CHINA'S WESTERN REGION: INFRASTRUCTURE INVESTMENTS AND ECONOMIC GROWTH

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Abstract

The Western Development Program had a high impact on the western regional development of China, initiated by the major governmental leaders of China. This strategy contributed for a long term growth of the region and for the country as well, by increasing the infrastructure investments in the western region and developing the regional economies of comparative advantage. For this research was implemented the simplified version of growth theory by looking at investments only, and in a long run it was expected for the factors of economic growth to diverge or converge. This phenomenon is approved by the implemented data analysis which showed that in a long run, considering the investments, the incomes per capita and the growth rate converged between the regions. It explains that, by increasing investments in the low developed regions, in a long run, the factors of economic growth will become closer to those of more developed regions. However, the disparity between and within the regions remained as a result of the increased political influence over the funds allocation and revenue collection.

Introduction

China is one of the developing countries which in recent years showed a rapid economic growth as a result of its open policy towards the international markets. However, China is facing regional disparities and inequalities between the Eastern (coastal) and the Western (rural) region of China. The reasons behind this issue are economic policies and reforms for economic development and growth of the coastal part implemented by the central government. This region was closer to international trade and it was expected that the investments in this region would bring higher returns and also develop the other regions. In contrast, the western part of China lagged behind the coastal part, mostly in infrastructure investments and education, until the central government introduced the China's Western Development Program or Great Western Development Strategy. The aim of this program was to invest in infrastructure, education, agriculture and environmental protection in order to increase the economic growth and development of the Western region. The implementation of the plan of this program lasted ten years, from 2000 until 2009.

The main aim of my research is to analyse how the infrastructure investments in the Western region improved economic growth and development during the ten year period of investments and what is the impact of that today. Questions considering this research are: what are the disparities after the period of investments, and is there a convergence or divergence between the factors of economic growth? These questions can be answered by applying the growth theory in the case of China and by implementing a qualitative analysis of economic growth.

Moreover, this research will apply the regional growth theory. This theory has emerged from the neoclassical trade theory and national economy's growth theory, which explains the development of regional economies over time.[1] The regional development theory predicts that

[1] Dawkins, Casey J. "Regional development theory: conceptual foundations, classic works, and recent developments." Journal of planning literature 18.2 (2003): 131-172.p. 134

after a long run the incomes per capita and factor prices will converge or diverge between the regions.[2] With this theory is assumed that a region has an abundant factor of producing specific goods and it can be used as a comparative advantage for increasing its production. This will help for the region to specialise its production and to share its goods to the other regions, and thus it will increase the exchange of other factors needed for the region's sustainable production.

One of the main ideas of introducing the regional growth theory in the case of China, is to explain how the investments in infrastructure contributed to domestic output, which can be measured by the rate of returns to capital.[3] Moreover, by comparing the GDP growth and GDP per capita, before, during and after the implementation of the program, between the Eastern and Western region, I will find the difference in the growth. Then, by comparing the size of investments between the two regions during the ten years and by implementing a regression model, I will ascertain whether the different amount of investment resulted on convergence or divergence of the factors for economic development.

This paper is divided into five parts. The first chapter is a literature review, in order to show how other authors perceive the relationship between the infrastructure investments and economic growth in developing countries. The second chapter will be the historical background of China's Western Development Program. In the third chapter I will introduce the theoretical background and the effects of the infrastructure investments on economic growth and inequalities in the case of China. The fourth chapter will be the qualitative analysis and the main findings, and the fifth chapter will be a discussion. At the end will follow the concluding remarks.

[2] Ibid., p. 135
[3] Banerjee, Abhijit V., Esther Duflo. "Growth Theory through the Lens of Development Economics." http://economics.mit.edu/ (2004): 1-88, p. 7

Chapter 1: Literature Review

There is a vast literature about the effects of the infrastructure on economic growth. Most of the developed countries show that there is a need for a quality upgrading of already existing infrastructure, rather than building new systems. Regardless of this case, the developing countries showed a need for development and economic growth through investing in infrastructure for connecting rural with urban areas, connecting the more developed with less developed areas, increasing the length of transportation lines, investing in telecommunication for increasing the share of information and labour, increasing the income, increasing the level of education and increasing the trade between different regions. Many authors have debated the efficiency of the infrastructure investments. This paper will also analyse the infrastructure investment impact on the economic growth. Moreover, it will consider the impact on the financial returns and the factors which determine the payoff of investments.

Stéphane Straub refers to several factors when considering the impact of the infrastructure on the economic growth. The author argues that the effect of the infrastructure on the economic growth can be assessed through the output growth and productivity, which is determined by the factor of expenditure on infrastructure at different levels of development as well as its role for closing the gap between the poor and rich, rural and urban areas.[4] Another factor which determines the result of infrastructure investment is the composition of investment, whether it is operational or capital expenditure, public or private investment, and what the regulations are. These factors will determine the economic performance of the investments and the success of competition between different sectors. The productivity effect of the investments is seen as a function between the infrastructure stock increase and simultaneously the rise of productivity

[4] Straub, Stéphane. Infrastructure and Growth in Developing Countries. Vol. 4460. World Bank Publications, 2008, pp. 3-4

of other factors.[5] The investors of private capital stocks are looking for investments on those sectors where the costs can be adjusted and where those entrepreneurs can continuously realise their activities.[6] The quality of the infrastructure will determine the behaviour of different economic actors, such as migration, opening new enterprises, and an investment of the capital at different locations. In the developing countries the investments on the three sectors: electricity, road transport and telecommunication showed more positive link with the growth than in the developed countries.[7]

The positive impact of the infrastructure investment on the economic growth is analysed by Antonio Estache and Grégoire Garsous who imply that there is significant impact of the infrastructure on the GDP and in a long run on the economic growth of the country. They state that this phenomenon is well recognized by the policy makers and that a better quality and quantity of infrastructure investment can impact on the productivity of human and physical capital and thus, on the economic growth. The authors emphasise that public capital investments on infrastructure have significant impact on the growth and its payoff.[8] They suggest that investment in the energy sector is one of the most productive sub-sectors in most countries. They also imply that only until a certain level of infrastructure development the productivity and growth payoffs will remain.[9] Growth is assessed on the level which is needed to reduce the poverty. There are different amounts of funds needed for the developing regions, as for example, for the Sub-Saharan African countries the spending need per year is 15% of the GDP, in Asia the annual commitment is 6.5% of GDP, in Latin America 4%, for MENA 3% and extra 4% for operations and maintenance and for Europe and Central Asia (ECA) the

[5] Ibid., p. 7
[6] Ibid., p. 8
[7] Ibid., p. 33
[8] Estache, Antonio, and Grégoire Garsous. "The impact of infrastructure on growth in developing countries." International Finance Corporation Economics Notes Note 1 (2012), pp. 1-2
[9] Ibid., p. 6

needs are 6.6%.[10] The authors imply that the more developed the country, the lower the payoff of additional investment, and the less developed the country is, the more the infrastructure matters. Also, the payoff of the investments is for the long run, by showing a slow but long term income flow.[11]

In addition, the World Bank emphasise that the quality of infrastructure investments of the developing countries produces high returns, economic growth and poverty reduction. The investment of domestic private capital such as infrastructure and human capital has higher returns and it attracts foreign investments. It is also estimated that the investment in quality infrastructure can impact growth at medium term. The fiscal consolidation and the increase of the infrastructure investment in developing countries is expected to increase GDP by about 25%, while the global GDP by 7% over ten years period. The World Bank reports that the investments in infrastructure requires large and long term finance, which even for many capital developed markets is hard to raise.[12] The bank estimates that $1.2 trillion per year is needed for infrastructure investments and maintenance for developing countries. The World Bank also reports that the returns of infrastructure investments are high in developing countries where the infrastructure stock is low, and the returns depend on how the project is prepared, implemented and maintained.

Regarding the type of infrastructure investment, Chris Edwards points out on the positive role of private infrastructure which reduces governmental subsidies and regulations, and thus, encourages the involvement of the market based economy.[13] The author argues that federal investments in infrastructure are means of waste and inefficiency. According to the analysis,

[10] Ibid., pp. 2-3
[11] Ibid., p. 4
[12] "REBALANCING, GROWTH, AND DEVELOPMENT: AN INTERCONNECTED AGENDA" World Bank. 30 Apr. 2016, pp. 10, 12 http://siteresources.worldbank.org/DEC/Resources/84797-1320153303397/Rebalancing_Growth_and_Development-WB_paper_for_G20.pdf
[13] "Infrastructure Investment". Downsizing the Federal Government. 2016. Web. 5 May 2016. http://www.downsizinggovernment.org/infrastructure-investment

the inefficiency of the federal investments is a result of the budget deficit and budget limitations. In addition, it is a result of government mismanagement and misallocation of resources. For these reasons, the author prioritizes the private sector involvement in the infrastructure investment, rather than government involvement with federal subsidies and regulations. In addition, Achim Kemmerling and Andreas Stephan emphasise that although the impact of the public capital is significant for local production, the politicized function of the government to allocate the funds, and the ineffective and insignificant way of spending on investments, resulted for diminishing of the role of the public investments.[14]

Despite the positive attitude towards infrastructure investment and economic growth of the private investments, it is important to emphasise that public investments are also of a huge importance in economic growth, as it will be further analysed in the text.

Some of the authors, Kersten Kellermann, Andreas Kappelera and Timo Välilä justify the public investments on infrastructure because of its significance on local production, the growth effect on private consumption[15] and because of the increase of the economically productive public investments.[16] There is Robert L. Guild who also supports the argument that the relationship between public investments in infrastructure and interregional development is positive. The author states that in order to take advantage of this relationship, a sufficient level of productivity is needed.[17] Moreover, he claims that it is necessary to determine balanced growth, rather than to have surplus of investments in disadvantaged regions which cannot give any results, or lack of investments which can harm the development on some level.

[14] Kemmerling, Achim, and Andreas Stephan. "The Contribution of Local Public Infrastructure to Private Productivity and Its Political Economy: Evidence from a Panel of Large German Cities". Public Choice 113.3/4 (2002): 403–424, p. 421

[15] Kellermann, Kersten. "Debt Financing Of Public Investment: On A Popular Misinterpretation Of "The Golden Rule Of Public Sector Borrowing"". European Journal of Political Economy 23.4 (2007): 1088-1104, p. 1088

[16] Kappeler, Andreas and Timo Välilä. "Fiscal Federalism And The Composition Of Public Investment In Europe". European Journal of Political Economy 24.3 (2008): 562-570, p. 562

[17] Guild, Robert L. "Infrastructure Investment and Interregional Development Theory, Evidence, and Implications for Planning." Public Works Management & Policy 4.4 (2000): 274-285, p. 274

Infrastructure planning is important for reducing disparities and promoting interregional development. Then, by accomplishing certain conditions, the public investments can positively impact on the economic productivity, private investments and social welfare.[18]

While talking about the developing countries and the positive impact of the infrastructure investment on the economic growth, many authors choose to select the case studies of South Africa, Brazil, India and China. The further analysis will also focus on China.

