However, the intraprovincial inequality is also serious and plays an important role on the research of balanced regional and local economic development.

I selected Chongqing as the research object of intraprovincial inequality, and mainly focused on the gap between urban and rural areas and the ecological environment. It can be seen from the data that the economic and social development increased rapidly after Chongqing becoming municipality, but the level of income and consumption expenditure of rural residents was far behind that of urban residents. And the gap between rural and urban areas was very obvious. In order to keep the sustained development, the national and local governments formulated some policies, and invested in construction of infrastructure, education, environmental protection, R&D, and some other facts to promote the balanced economic and social development in Chongqing. After local government implementing the strategy of common development of "circular-shaped" and "two wings" regions in 2007, the economic and social development was more balanced in recent years.

According to Pennink's (2013) model, I divided the solutions for improving imbalanced problems in Chongqing into national and local level. In the national level, I paid more attention to policy supports from government; and in the local level, I mainly focused on policy supports, development of R&D, adjustment of industrial structure, and environmental protection. This kind of division is better for analyzing and solving the imbalanced problems by integrating the specific situations in the process of economic development in a specific region. And these factors and relationship are needed to adjust accordingly when analyzing local economic

development in different regions. Besides those factors that have been mentioned in the Pennink's (2013) model, ecological environment is also a very important factor for the local economic development and is needed to draw more attention. Because ecological environment in a specific region is closely related to bridging the gap between economic development and protection of environment, and the protection of ecological environment is the key aspect of the trend of sustainable development in the whole world. When combining the model with a specific region – Chongqing, it can be seen from the data that supports from national and local government, development in education and technology, insisting on sustainable development and balancing the gap between economic development and environmental protection and adjustment of industrial structure are important for improving imbalances. Although the imbalanced problems cannot be solved in a short time, Chongqing is an important part of researches in regional and local economic development. And it can be seen from the recent development in Chongqing that intraprovincial inequality is also an important field of researches in regional and local economic development, and the intraprovincial inequality is needed to draw more scholars and economists' interests.

The economic and social development in Chongqing in recent years is a good example for the balanced and sustained development in any other provinces in the west of China. The ecological environment is more fragile, the transportation and other infrastructures are more backward, and natural and human resources are more insufficient. So the policy supporting from national and local government, investment in education and R&D, bridging the gap between economic development and environmental protection and optimizing of industrial structure are more important for the economic and social development in the western region of China. The analysis of Chongqing in this thesis can be used to change the imbalance in the west of China with less developed economy and institutions. The more important thing is that the balanced and sustained development needs to base on its own characteristic in the west of China.

### **Limitation**

The imbalanced problems in Chongqing are extensive, and this thesis mainly focuses on the gap between urban and rural areas and the ecological environment. Other imbalanced problems are also needed to draw attention and be solved. And the data collection is not comprehensive, especially the data about ecological environment. Ecological environment is a big and extensive issue, and it is very important for the coordinated regional and local economic development, especially for the developing countries. So the relationship between ecological environment and regional and local economic development is needed to pay more attention in the further study. Moreover, I did not find much data about construction of transport and other infrastructures, so I did not talk about it in this thesis. But construction of infrastructures is the important symbol of the level of economic and social development, especially the construction of transport, which is the key to trade

among different regions. So the relative researches are needed in the future. I hope that my analysis of intraprovincial inequality could draw more scholars and economists' attention to do the research in this field and promote the balanced regional and local economic development.



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