In the case of South Africa, Wolassa L. Kumo argues that there is a strong causality between public infrastructure investment and GDP growth, and that these investments improve the economic growth of the country in a long term. The author states that there is causality between both, the infrastructure investment and public sector employment. This means that the role of investment is to increase the rate of employment, and thus, by increasing the employment, through the indirect aggregate demand and growth, to influence on the increase of infrastructural investments.[19] The author concludes that in South Africa there is a long-run equilibrium and positive relationship between economic growth, economic infrastructure investment, employment, as well as export and import of goods and services.[20] Nevertheless, there is still a need for infrastructure investment especially in the energy sector which nowadays is lagging behind of its demand.

In the case of Brazil, by considering the impact of the infrastructure investments and economic growth, Mercedes Garcia-Escribano, Carlos Goes, and Izabela Karpowicz conclude that the lack of infrastructure investment in Brazil is an obstacle to further growth. This affects the productivity, market efficiency, domestic integration and its export. Brazil is known to be one of the most competitive and export oriented countries in the region, and a low quality of

[18] Ibid., p. 280
[19] Kumo, Wolassa L. "Infrastructure Investment and Economic Growth in South Africa: A Granger Causality Analysis." African development Bank Group Working Paper Series 160 (2012), p. 4
[20] Ibid., p. 4

infrastructure would not allow its effective performance. For these reasons, governmental reforms are expected to contribute to the decision of lowering the gap in an ineffective infrastructure.[21] The authors imply that the reason for the infrastructure gap is the increase of private investments and lowering of the public investments. Thus, governmental reforms are expected to fill the infrastructure gap and attract more foreign and domestic investments.[22]

In the case of India, Hans P. Binswanger and Shahidur R. Khandker analyse the impact of the governmental investment decisions, financial institutions and farmers on agricultural investment and output. The government allocates infrastructural investments particularly to the agricultural potential and on places where the output is expected to be higher. This means that the investments in infrastructure are concentrated on the better regions, rather than on the poor ones, where the agricultural production is higher.[23] The investments to improved road infrastructure showed an increase in agricultural output, and thus on growth. This resulted on increased share of cheap agricultural loans by the World Bank and private investments initiated by the higher wages.[24] Aswini Kumar Mishra, Kunapareddy Narendra and Bibhu Prasad Kar, in analysing the case of India, also state that without any appropriate infrastructure the country cannot have a sustainable GDP growth. The analysis made by the authors regarding the linkage between infrastructure and economic growth showed high returns and emphasised that in order to reduce the lack of public investments in infrastructure it is necessary to introduce Public Private Partnership.[25] According to the World Bank, the effects of infrastructure investment on the economic growth in India are seen through regional development of rural and urban

[21] Garcia-Escribano, Mercedes, Carlos Goes, and Izabela Karpowicz. "Filling the Gap: Infrastructure Investment in Brazil." (2015), p. 2
[22] Ibid., p. 15
[23] Binswanger, Hans P., Shahidur R. Khandker, and Mark R. Rosenzweig. "How infrastructure and financial institutions affect agricultural output and investment in India." Journal of development Economics 41.2 (1993): 337-366, pp. 337-338
[24] Ibid., pp. 364-365
[25] Mishra, Aswini Kumar, Kunapareddy Narendra, and Bibhu Prasad Kar. "Growth and infrastructure investment in india: Achievements, challenges, and opportunities." Economic Annals 58.196 (2013): 51-70, pp. 51, 67

markets, where low transportation costs allowed an increased access of agricultural products to the market, as well as contributed to an increase of agricultural production by investments in irrigation. These improvements also resulted in an increase to communication, lowering the lending price of the World Bank's loans and an increase to the agricultural yields.[26]

Despite the positive attitude between the relationship of the infrastructure investments and economic growth, there are some authors who argue that this relationship causes disparities of income between different regions in the developing countries.

The neoclassical theories predict that the differences in price of labour and other factors merge over time,[27] while the extended regional development theories argue that despite merging of the factors over time there is also a tendency of divergence between the per capita incomes of the industrialized and less developed countries. This phenomenon, of divergence and convergence in per capita incomes and factor prices, is analysed by Casey J. Dawkins, who argues that over time the implications on the convergence theory will increase, which means that even though the wages will equalise between the regions, there would be difference in per capita incomes. The convergence model is not applicable to per capita incomes because of the technological and saving rate differences across the regions.[28] To reach the convergence model, moreover, to reduce the disparities of income and growth over the time and for effective allocation of the resources, it is necessary to optimize free trade and regional investments.[29] With these policies it is expected that the regions lagging behind will enhance developed

[26] "World Development Report 1994: Infrastructure for Development." World Bank, Washington, DC (1994). Web., 30 Apr. 16, p. 14 https://openknowledge.worldbank.org/bitstream/handle/10986/5977/WDR%201994%20-%20English.pdf?sequence=2&isAllowed=y

[27] Dawkins, Casey J. "Regional development theory: conceptual foundations, classic works, and recent developments." Journal of planning literature 18.2 (2003): 131-172, p. 135

[28] Ibid., p. 136

[29] Ibid., p. 149

regions. However, the disparity issues would remain until market inefficiency determines interregional inequalities.[30]

There are some policies which require on an effective way reduction of income inequalities and economic disparities. In the case of China it is argued by Sylvie D´emurger, Prabir De and Buddhadeb Ghosh that the interregional disparities and income inequalities can be reduced by setting policy priorities and public investments in regions which can give higher returns and payoffs[31] and thus, infrastructure investments in the case of South Asia would attract more foreign investments and increase the openness of the market.[32] However, in the case of South Africa as considered by Antonio Estache, Jean-Francois Perrault, and Luc Savard, financial aid received from abroad for infrastructure investment can cause the Dutch Disease[33], and thus create a negative impact on the trade balance of the country.[34] It is argued by Yazid Dissou and Selma Didic that poverty in developing countries can be reduced by faster, rather than high economic growth. The authors emphasise that investments in education and transportation can be direct factors in economic growth and poverty alleviation, but they do not have a clear view about the electricity investment.[35] Nevertheless, Isaksson Anders and the UN reported that the investments in energy infrastructure are one of the most important inputs for industrial

[30] Ibid., p. 152
[31] Demurger, Sylvie. "Infrastructure development and economic growth: an explanation for regional disparities in China?." Journal of Comparative economics 29.1 (2001): 95-117, pp. 95, 115
[32] De, Prabir, and Buddhadeb Ghosh. "Effects of infrastructure on regional income in the era of globalization: New evidence from South Asia." Asia Pacific Development Journal 12.1 (2005): 81-108, p. 100
[33] The Dutch Disease can be explained as foreign inflows that contribute to a real exchange rate appreciation that adversely affects a country's international competitiveness.
[34] Estache, Antonio, Jean-François Perrault, and Luc Savard. "The impact of infrastructure spending in Sub-Saharan Africa: A CGE modeling approach." Economics Research International 2012 (2012), pp. 1-2
[35] Dissou, Yazid, and Selma Didic. "Infrastructure and growth." Infrastructure and Economic Growth in Asia. Springer International Publishing, 2013. 5-45, pp. 5, 42

production, economic growth and poverty reduction, especially in the developing countries in Africa.[3637]

By and large, infrastructure investments are shown to be a positive source for economic development. However, how much these investments affect productivity and growth depends on the government decisions and policy makers, as well as on the assessment and planning of the projects. Another important factor is the type of investment, whether it is private or public and this will depend on the government decisions and system regulations. The government's decision will depend on whether the government wants to influence the economy by giving subsidies or by emphasising the market economy. The developing countries, despite showing positive relationship between infrastructure investment and economic growth, still have disparities and income inequalities, since many regions develop in different ways and it is unequally invested between the regions. Many of the developing countries' regions are lagging behind because of underdeveloped infrastructure, lack of educated labour, lack of technology, lack of trade and low incomes. In a long run, these inequalities are expected to decrease as a result of higher returns on capital investment.

In the case of China, my further analysis will be about determining the long term effect of the infrastructure investment on the economic growth and ascertaining the main factors for causing those effects. Moreover, it will be analyse the effect of public infrastructure investment on the economic growth, from the period of implementation of the Chinese Western Development Strategy. During the project implementation period it will be also analysed the influence of the Chinese reforms and Chinese regional decentralization.

[36] Isaksson, Anders. "Energy Infrastructure and Industrial Development, Research and Statistics Branch, Programme Coordination and Field Operations Division." UNIDO, Vienna (2009), pp. 1-4

[37] Jerome, Afeikhena. Infrastructure for Economic Development and Poverty Reduction in Africa. UN-HABITAT, 2011, pp. 1-3

Chapter 2: Historical Background of the Economic Reforms

The following chapter will introduce the evolution of different policies and reforms for economic development, including from the time of Mao governance (1945) until the presidency of Wen Jiabao (2010). This report will review the reasons for implementing the Western Development Program (WDP) and the central government strategy and decisions to influence on the economic growth.

Historically, China's economic development was based on three main strategies. The aim of the first economic strategy, introduced between 1949 and 1978, was to promote a balanced development, common wealth and an economy based on politics. It is important to emphasise that during this period the most developed regions were the western and the central, while the coastal region fell into a recession due to the deployment of the heavy and military industry in the western region.

The second strategy was introduced between 1979 and 1991, known as Unbalanced Development. This strategy introduced preferential policies for an open-up economy. The policy was initiated to prioritize the eastern (coastal) region to over grow the western region. In 1982, the Congress of the Chinese Communist Party set a goal for improving the well-being of the country by increasing the industrial and agricultural output and increasing the country's living standards in the period of two decades.[38] Between the 1980s and 1990s, the Chinese leader Deng Xiaoping supported this regional policy as it was believed that other regions would also benefit in the long term by the development of the eastern (coastal) region.[39] It was stated by Deng in 1988 that:

[38] Lai, Hongyi Harry. "China's western development program: Its rationale, implementation, and prospects." Modern China 28.4 (2002): 432-466, p. 433

[39] Lu, Zheng, and Xiang Deng. "China's western development strategy: policies, effects and prospects." Munich Personal RePEc Archive (2011): 1-26, pp. 1-3

> "The coastal areas, which comprise a vast region with a population of 200 million, should accelerate their opening to the outside world, and we should help them develop rapidly first; afterward they can promote the development of the interior"[40]

Both leaders, Mao Zedong (1945-1976) and Deng Xiaoping (1978-1989), were concerned with the creation of market inequality in the region. However, both of them implemented policies which increased the regional inequalities between the eastern and western region. Mao promoted irrational industrialization through a combination of 'counter-pole' policies, while Deng promoted an export oriented industrial development on the already better developed coastal provinces.[41] On the one hand, the 'counter-pole' policies, implemented during the Mao era, encouraged industrial development in less developed areas. From these limited investments, which included state-owned or state- controlled enterprises or subsidies for industrial investments, it was expected that these areas would be self-sufficient.[42] On the other hand, the 'trickle- down' policies were determined to develop a specific region's infrastructural investments in telecommunication, transport and public utilities. These policies were compatible with the Deng strategy for eastern regional development, as well as for future western regional development. The 'trickle- down' policies proved to be more effective than the 'counter-pole' policies, as a result of less control over the economy conducted by the central government, rather than the latter which promoted increased control over the market by the central government.

Although Deng promised interior regions to be patient with development, in 1992 he announced that it would be necessary for less developed regions to be helped by the end of the century because of increased interregional inequalities. At the same time, the country reached

[40] http://en.people.cn/dengxp/vol3/text/c1910.html, accessed 07 May 2016
[41] Golley, Jane. "China's western development strategy and nature versus nurture." Journal of Chinese Economic and Business Studies 5.2 (2007): 115-129, p. 118
[42] Ibid.

a "competitively well-off level".[43] The gap of interregional inequalities increased between 1980s and 1990s, as well as between 1990 and 2000 when the coefficient of variation for provincial GDP per capita increased from 0.56 to 0.64 respectively, and from then on the rate of 0.64 was constant.[44]

The reasons for widening the regional inequities, beside the coastal development strategy were the fiscal reforms of 1994, which included changes of tax rates and revenue share between the regions.[45] These fiscal reforms reduced governmental spending in the western provinces and thus the revenues lowered.[46] The interregional disparities were a result of different tax rates between the regions, where the western region had higher tax rates for resource extraction, rather than the eastern region which had more preferential tax rates for manufacturing and retail sectors. Another reason was the late openness of the western market compared to the coastal areas, which attracted only 3.5% of the total foreign direct investments in China in 1997.[47] Also, the interregional disparities increased as a result of the reduced share of production factors between the regions. The interregional trade between the western and coastal region declined because of the lower prices purchase of raw materials than the price of export of industrial products in the international markets. This unfairness towards the western region reduced the interregional trade.[48]

There were concerns raised by the Chinese Premier Zhu Rongji in 1994 and 1995 about the increase of the interregional inequalities and in order to reduce them, an increase of investments for western economic development was proposed. Additionally, in 1996, the Premier Jiang Zemin, during the Ninth Five-Year Plan, introduced a policy for reducing the gap of

[43] Lai, Hongyi Harry. (2002), p. 433
[44] Fan, C. Cindy. "China's eleventh five-year plan (2006-2010): from" getting rich first" to" common prosperity"." Eurasian Geography and Economics 47.6 (2006): 708-723, p. 713
[45] Lai, Hongyi Harry, (2002), p. 437
[46] Ibid., p. 439
[47] Ibid.
[48] Ibid., p.438

interregional inequalities and proposed to coordinate regional economic development. It was also declared by Jiang, that by 2000 an antipoverty program would be implemented in order to increase the living standards of the interior region.[49]

Despite the increased interregional disparities, Deng's strategy and the post Deng leaders made an impressive progress on the economic growth and increased the GDP by 4.3 times between 1980 and 1998. This strategy helped China to grow with a high speed and it helped the relatively well- off of the whole country.[50] The increased wealth of the country and the Asian financial crisis in 1998, resulted for the central government stimulation of domestic consumption and a refocus on the interior region by introducing policies for lowering the interest rates and increasing the infrastructure investments.[51]

The third strategy, known as China's Western Development Program (WDP), was implemented by the new generation leaders of the Communist party in order to enforce the realization of Deng's promise, for fast economic and industrial development of China's western rural region. This means that the WDP was introduced by Deng Xiaoping in 1999, and initiated its investment realization for regional development by the principles of President Hu Jintao' and Premier Wen Jiabao' administration in the 10th (2001-05) and 11th (2006-10) Five Year Plan.[52] The aim of the new Chinese presidency was to achieve "harmonious socialist society" and "common prosperity" which before that the regions were characterised with high rate of inequalities among the disadvantaged groups and less developed areas.[53] They initiated an increase of economic growth and reducing inequalities in the western region. In the pre-western Chinese policy, the west regions were not only among the poorest and the least industrialised, but they were also the least reformed and marketed. During the Western

[49] Ibid., p. 435
[50] Ibid., p. 436
[51] Ibid., p. 441
[52] Fan, C. Cindy. (2006), p. 709
[53] Ibid., pp. 708-709

Development Strategy the central government promoted financial support, infrastructure development and education, and this promoted industrial development of the western region.[54] With the western policy it was expected that enterprises will reallocate in the western provinces in a long run because of the lower costs of production offered in this region.[55] The purpose of the WDP was to promote regional development of the underdeveloped regions and to reduce regional disparities.[56] In addition, the WDP introduced key reforms to non-state economic growth, especially for rural enterprises and foreign direct investments. Before the introduction of these reforms, in the western region it was difficult to stimulate infrastructure building, employment and sustainable growth, as well as to promote increased consumption because of the high number of state sectors located in the western region. Apart from that, the coastal region had already non-state sectors which produced a high rate of employment.[57] In sum, the purpose of this program was to promote social and economic growth in the long run, by promoting macroeconomic regulations with market adjustments. The purpose of the laws and regulations was to attract non-state investments and skilled labour in the western region for development and improvement of the urban infrastructure and for private investments in high tech enterprises.[58]

[54] Golley, Jane. (2007), p. 119
[55] Ibid., p. 115
[56] Zheng, Deng.(2011), p. 3
[57] Lai, Hongyi Harry, (2002), p. 443
[58] Ibid., p. 458

Chapter 3: China's Western Development Program and its Realization: Infrastructure Investment

The Western development policy in China affected 6 provinces- Gansu, Guizhou, Qinghai, Shaanxi, Sichuan, and Yunnan; in addition to five autonomous regions- Guangxi, Inner Mongolia, Ningxia, Tibet, and Xinjiang and 1 municipality- Chongqing. The western regions of China covered 71.4 % of the mainland area of China which was one-third of the administrative provinces of the country and the autonomous regions. This area was about 5.4 million square meters, with a population of above 280 million. The region was relatively poor and the lack of transportation restrained this territory from the communication and economic development with the rest of the country.[59]

The central government implemented policies for Chinese western and central development by attracting foreign direct investments to those sectors which were necessary for China to develop and to use its own resources while promoting sustainable growth. This was an example of the National Development and Reform Commission (NDRC) which in 2008 initiated allocation of foreign investments to the sectors where the government supported their development, regarding to the sector's potential and advantage for further development in the region.[60] Those investments were allocated to the following industries: natural resources and new energies, agriculture, automobile, environmental protection, education, information technology, telecom, and public services which included road transportation, construction and operation of urban gas, heat, and investment on water supply and drainage system. The policymakers' initiative was to match those industries which can use their own capabilities and resources and to increase into developed centres. For example the investments in science and technology

[59] Western China, accessed 08 May 2016

[60] "Economic Development Policies For Central And Western China – China Business Review". Chinabusinessreview.com. 2016. Web. 10 May 2016. http://www.chinabusinessreview.com/economic-development-policies-for-central-and-western-china/

research and development would be located in the places where high and new-tech are manufactured, such as machine-tool manufacturing or heavy-automobile manufacturing.[61]

The funding which supported the realization of these investments consisted of several sources such as: fund raising, domestic loans, state budgetary allocation, foreign investments and other sources. The share of state budgetary funds in the western region increased from 23% to 29% between 2000 and 2003. It was reported by the World Bank in 2005, that foreign investments and funds raised by the domestic firms had higher effects on the growth than the funds received from budgetary allocation. However, the low capital flow from the eastern to the western region increased the need for a higher proportion of funds allocation on the west and for reforms which would eliminate the bureaucratic barriers of the provincial governments.[62]

China's policies encouraged many foreign banks to establish their branches in western China in order to support development. In western rural region's village banks, finance companies and rural fund cooperatives were established. State owned bank loans also supported the development of the western region by providing agricultural loans which during the period of 2001 and 2010 increased from 17.78% to 22.36%.[63]

The share of investments in capital construction for transport, post or telecommunication increased in 2004 by 19% only, which until 2002 the investments were at the same level as before the reforms for regional infrastructure development in 1996 and 2000. The infrastructure investment was planned to reach 127 billion Yuan in Western China between 2001 and 2005, for area of 27,500 km or 37% of the national total. This goal was surpassed by the realization of a railway plan with a length of 27,594 km in 2005 or 36.6% of the national total.[64] In

[61] Ibid.
[62] Golley, Jane. (2007), p. 120
[63] Lu, Zheng, and Xiang Deng. "China's western development strategy: policies, effects and prospects." Munich Personal RePEc Archive (2011): 1-26, p. 6
[64] Ibid., p. 121

addition, the government invested in fixed assets in the western region, between 2001 and 2010 was 30.76%, which was higher than investments in the eastern, central and northeastern regions. Also, national bonds, on which was spent every year since 2001 by 40% of the total, had an important role in the infrastructure investment in the western region. The amount of the bonds spent between 2000 and 2005 was RMB 341.4 billion, while in 2009 the local bonds amounted to RMB 75.0 bn. The spending was for investments in construction and infrastructure improvement.[65] Some of the most significant realized infrastructure investments in the western region were the Qinghai-Tibet railway, the West-East natural gas pipeline and the West-East power transmission. [66]

Overall, the realization of the regional development project in China resulted on fast economic growth and thus in significant poverty alleviation between the period of 2000 and 2010, with a poverty reduction rate of 10.2% to 2.8% respectively.[67] In addition, the western development strategy enabled the western region to surpass the growth of the eastern region in 2007, with a growth rate of 14.6% in comparison with the eastern regional growth rate of 14.4%.[68] The initiative of the government was to continuously focus on the rural development with infrastructure investments. This means that the infrastructure investments were of significant importance to the development of rural areas. This will be the subject of further analysis.

[65] Lu, Zheng, and Xiang Deng. (2011), pp. 5-6

[66] "THE PEOPLE's REPUBLIC OF CHINA NATIONAL REPORT ON SUSTAINABLE DEVELOPMENT". www.china-un.org 2016. Web. 10 May 2016, p. 18 http://www.china-un.org/eng/chinaandun/economicdevelopment/sfz/P020120608816288649663.pdf

[67] Zhang, Yumei, Xinxin Wang, and Kevin Chen. "Growth and distributive effects of public infrastructure investments in China." Infrastructure and Economic Growth in Asia. Springer International Publishing, 2013. 87-116., p. 89

[68] "THE PEOPLE's REPUBLIC OF CHINA NATIONAL REPORT ON SUSTAINABLE DEVELOPMENT", pp. 17- 18

3.1. Infrastructure Investments and Economic Growth in the Western Region

Infrastructure investment was an important tool for the growth of the western provinces which helped for the market to open on the remote areas and to lower the transportation costs. The quality of infrastructure reduced the transportation costs and increased the market accessibility.[69] Moreover, the infrastructure availability and the cheap labour attracted the foreign direct investments in China. Especially, the investment in infrastructure gained a significant importance in 2008 during the global financial crisis, when the export oriented growth of China declined and the central government decided to keep its economy stable by investing in infrastructure and public services.[70]

One of the reasons which showed that China's investment in infrastructure was effective, was the ability of the government to receive more revenues and returns, by managing its state-owned enterprises. The Chinese government had an important strategy for balancing and sustaining the economic growth, through implementing a fiscal stimulus program, planning system, laws and policies for infrastructure development. With the redistribution of the fiscal role from the central government to the local government, the funds for infrastructure in 2006 boomed and increased the capital formation.[71] Another strategy which was introduces by the government was the fiscal stimulus program which by definition means that the government is supporting the economic growth of the country by lowering the taxes or increasing the public spending.[72] In the case of China regarding the implementation of the fiscal stimulus program

[69] Luo, Xubei. "The role of infrastructure investment location in China's western development." World Bank Policy Research Working Paper 3345 (2004), p. 2
[70] Sahoo, Pravakar, Ranjan Kumar Dash, and Geethanjali Nataraj. "Infrastructure development and economic growth in China." (2010), p. 6
[71] Ibid., pp.8-10
[72] "Economic Stimulus Definition | Investopedia". Investopedia. 2012. Web. 11 May 2016. http://www.investopedia.com/terms/e/economic-stimulus.asp

in 2009, during the global financial crisis, it is argued by both economists Yi Wen and Jing Wu that:

> "China implemented bold, decisive fiscal stimulus programs that no other major nations dared to adopt. In particular, the Chinese government cleverly used its state-owned enterprises (SOEs) as a fiscal instrument to implement its aggressive stimulus programs in 2009, consistent with the very Keynesian notion of aggregate demand management through increased government spending."[73]

This indicates that during the global financial crisis, China was able to "bring back on the track" its economy by increasing its public spending and supporting the investments on infrastructure by the state owned enterprises (SOEs) investments. The aim of the SOEs was to expand their credit borrowing and fixed investments, which also encouraged the private investments and increased the GDP growth.[74] China focused on its interior regional development, for encouraging its domestic production and consumption, rather than increasing its economic growth by the export output. The industrial output of China during the financial crisis nearly doubled and it contributed to 50% of the global GDP.[75] Although China risked to invest on fixed assets, by increasing its public debt and reducing the liquidity of the assets, it helped to retain outside from the recession. This strategy for infrastructure investment and development, by using public spending and its stimulus program, helped for China to recover from the economic crisis and to show a sustainable growth.[76]

[73] Leubsdorf, Ben. "'Bold' Chinese Stimulus Eased Recession Pain, Fed Economists Say". WSJ. 2016. Web. 27 May 2016. http://blogs.wsj.com/economics/2014/03/14/bold-chinese-stimulus-eased-recession-suffering-fed-economists-say/

[74] Wen, Yi and Jing Wu. "Withstanding Great Recession Like China". SSRN Electronic Journal. Web, p. 3 https://research.stlouisfed.org/wp/2014/2014-007.pdf

[75] Ibid.

[76] Sahoo, Pravakar, Ranjan Kumar Dash, and Geethanjali Nataraj. (2010), p. 24

The impact of the infrastructure investments on the economic growth can be explained by applying simplified version of growth theory, which analyses only the investments and measures the production function of the output of the investments. Moreover, it measures the gains of the self-sustain productivity and the long term growth, regarding to the public expenditures.[77] In the case of China, the production function of investment in transportation, telecommunication, power and irrigation can be measured as an indirect factor which improves the productivity of all inputs in the production process. In addition, the technology investments are a direct factor in the productivity which generate technological progress and economic growth. Furthermore, transportation and telecommunication investments are of significant importance for development of the country, especially in the case of China where the industrial centres are concentrated on the eastern, and the natural resources on the western part of China. These infrastructure investments created a network for efficient communication between the regions with different economic priorities and became important for the economic growth.[78]

Despite the fact that infrastructure creates network and linkage between different developed regions, and affects their economic growth and development, it should be also considered the quantity and quality of infrastructure investments as factors for economic development. This means that the weak infrastructure would reduce the efficiency of transportation of natural resources and thus, would result in a price increase.

The infrastructure investments, which create interregional linkages, helped for the speeding up process of allocation of the labour, enterprises and foreign investments in the western region where it was offered cheap labour and other cost advantages. This interregional linkages helped to reduce the transport costs, interregional barriers for trade and cooperation, to improve the

[77] Démurger, Sylvie. "Infrastructure Development And Economic Growth: An Explanation For Regional Disparities In China?" Journal of Comparative Economics 29.1 (2001): 95-117, pp. 103-104
[78] Ibid.

education in the western region and to make the region attractive for further industrial production. As a result of the increased movement of educated labour in the western region, improved education and cheap labour, made attractive the western region for technological know-how investments.[79]

Regarding to the sectorial division of the infrastructural investment, the investments in energy production and raw material exploitation in the western region, showed to be one of the most potential segments which led into economic growth for the region. Thus, the energy and natural resources became a comparative advantage for economic growth in the China's western region. The Chinese industrial development raised the demand for natural resources, and as a result of different allocation of natural resources and industrial production between the eastern and western part of China, it increased the need for investment on roads and transportation. Thus, as an important factor that determines the economic growth is the reasonable way for choosing to invest in infrastructure for energy production, regarding the availability of the natural resources to provide the national demands. According to the recent findings, the western region is rich with coal and hydropower resources, but poor in petroleum and natural gas. Moreover, the western region has 80% of the nation's hydropower, while natural gas has 58% of the total national reserves. Also, the western region is abundant with minerals which contain more than a half of the nation's reserve and the most important mineral is the potassium with 97% of the national total reserves.[80]

As an example of infrastructure that contributed for a positive effect on the economic growth, is the investment in electricity infrastructure.[81] The investment on electricity production was of special importance during the 2000s when the Chinese economy was growing fast, and its

[79] Golley, Jane. (2007), p. 127
[80] Lai, Hongyi Harry, (2002), p. 445
[81] Shi, Yingying. "The Role of Infrastructure Capital in China's Regional Economic Growth." International Association of Agricultural Economists Triennial Conference, Foz do Iguaųcu, Brazil. 2012, p. 15

production helped to reduce the energy bottlenecks and to provide sustainable economic growth. In return, the electricity production showed a positive and significant effect on the real GDP per capita for the Central, Western and North-eastern regions.[82] One of electricity production related projects during the WDP is the investment in hydropower in the Yunnan province. This project included dam building on transnational rivers from which was expected to modernize and to reduce the poverty in the rural regions.[83] This project was realised at the time of electrical industry transformation, increased power demand and electricity shortages.[84]

The WDP legitimized the transfer of electricity to the eastern region by cheaper prices and by amount which fulfilled the region's shortages. With this project benefited the hydropower companies and the eastern region.[85] The estimation showed that the Yunnan's hydropower potential is significant, with 900 billion kWh, or 15.3% of China's total.[86] Despite the ecological and social concerns about building the dam over international rivers in the western region of China, its realization contributed to poverty reduction, electricity production, provided irrigation and ensured an electricity flow during the dry seasons.[87]

The building of hydropower dams is approved by the State Council regarding its economic, technical and social feasibility, and financed by the loans of the China's State Development Bank and the World Bank. Moreover, the profitability of the project is evaluated at a provincial level, while the national economic protection, environmental protection and the simulation of the market competition is provided by the central government. The WDP is of crucial

[82] Ibid., p. 16
[83] Magee, Darrin. "Powershed politics: Yunnan hydropower under Great Western development." The China Quarterly 185 (2006): 23-41, pp. 23-24
[84] Ibid., p. 24
[85] Ibid., p. 26
[86] Ibid., p. 28
[87] Ibid., p. 30, 34

importance for the regional development by introducing interregional relations, inter-governmental negotiation, financial and other operations and thus, facilitate the capital flow.[88]

3.2. Infrastructure Investments and Inequalities

In this part it will be analysed the impact of the infrastructure on the regional inequalities between the eastern and western region of China. Moreover, it will be emphasized on the reasons which caused an increase of inequalities between the regions. On the one hand, it will be shown the impact of the central government and its role in revenue collection, and on the other hand, the limitation of the local government to collect enough revenues for distribution to the central government and maintain its function, while constraining into mismanagement of expenditure and involving into corruption. Analysing the fiscal reforms is of special importance for the public investments, because the flow of the revenues to the fiscal budget would determine the public expenditures. In addition, the taxation, fiscal reforms and policies can show the strategies and the preferences of the central government to develop certain region.

According to some analysis, the cause for increased inequalities between the regions is the interregional migration, regarding to the improved infrastructure and increased network with the developed cities. This helped for more skilled labour to move to those places, instead to improve their place of living.[89] The issue of increased inequalities by the migration was a result of the changing occupation other than agriculture and moving to another part of the country. Thus, the number of workers and the amount of agricultural production lowered in the rural areas and it resulted on insufficient food supplies in the eastern urban areas. The interregional migration resulted in leaving the household and causing loss of investments on farms and other

[88] Ibid., pp., 37-39

[89] Banerjee, Abhijit, Esther Duflo, and Nancy Qian. On the road: Access to transportation infrastructure and economic growth in China. No. w17897. National Bureau of Economic Research, 2012, p. 3

agricultural production, by diminishing of the skilled workers.[90] For these reasons, the Chinese government implemented a policy which regulated the labour mobility, especially the unskilled low-wage rural workers, and prevented the capital flow from the rural to the urban areas.[91]

However, there are arguments which refuse the above statement. It should be considered that the interregional distribution effect of the infrastructure has an impact on the growth for the whole country.[92] This means that the increased movement, would cause more frequent usage of the transportation, as well as it would raise the incomes of those who are working in the developed cities, and additionally, it would contribute for income distribution from more developed to the less developed regions in a form of remittances.

Moreover, the public investments are seen as means for poverty and regional inequality reduction. Since the 1970s it was announced a rapid economic growth and poverty reduction, regarding the public investments and policy reforms.[93] The annual poverty rate from 1989 to 2000 dropped 9% per year, from 103 million to 30 million rural poor people. Of special importance is the rural poverty decline between 1990 and 1998, where the estimation showed a decline in the poverty rate from 31.3% to 11.5% of total rural population.[94] It is assessed that not only the public investment in agriculture production decreased the poverty rate, but also the governmental spending on infrastructure and education influenced on increasing employment on non-agricultural sectors and thus on poverty reduction.[95] More specifically, the investment in rural telecommunication, electricity and roads contributed to poverty

[90] Alan de Brauw, J., and Scott Rozelle. "The Impact of Migration and Remittances on Rural Incomes in China." (1999).
[91] Banerjee, Abhijit, Esther Duflo, and Nancy Qian (2012), p.6
[92] Ibid., p.2
[93] Fan, Shenggen, Linxiu Zhang, and Xiaobo Zhang. "GROWTH AND POVERTY IN RURAL CHINA: THE ROLE OF PUBLIC INVESTMENTS". EPTD DISCUSSION PAPER NO. 66 (2000): 1-48. Web. 14 May 2016, pp. 1-3 http://ageconsearch.umn.edu/bitstream/16115/1/ep000066.pdf
[94] Fan, Shenggen, Linxiu Zhang, and Xiaobo Zhang. "Reforms, Investment, and Poverty in Rural China*." Economic Development and Cultural Change 52.2 (2004): 395-421, p. 398
[95] Ibid., (2000), p. 4

alleviation.[96] The growth from the investment can be seen through the increase of electricity consumption in the rural areas from almost zero to 242 billion kW in 2000, as well as the number of rural telephone sets increased from 3.4 million to 51.7 million between 1992 and 2000.[97] However, it should be considered that the investment on roads had the most important impact on the economic growth and poverty reduction.[98]

In the period between 2000 and 2010, despite the poverty alleviation for 70 million, with a poverty rate decline from 10.2% to 2.8%, the interregional inequality rate increased within the same period. It is evident that the urban-rural per capita income ratio gap increased from 2.8 to 3.2, as well as the Gini coefficient became 0.47 in 2009, as one of the highest in the world and exceeded the "warning level".[99] In line with the increase of rural-urban income inequalities, the urban population increased as well to 26.4% in 1990, 36.2% in 2000, 45% in 2007[100] and 56% in 2015.[101]

One of the reasons for widening the gap between the rural and urban inequalities and increasing regional inequalities is the fiscal reform. The fiscal reform which took place in 1994 introduced adjusted taxes and revenue sharing between the central and provincial governments. The aim of these reforms was to decrease regional inequalities and to promote economic development of the rural areas. However, despite the increased investments and aid in the western region, the fiscal reforms lowered the revenues in the region by increasing the taxes of extraction industry, but at the same time decreasing the taxes of the coastal region in the manufacturing and retail sectors. In addition, the central government imposed consumption taxes in the

[96] Ibid., p. 41
[97] Ibid., (2004), p. 401
[98] Ibid., p. 413
[99] Zhang, Yumei, Xinxin Wang, and Kevin Chen, p. 89
[100] Ghosh, Jayati. "Poverty reduction in China and India: Policy implications of recent trends." (2010), p. 6
[101] Jingya, Zhang. "China Urbanization Rate Reached 56% In 2015 - CCTV News - CCTV.Com English". English.cntv.cn. N.p., 2016. Web. 15 May 2016. http://english.cntv.cn/2016/01/30/VIDEf3nCcpAilTmx5J17brHD160130.shtml

western region on the products which provided the major source of revenue, such as alcohol and cigarettes, in order to prevent the local governments overdeveloping from these sectors. Moreover, as a result of the financial crisis in 1998, to promote the export, it was necessary to increase the rebates, and as a consequence they ballooned and the centre's aid to the interior region declined. Thus, for the western region was difficult to resolve the fiscal budget deficit as a result of reduced income revenues and then, the regional inequalities increased.[102]

In addition to the central government's fiscal reforms for revenue collection by increasing taxes and regional inequalities, the fiscal decentralization reform also influenced on creating interregional and intraregional inequalities within the provinces. The fiscal decentralization reform is defined as redistribution of power from the central to the local government regarding its responsibilities for expenditures and revenue transfers.[103] However, in the Chinese western provinces, the local government was faced with limited financial revenues and mismatched expenditures.[104] In order to increase the revenues, the local government used its official position to impose additional burdens for individuals and enterprises, since the regulation of the taxes was not under its authority. This corruptive way of collecting revenues not only reduced the transparent, standardized and institutionalized way of revenue distribution, but it also increased the regional imbalances.[105] Despite the reforms and rules formulated between 2000 and 2010, the corruption is still present nowadays as a coexistence manner for collecting revenues by the governmental organs and its rate increases by every year and causes economic loses.[106]

[102] Lai, Hongyi Harry, (2002), pp. 439-441
[103] Feruglio, Nicoletta. "FISCAL DECENTRALISATION: AN OVERVIEW". 1st ed. UNDP Bratislava Regional Centre: World Bank, 2007. Web. 15 May 2016, p. 1 http://siteresources.worldbank.org/PSGLP/Resources/FeruglioandAndersonoverviewofFiscaldecentralization.pdf
[104] Zengyu, Mi and Qiongzhi Liu. "Income inequality, fiscal redistribution, and governmental corruption: evidence from Chinese provincial data." The Journal of Developing Areas 48.4 (2014): 119-137, p. 121
[105] Ibid.
[106] Ibid., pp. 121-122

The decentralization process, became a political issue of China, which caused unequal distribution of the revenues and expenditures of the central government towards the local government. The imbalance became as a result of the central government's power to increase the taxes among the regions, to collect more revenues, but not to distribute on the same amount on a local government level. From this process the central government benefited the most, while the local government was lagging behind to cover the increased expenses and to maintaining its main function. Despite the local government received large extrabudgetary funds and increased the local fees and charges, it was still insufficient to cover the local public expenditures. The lack of central and provincial control over the local government's budgetary collection, resulted in increasing intraregional disparities, especially in the poorest regions where the population was overwhelmed by the increased payments. However, it should be noted that China is between the process of centralization and decentralization, which means that the central government has still power on the action of the local administration. With the regional developing program the central government tried to reduce the imbalances, by transferring funds between rich and poor regions, and by the system of equal distribution of wealth among the regions.[107]

In conclusion, the fiscal decentralization, as a political issue of funds allocation and their spending, created a negative impact on the economic growth, income inequalities and stagnation of the process of urbanization.[108] Moreover, the fiscal distribution of the revenues from the local to the central government by imposing increased taxes, caused a burden for the local government in the rural areas. Thus, the limited revenues of the local government and its mismanagement, caused low investments on maintaining the public functions, such as

[107] Zipfel, Marion. "China Between Centralization And Decentralization". gbtimes.com. N.p., 2007. Web. 21 May 2016. http://gbtimes.com/world/china-between-centralization-and-decentralization

[108] Wang, Zhiguo, and Liang Ma. "Fiscal Decentralization in China: A Literature Review." Annals of Economics and Finance 15.2 (2014): 751-770, p. 766

education, health and other public services,[109] and it resulted for the local government to increase its revenues by involving into corruption. Regarding to the rural-urban income inequalities, they were also created by the fiscal reforms, which reduced the rural earning by the increased taxes, and stimulated the urban regions by increased their subsidies, investments and credits.[110] This means that the rural-urban disparities were a result of unequal treatment of the regions since the 1980s, when the central government imposed restrictive policies for rural-urban migration, reduced the access to education and reduced the allocation of investments in the rural areas.[111] In addition to these policies and reforms, another reason for increasing the disparities between the regions in the 1990s was the openness of the market and the increased overseas trade, where the central government was using the preferential geographical position of the eastern region, for improving the growth of the country. However, in the beginning of the 21st century, the central government tried to balance the interregional and intraregional disparities by promoting regional development programs and increasing the interregional transfer of funds.

[109] Zhigang, Yang. "Further reform of China's fiscal system." China & World Economy,(1) (2001): 1-9, p. 2
[110] Ding, Lu. "Rural–urban income disparity: impact of growth, allocative efficiency, and local growth welfare." China Economic Review 13.4 (2002): 419-429, p. 420
[111] Ibid.

Chapter 4: Data Analysis

In the next part will follow a qualitative analysis with the aim to show how the infrastructure investments contributed to the economic growth. Moreover, the idea of this analysis is to focus on the two different regions, the western and the eastern region of China, as important parts during the implementation of the Western Development Program of China. Since the goal of this program was to develop the western part, I would like to show how much this program has contributed to the economic growth in this region by infrastructure investments. It also has to be considered the previously mentioned, that according to the growth theory the impact of the infrastructure investments can be measured in a long run regarding to its output. Then, in order to find the measure for showing the output, it is necessary to know what the input is and to what it refers. The answer is that as an input is the capital investment, including finances from different sources such as public expenditures, loans, foreign direct investments as well as private investments, which as it was mentioned before, the private investments were important for the enterprises because of their returns. Moreover, in this analysis the data show the total investments in fixed assets during the tenth year period of the project, by each province and every year from 2000-2009. The data are collected from the National Bureau of Statistics of China.

It should be noted that the investments in the fixed assets include investments in transport, storage and post, then, on construction, electricity, steam, hot water producing and supply industry, in state-owned petroleum and natural gas extraction industry, as well as investments in state-owned energy industry. The output of these investments can be shown by the Gross Domestic Product and Gross Domestic Product per capita by each province during the tenth year period.

This analysis will show the correlation between infrastructure investments and GDP, then, the correlation between infrastructure investments per capita and GDP per capita during the tenth year period of investments, and how it contributed to the economic growth. In addition to the analysis of the tenth year period of investments during the western development program, it will be also analysed the investments and investments per capita until 2015, and respectively their influence on GDP and GDP per capita. This analysis will show how much further was invested in infrastructure and how it contributed to the economic growth. Moreover, the comparison of the western and eastern regional investments, will show whether during the WDP, the western region was more preferable for investments and whether its aim was to reduce the regional disparities. The comparison of investments between both regions will indicate the dynamic of economic improvement, and it will show whether the central government preference was to invest on one region, by diminishing the investments and development of the other region.

The second analysis will cover the average growth rates of GDP and GDP per capita during and after the period of WDP. By implementing a comparative analysis of growth rates between the western and eastern region of China, it will be shown how the growth rate of both variables differs in different period of time and between both regions. With this estimation it will be concluded the dynamic of growth.

The third analysis will focus on the regression analysis model, which will determine the relationship between the variables. More certainly, it will focus on analysing the relationship between the GDP per capita and the growth rate during different periods of time, which will show how much is the value of average growth rate when the GDP per capita is fixed. The data about the GDP and GDP per capita are taken from the China Economic Census 2008, National-Regional Data and from the official publications Statistical Yearbook (China Statistical Yearbook 2010 - 2014).

This analysis includes provinces from the eastern and the western part of China. The eastern part includes the following eight provinces and three municipalities: Beijing (municipality), Tianjin (municipality), Shanghai (municipality), Hebei, Liaoning, Jiangsu, Zhejiang, Fujian, Shandong, Guangdong and Hainan. The western part includes the following six provinces, five autonomous regions and one municipality: Inner Mongolia (autonomous region), Ningxia (autonomous region), Xinjiang (autonomous region), Guangxi (autonomous region), Tibet (autonomous region), Chongqing (municipality), Sichuan, Guizhou, Yunnan, Shaanxi, Gansu and Qinghai. It should be noted that the autonomous regions have their own local government, which has more legislative rights than in the other regions. Despite the difference of the political status of the regions, the autonomous regions are important to take into account in this analysis because of their geographical position, the division between east and west regions, as well as because the Western Development Program included the infrastructure investments on those interior regions.

	2000		*2005*		*2010*		*2015*	
	Correlation between investments and GDP	*Correlation between investments p.c. and GDP p. c.*	*Correlation between investments and GDP*	*Correlation between investments p.c. and GDP p.c.*	*Correlation between investments and GDP*	*Correlation between investments p.c. and GDP p. c.*	*Correlation between investments and GDP*	*Correlation between investments p.c. and GDP p. c.*
Western China R	*0.98*	*0.59*	*0.97*	*0.83*	*0.99*	*0.73*	*0.98*	*0.82*
Stat. Significance[112]	*0.00*	*0.04*	*0.00*	*0.00*	*0.00*	*0.01*	*0.00*	*0.00*
Eastern China R	*0.95*	*0.78*	*0.92*	*0.12*	*0.82*	*-0.25*	*0.84*	*-0.01*
Stat. Significance	*0.00*	*0.00*	*0.00*	*0.73*	*0.00*	*0.47*	*0.00*	*0.98*

Table 1. Correlation between investments, investments per capita on fixed assets, GDP and GDP per capita in the western and eastern region of China (investments, investments per capita, GDP and GDP per capita are calculated on 100 Million Yuan)

This analysis aims to develop a clear picture about the correlation between the investments on fixed assets and GDP on the one hand, and the correlation between the investments per capita

[112] significance p< 0.05- there is statistically significant relationship between the variables

on fixed assets and GDP per capita on the other hand, within the eastern and the western region of China. In this regression analysis, the main focus is on the coefficient of correlation (R), which determine how much the data are close to the linear line. The value can be determined as more or less closer to 1 or 0. The value which is closer to 1 will mean that the variables are correlated and closer to the regression line. The value which is far from 1 will mean that the variables are less correlated, or there is a dispersion of the data from the regression line.

From this analysis it can be concluded that in the western region of China there is a strong and positive linear correlation between the investments on fixed assets and GDP, from 2000 until 2015. The estimation showed that there is a statistically significant relationship between the variables. Regarding to the correlation between the investments in fixed assets per capita and GDP per capita, it has shown an increase from moderate positive linear correlation in 2000 to the strong positive linear correlation of the variables from 2005 until 2015. There is also statistically significant relationship between the variables.

In the case of eastern China, there is a strong and positive correlation between the investments on fixed assets and GDP, with statistically significant relationship between the variables. However, despite the strong and significant correlation between the fixed assets per capita and GDP per capita in 2000, there is a weak positive and an insignificant correlation between the variables in 2005, and during the years of 2010 and 2015 this correlation shifts into weak negative and insignificant correlation between the variables.

This shows that in the western region, the infrastructure investments and infrastructure investments per capita are highly correlated with the GDP and GDP per capita, respectively. In the eastern region, only the investments are highly correlated with the GDP, while the investments per capita are very low or negatively correlated with the GDP per capita. Moreover, by comparing both regions it can be concluded that the investments in infrastructure had high importance for the growth of both eastern and western regions, by a tendency of

decrease in the eastern region. The dependence of the infrastructure investments on the growth on the eastern region decreased during the tenth years of investments, which in comparison with the western region its importance remained stable high during the same period. In addition, the importance of the investments per capita and GDP per capita in the eastern region decreased and shifted into negative, while for the western region the investments per capita showed to be of a high importance for the regional GDP per capita. This means that the infrastructure investments were of high importance for the economic growth of both the eastern and western regions, while per capita investments were only important for the western regional incomes per capita.

year	2015	2010	2009	2008	2005	2000
total investments per capita in the eastern region	1.75	1.80	0.45	0.38	0.74	0.64
total investments per capita in the western region	1.83	1.87	0.34	0.38	0.51	0.32
Ratio	0.96	0.97	1.33	1.00	1.46	1.97

Table 2. Total investments on fixed assets per capita in the eastern and western region of China and its ratio (investments are shown on 100 Million Yuan)

From this table it is important to see how the investments in the western region increased and converged with the investments in the eastern region. The most significant increase of the investments per capita is from 2000 to 2005. Then, it is important to note that despite the decrease of the investments per capita in 2008, they have the same rate as the investments per capita in the eastern region. In 2009 there is a significant difference of per capita investments between the both regions. It is important to note that this difference comes as a result of the government decision to reduce the investments in the western region, since the western region's economic growth started to increase with a higher rate than that of the east. Another explanation for this disperse is that during 2009 China was facing with the global economic crisis, which in order to stabilize its economy, it started again to increase its investments in the inner region,

from which was expected higher returns. This argument is justified by the fact that in the next years we can see an increase of investments per capita rate during the following years of 2010 and 2015. This rate is not showing an increase in the western region, but also a higher rate of investments per capita than that of in the eastern region.

By comparing the increase of investments from year to year by different regions, we can see that in the beginning of the period of WDP, from 2000 to 2005, there was a higher increase of investments per capita in the western region, rather than the increase of the eastern region. This means that during the WDP the higher investments in the western region contributed on the regional growth, as well as on the country as a whole. In addition, the estimation showed that after the WDP the investments still had an increase rate in the western region, which meant that the government's initiative was to continue to develop the western region and thus, to contribute to the development of the country as well, by investing on infrastructure.

In addition to this estimation, by comparing both regions it is shown that the investments per capita in the western region were almost two times lower than the investments per capita in the eastern region in 2000, 1.46 times in 2005, and until 2009, which was the end of the WDP, showed 1.33 times lower investments per capita in the west than in the east. By comparing with the previous estimation of significant relation between infrastructure investments and economic growth, it can be concluded that the lower amount, but higher intensity of investments in the western region have contributed to the increase of its regional and national GDP growth. It can be also noted that the difference of investments between the eastern and the western region between 2000 and 2015 decreased, especially in 2015 when the ratio was only 0.96 as difference of investments per capita between the eastern and western region. In conclusion, the analysis showed that the western region was highly dependent from investments after the tenth year program, especially in 2015, when it contributed to the regional and national economic growth. During the same period, the contribution of investments on the

economic growth lowered in the eastern region. From here is important to note that the investments per capita on the western region were not only converging, but they also exceed the investments per capita of the eastern region. This means that the investments in the western region are of a high importance for the economic growth, not only in a regional but also on a national level. From this analysis, it also important to note that the government have increased its preferable stance towards the west than in the east, since there is a higher rate and an increased amount of per capita investments in the western region than that of in the eastern region. Also, it can be concluded that the increased investments per capita in the west diminish the investments on the east.

As it was already discussed above, the second part of the analysis will cover the differences of growth rate changes during the years and between the both regions of China.

	(2000-2005)	(2005-2010)	(2010-2015)
total average GDP	1.02	1.26	0.14
average GDP east	1.02	1.17	0.08
average GDP west	1.02	1.34	0.20
total average GDP per capita	0.91	1.14	0.66
average GDP per capita east	0.91	0.99	0.56
average GDP per capita west	0.94	1.24	0.72

Table 3. Total average rate of GDP and GDP per capita by regions of China, 2000-2015

The analysis shows that the average growth rate is higher in the western region of China than the average growth rate in the eastern region of China. This statement is also applicable for both GDP and GDP per capita growth rate during the period from 2000 until 2015. This analysis clearly shows that the growth of the western region contributes to the total growth of the country, as a result of the high western growth rate. The estimation shows that in the western region the average rate between the tenth year periods (2000-2010) has increased for 0.32, while for the next tenth year period (2005-2015) the average growth rate in the western region

has decreased for 1.14. In comparison, the average rate in the eastern region between the tenth year periods (2000-2010) has increased for 0.16, which is two times less than the increase in the western region. In the next tenth year period (2005-2015) the average growth rate in the eastern region has also decreased as in the western region, for a rate of 1.1, which is almost the same as that of the western region. In conclusion, the western region during the tenth year period increased to a higher growth rate rather than the eastern region, while during the next ten years the western region decreased with almost the same rate as that of the eastern region.

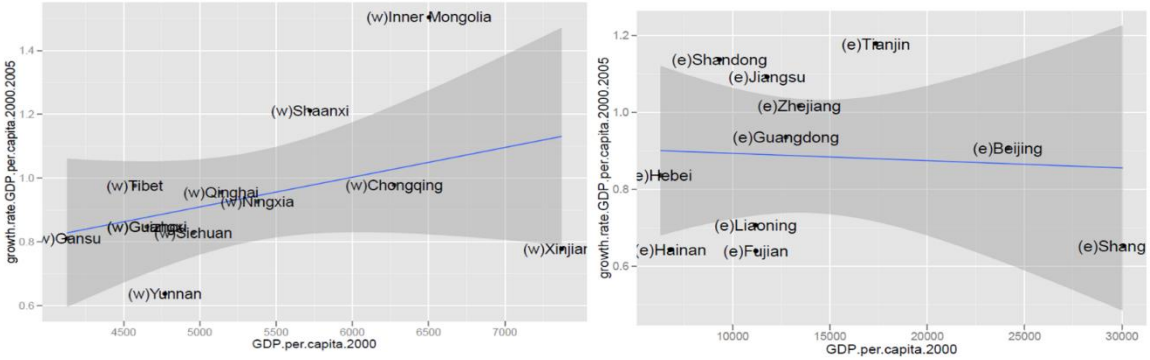
By comparing the GDP per capita average rate, during the tenth year period (2000-2010) in the western region it increased for 0.31, which is almost near with the growth of the GDP in the western region in the same period. In the next tenth year period (2005-2015) it is estimated a decrease in the growth rate of the GDP per capita in the western region for 0.53 which is a twice lower rate decrease than the decrease of the GDP in the western region on the same period. In the eastern region, the growth rate of the GDP per capita also increased during the tenth year (2000-2010) for 0.07 which is two times lower increase than the growth rate of the GDP of the eastern region in the same period. In the next tenth years (2005-2015) the average growth rate of the GDP per capita decreased for 0.43 which is two times less than the decrease of the GDP of the eastern region in the same period.

From here it can be concluded that the average growth rate of GDP per capita and the GDP in the western region increased by a same rate in the first tenth years, while in the eastern region the GDP per capita was two times lower than its GDP in the eastern region. This means that the incomes and productivity had a same rate of increase in the western region, while in the eastern region they were faced with disparities, where the productivity was two times higher than the incomes of the people. In addition, during the next ten years, on the both regions it was estimated a decrease of the GDP per capita average rate, which had a lower rate of decrease than the GDP rate. This means that the productivity was affected by a higher rate of slowing

down than the rate of incomes during the tenth year period (2005-2015). In addition, the incomes were not affected by the same dynamic as the productivity decreasing rate.

Also, it can be concluded that the investments held during the tenth year period justified the Western Development Program, since we can see an increase on both average rate of GDP and GDP per capita, moreover, increase in productivity and incomes. In contrast, in the eastern region the productivity rate and incomes were increasing with double lower rate than those of the western region. However, on the next five years there is a decrease in productivity rate in the both regions, as well as a decrease of the incomes, but with less dynamic than the productivity rate. This estimation may also show that during a long period of time, if this process of lower dynamic of income decrease continue, then the productivity and the incomes may diverge, and thus decrease the disparities within as well as between the regions of China.

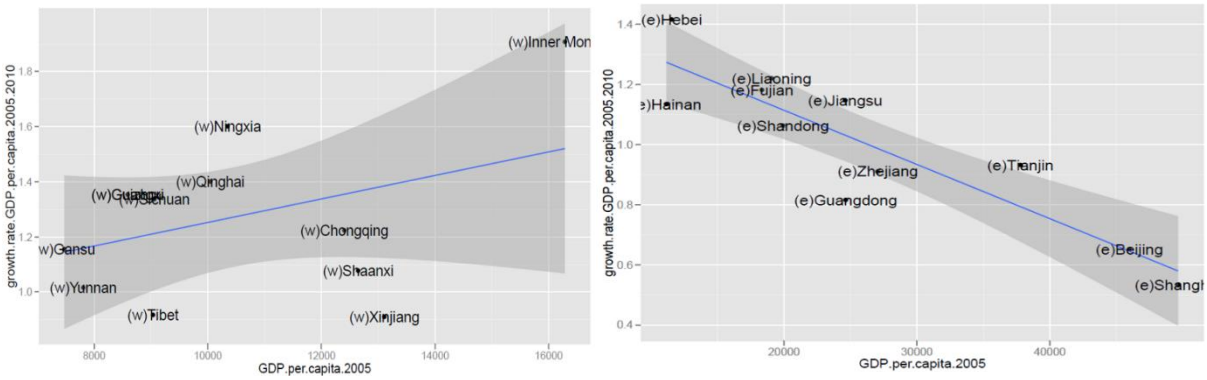
In the last analysis it will be shown the process of convergence between the GDP per capita and its growth rate. Moreover, the model of regression analysis will show the relation between the independent variable- GDP per capita and the dependent variable- the growth rate of the GDP per capita in the period between 2000 and 2015, in the both regions.



Scatter plot 1: Regression analysis; relation between GDP per capita (2000) and its growth rate (2000-2005)[113]

[113] Western region correlation between GDP per capita and growth rate is 0.3945 which shows weak correlation, while the correlation between the same of the eastern region is -0.067, which shows low negative correlation.

This model shows that during the period of 2000 and 2005 the relation between the growth rate and the GDP per capita was dispersed between the western and the eastern region. There were eastern cities with high GDP per capita, such as Shanghai and Beijing, but at the same time they did not increase with the same high growth rate as the western provinces did. This is an example of Inner Mongolia, which showed the highest growth rate during that period. Moreover, the growth rate of the western provinces was concentrated on a rate between 0.8 and 1, while the eastern region was more dispersed in terms of both growth rate and GDP per capita. In the period between 2000 and 2005 there was a positive relationship between the GDP per capita and the growth rate in the western region, while in the eastern region there was a negative relationship between these variables on the same period. The western region was linearly associated rather than the eastern region, which was not associated. (Scatter plot 1.) The different direction of regression line between the regions shows that the factors of economic growth diverge between the regions.

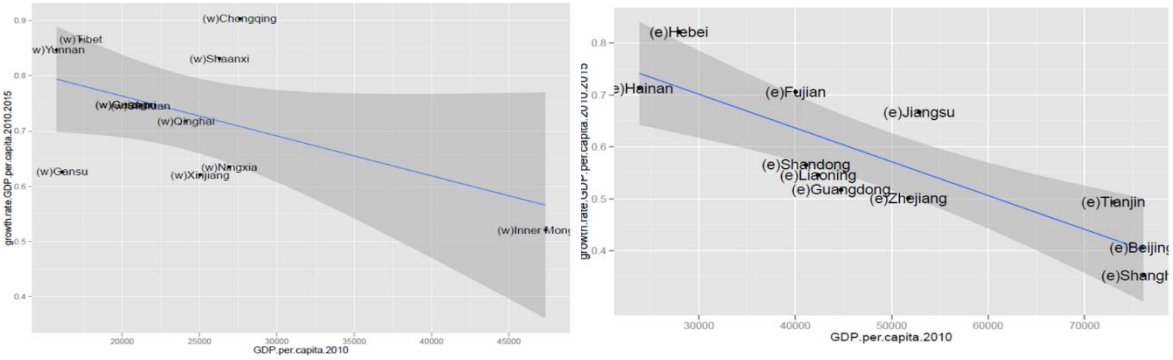


Scatter plot 2: Regression analysis; relation between GDP per capita (2005) and its growth rate (2005-2010)[114]

In this model, the relation between the GDP per capita in 2005 and the growth rate (2005-2010) for the western region is positive and nonlinear, with an outlier of Inner Mongolia which increased with high rate of growth and high rates of GDP per capita. This relation shows that the increase of the growth rate results in an increase of the GDP per capita in the western region.

[114] Western region correlation between GDP per capita and growth rate is 0.3889 which still shows weak correlation, while the correlation between the same of the eastern region is -0.8915, which shows strong negative correlation.

Despite the positive relation in the western region, in the eastern region, it was noticed a negative correlation between the variables on the same period, with the more linear association. This means that the higher the growth rate, the lower the GDP per capita in the eastern region. In addition, both cities- Beijing and Shanghai influence the low rate of growth in the eastern region, as a result of having the lowest growth rate even though having the highest GDP per capita at that time. This can mean for the both regions that the outliers influence the increase or decrease of the growth in the region, regarding to the transfer of public spending and investments, distribution of incomes and their spending. (Scatter plot 2.) Moreover, the positive correlation between the factors of growth in the western region and the negative correlation between the factors of growth in the eastern region, showed a divergence of the factors of growth between both regions.



Scatter plot 3: Regression analysis; relation between GDP per capita (2010) and its growth rate (2010-2015)[115]

This regression model shows a clear convergence of the factors of economic growth between the eastern and western region, since the regression line has shifted on the same direction. This means that in the both regions there is a negative correlation between the growth rate and GDP per capita, during the period between 2010 and 2015. The western region shows a negative dispersive, nonlinear correlation, with an outlier in Inner Mongolia which implies on the lowest growth rate in the western region. In the case of eastern region, there is a negative linear

[115] Western region correlation between GDP per capita and growth rate is -0.5238 which shows moderate negative correlation, while the correlation between the same of the eastern region is -0.8408, which shows strong negative correlation.

correlation between the variables. At this period, despite Beijing and Shanghai, as an outlier is approaching Tianjin, as cities with the highest GDP per capita, but the lowest growth rate in the eastern region. The interpretation on the both regions would be that the higher growth rate, the lowest GDP per capita.

By comparing both regions, the analysis shows that the growth rate in the western region was higher than the growth in the eastern region, and the GDP per capita was converging between the both regions. The convergence also implies on the similar growth between both regions, that some provinces of the western region approached closer to the growth of other eastern provinces. This is an example with the western province Qinghai, which had the same growth rate and GDP per capita as the eastern province Hainan, Inner Mongolia with Guangdong, and Shaanxi with Hebei. This can show that the western provinces have reached a high rate of growth for the period of investments, identified by the incomes per capita, which still shows disperse between a high growth rate and low incomes per capita in the western region, and low growth rate and high incomes per capita in the eastern region.

Chapter 5: Discussion

From the data analysis follows that the investments during the Western Development Program impacted on high economic growth in the western region as well as on the national growth. The analysis showed that during this program the investments in the western region increased and impacted on higher economic growth on the western region than on the eastern. The infrastructure investments in the western region were justified by showing a high correlation rate between the investments and GDP, and GDP per capita. Moreover, in the eastern region is shown lower correlation than that of in the western region. This means that the investments in infrastructure were of higher importance for the economic growth of the western region. The most important from this analysis is to conclude that the infrastructure investments still are of high importance for the economic growth in the western region.

The further analysis shows that the increased economic growth and the higher amount of investments in the western region is converging with the economic growth and investments of the eastern region. The importance of western development investments and its impact on higher economic growth shows that there is still room in the western region to develop and through these investments to improve the country's economic growth.

In addition, the regression model reflects on the dynamic and on the correlation between the variables. In the western region, it is shown how the growth rate and the GDP per capita rate were higher during the period of investments, leaded by higher investment and growth rate in Inner Mongolia, which after this program resulted in decreased growth, but still high rate of GDP per capita. From here it is important to conclude that Inner Mongolia had an important role for the western economic development, by emphasising on its potential for infrastructure investments. However, after the WDP, Inner Mongolia showed higher rates of GDP per capita, but decreasing growth rate. This means that during the WDP the productivity and the average

income per person increased, while after this program, despite the decrease of the productivity, the income per person increased. Regarding remain western regions, the situation was opposite. Despite the high productivity rate, the income per capita was lower. This implies on unequal distribution of capital between the western regions.

In comparison with the eastern region, the regression model showed that the western region exceeded the growth rate of the eastern region. This meant that the dynamic of growth was higher in the western region, by the contribution of the investments, despite the lower rate of income per person. This issue with increased economic disparities within the regions can be explained by the process of decentralization and increased power of local governments. Despite the aim of the central government to reduce the regional disparities and to increase the economic growth of the country, through investing in infrastructure and expecting long term returns of capital, the local government's power to control the collection of the revenues on a local level through corruption, resulted in increasing disparities and lowering the rate of income per person. This meant that during the WDP, public expenditures contributed to higher economic growth of the western region and for the national growth as well. However, the unequal distribution of revenues and the increased demand for collecting public revenues through increased taxation by the central government, as well as the increase of imposing fees and charges by the local government resulted in increased disparities within and between both regions.

Conclusion

This paper contributed on analysing the issue related to the infrastructure investments and economic growth. The analysis focused during and after the Western Development Program, which strategy was to develop the western region of China. The method of this analysis was a qualitative data analysis and applied simplified version of growth theory by looking at investments only.

The main findings showed that the infrastructure investments are of a high importance for the economic growth of China. This is especially important for the increased investments in the western region, which contributed to high regional and national economic growth of the country. The western region before the implementation of WDP was characterised by lack of infrastructure investments and it showed backwardness of its economy rather than the eastern region, which was already urbanized and had a high level of network. Moreover, the infrastructure investments showed to be a factor for continuity of production and maintaining other economic activities, such as labour movement and increasing foreign and private investments. In addition, the positive impact of infrastructure investments on the economic growth is seen through the reduction of poverty rate.

China, as well as other developing countries such as South Africa, Brazil and India, showed a common characteristics towards the economic importance of the infrastructure investments. These countries shared a positive correlation between the infrastructure investments and economic growth. It is also important to note that the lack of infrastructure investments cannot contribute to economic development because of its importance in performing the production function of the region. This gap is an obstacle for the alignment between the regions and other countries, which is necessary for the region's economic improvement and development by creating networks and partnerships.

The central government of China initiated a development of the western region for several reasons. One of the most important reasons was to reduce social and economic inequalities and disparities between the regions. Another reason was the high improvement of the eastern region and its economic imbalance with the interior regional development. Then, the financial crisis in 1998 and the global economic crisis in 2009, resulted for the central government to focus on the interior for regional investments and development, which in return the country was prevented from recession. The strategy of the central government was to develop economies with comparative advantages, by investing in sectors which had a potential to specialize on some production which was necessary to accomplish the demand of the eastern region. The potential sectors for investments in the western region were on transportation, electricity production, energy extraction, telecommunication, because of their potential for resources development in the region and their transmission in the eastern region, regarding the increased demand for electricity and other energy resources. In addition to this strategy, the regional disparities increased as a result of political issues. The central government increased the demands for revenue collection by implementing fiscal reforms of increasing taxation, as well as by increasing funds control and profiting of the state owned enterprises. Moreover, the decentralization system created income inequalities and economic disparities within the western region.

Considering the methodological part of this research, moreover, the qualitative data analysis, it can be concluded that the investments in infrastructure contributed to the western regional development and growth, as well as for the country's economic growth. Investments in the western region increased by a higher rate than in the eastern region of China, which resulted on higher western rather than eastern regional growth. Despite the importance of infrastructure investments in the economic growth, it also contributed to the increase of the incomes per capita in the western region. After the WDP, although the infrastructure investments in the

western region increased and had an impact on the economic growth and incomes per capita, the aggregate economic growth decreased, but with a higher rate in the eastern region. This phenomenon pointed out on the convergence of the growth and income per capita between the both eastern and western regions. This meant that after the WDP, the factors of economic growth in the western and eastern regions shifted in the same direction, and some of the western provinces came close with the economic growth as those of the eastern provinces.

In addition, the regional growth theory also approved this phenomenon, which predicted that in a long run the factors of growth will converge or diverge. In this case it can be concluded that the growth rate and the income per capita has converged between the regions. Also, according to this theory, the western region of China was using its economic comparative advantage in order to develop its regional economy. This referred on the development of energy and resource sector, as well as on transportation and networks in the western region, which helped for the eastern region to fulfil its demands.

By and large, the infrastructure investments had high impact on the fast economic growth of the western region of China and for its national economy. However, because of higher rate of public investments, rather than private, the influence of the central government for revenue collection and its fiscal reforms, the lack of the process of decentralization, the high planed rather than a free market economy, the low control over the local governments and their spending, resulted for increased inequalities and disparities between and within the regions. In addition to these policies and reforms of the central government, the political issues related with funding allocation and their spending by the central and local government, also resulted in increased inequalities and disparities.

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Appendix 1

1.1. Table

GDP and investments in eastern China 2000					
N	Correlation	Sig.	Mean	Std. Deviation	Std. Error Mean
11.00	0.95	0.00	3378.32	2256.06	680.22

1.2. Table

GDP per capita and investments per capita in eastern China 2000					
N	Correlation	Sig.	Mean	Std. Deviation	Std. Error Mean
11.00	0.78	0.00	14020.3	7260.56	2189.14

1.3. Table

GDP and investments in eastern China 2005					
N	Correlation	Sig.	Mean	Std. Deviation	Std. Error Mean
11.00	0.92	0.00	5940.69	4335.63	1307.24

1.4. Table

GDP per capita and investments per capita in eastern China 2005					
N	Correlation	Sig.	Mean	Std. Deviation	Std. Error Mean
11.00	0.12	0.73	26347.5	12936.95	3900.64

1.5. Table

GDP and investments in eastern China 2010					
N	Correlation	Sig.	Mean	Std. Deviation	Std. Error Mean
11.00	0.82	0.00	10378.5	9160.88	2762.11

1.6. Table

GDP per capita and investments per capita in eastern China 2010					
N	Correlation	Sig.	Mean	Std. Deviation	Std. Error Mean
11.00	-0.25	0.47	49954.6	18249.35	5502.38

1.7. Table

GDP and investments in eastern China 2015					
N	Correlation	Sig.	Mean	Std. Deviation	Std. Error Mean
11.00	0.84	0.00	2683.99	8083.00	2437.11

1.8. Table

GDP per capita and investments per capita in eastern China 2015					
N	Correlation	Sig.	Mean	Std. Deviation	Std. Error Mean
11.00	-0.01	0.98	76547.4	22697.34	6843.51

2.1. Table

GDP and investments in western China 2000					
N	Correlation	Sig.	Mean	Std. Deviation	Std. Error Mean
12.00	0.98	0.00	933.95	701.93	202.63

2.2. Table

GDP per capita and investments per capita in western China 2000					
N	Correlation	Sig.	Mean	Std. Deviation	Std. Error Mean
12.00	0.59	0.04	5342.54	954.05	275.41

2.3. Table

GDP and investments in western China 2005					
N	Correlation	Sig.	Mean	Std. Deviation	Std. Error Mean
12.00	0.97	0.00	1394.87	1070.80	309.11

2.4. Table

GDP per capita and investments per capita in western China 2005					
N	Correlation	Sig.	Mean	Std. Deviation	Std. Error Mean
12.00	0.83	0.00	10448.7	2638.34	761.62

2.5. Table

GDP and investments in western China 2010					
N	Correlation	Sig.	Mean	Std. Deviation	Std. Error Mean
12.00	0.99	0.00	1549.47	1164.92	336.28

2.6. Table

GDP per capita and investments per capita in western China 2010					
N	Correlation	Sig.	Mean	Std. Deviation	Std. Error Mean
12.00	0.73	0.01	24006	8443.01	2437.29

2.7. Table

GDP and investments in western China 2015					
N	Correlation	Sig.	Mean	Std. Deviation	Std. Error Mean
12.00	0.98	0.00	-2887.8	1625.41	469.22

2.8. Table

GDP per capita and investments p. c. in western China 2015					
N	Correlation	Sig.	Mean	Std. Deviation	Std. Error Mean
12.00	0.82	0.00	41165.8	12320.36	3556.58

3.1. Table

GDP p.c. and growth rate of GDP p.c. in eastern China 2000/2005					
N	Correlation	Sig.	Mean	Std. Deviation	Std. Error Mean
11.00	-0.07	0.84	14020.1	7260.81	2189.22

3.2. Table

GDP p.c. and growth rate of GDP p.c. in eastern China 2005/2010					
N	Correlation	Sig.	Mean	Std. Deviation	Std. Error Mean
11.00	-0.89	0.00	26348.4	12937.31	3900.74

3.3. Table

GDP p.c. and growth rate of GDP p.c. in eastern China 2010/2015					
N	Correlation	Sig.	Mean	Std. Deviation	Std. Error Mean
11.00	-0.84	0.00	49955.9	18249.26	5502.36

4.1. Table

GDP p.c. and growth rate of GDP p.c. in western China 2000/2005					
N	Correlation	Sig.	Mean	Std. Deviation	Std. Error Mean
12.00	0.39	0.20	5341.98	954.09	275.42

4.2. Table

GDP p.c. and growth rate of GDP p.c. in western China 2005/2010					
N	Correlation	Sig.	Mean	Std. Deviation	Std. Error Mean
12.00	0.39	0.21	10448.7	2638.68	761.72

4.3. Table

GDP p.c. and growth rate of GDP p.c. in western China 2010/2015					
N	Correlation	Sig.	Mean	Std. Deviation	Std. Error Mean
12.00	-0.52	0.08	24007.4	8443.62	2437.46