

The Effectiveness of China's FDI Policies with Regard to Regional Development



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Analyzing the Effect of FDI on China's GRP from Different Perspectives

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Abstract

Foreign direct investment is an essential instrument for governments from developing countries to accumulate capital and accelerate development. History has shown how China successfully used its policies in order to attract investments from abroad to become one of the top host countries in today's global economy. But can the Chinese government, after three decades of economic transformation, guide and control foreign direct investments to the same extent as before? A panel data analysis over a period of 16 years (1997-2012) was established to investigate this issue at a provincial level. The regression model used in this thesis examines the effect of foreign direct investments on China's GRP from different perspectives. In general, the estimated results suggest a significantly positive effect of foreign direct investments on GRP. This effect, however, is significantly lowered for Eastern and Central China if the time period is 2005-2012.

Keywords: *China, foreign direct investment, policies, GDP, regional development*

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1. Introduction

Previous literatures have brought to light the rapid growth of the People's Republic of China (henceforth referred to as China), the changes it has undergone during the past decades and its crucial role in the world economy. An important event that contributed to China's fast development is the Chinese government's decision to open its market to foreign investments in 1978 as a measure to stimulate its struggling economy. This "Open Door Policy", numerous reforms as well as amendments that followed entailed a large number of foreign direct investment (FDI) inflows, which accelerated the development of the country. This once isolated economy has become one of the leading host countries for FDIs in the world.

Plenty of past research have shown how opening to foreign trade and investment has significantly boosted the Chinese economy and resulted in a large inflow of foreign capital, created job as well as facilitated the transfer of technology and expertise (Zhang, 2011). However, the distribution of FDI is highly unequal, with a focus in eastern coastal regions, major metropolitans and other special economic zones (Breslin, 2006).

The Chinese government takes another serious step towards the liberalization of the markets with China becoming a member of the World Trade Organization (WTO) in 2001. However, the implementation of a number of policy reforms is required in order to conform to the WTO's framework. These reforms increase the liberalization of the FDI regime as well as the access to the Chinese market and industries. But as a consequence, the Chinese government's initial strategy of gradual liberalization and control over FDIs may no longer thrive.

Therefore, this study aims to address the FDI policy environment in contemporary China. It is also important to investigate if these policies are still as successful and beneficial as before. There is a lot of literature about China's FDI policies and their effects on the Chinese and world economy post 1978. However, the situation of the Chinese market has changed with its integration into global trade. China may no longer be in full control over their FDI regime and foreign multinational companies are gaining more power at different levels.

2. Aim and Motivation of This Study

Why China?

China's fast-rising power in the world economy has become the subject of numerous debates. Being one of the largest and still growing economies in the world, China's actions greatly influence other countries economically and environmentally.

With a landmass of 9.6 million square kilometers, it is the world's third largest country. According to the National Bureau of Statistics, China's total population in 2013 is estimated to be approximately 1.360 billion (National Bureau of Statistics of China, 2014) and is therefore the most populated nation in the world followed by India. This creates a huge market for investors and producers, which is reflected in the number of inward FDIs in China. It is expected that China's potential for growth is not yet exhausted, since most investments are focused on the eastern coast. Other regions in the country are still undeveloped in comparison to the East; however, they can offer a range of natural resources and human capital that can be fostered.

Nevertheless, China's rapid growth also entails a number of environmental concerns. Severe air pollution caused by carbon dioxide emissions put the health of its citizens at risk. In addition, decades of inadequate disposal of industrial waste have led to water contamination in rivers and lakes. According to the World Wide Fund for Nature (WWF), approximately 40% of the water in China's river systems is not consumable for humans.

Research Problem

The liberalization of the market, gradual decentralization and integration into the world economy has boosted China's national economy considerably. However, the economic gap within the country is widening, with the East Coast flourishing and the remaining regions lacking in facilities and infrastructure. The government, thus, implemented various strategies in order to restore the balance. A key element of this plan is to direct FDIs into particular regions and industry sectors that take priority. This has worked successfully in the past, but the Chinese government might have lost its control over FDIs after becoming WTO compliant and being supervised by other member countries. Whether the policies can thrive to the same extent as before is questionable. Hence, this study aims to examine the effectiveness of China's FDI

policies with regard to the regional development. A panel data analysis over 16 years will be conducted to investigate how FDIs affect China's gross regional product and whether the effect varies when different regions or time periods are considered.

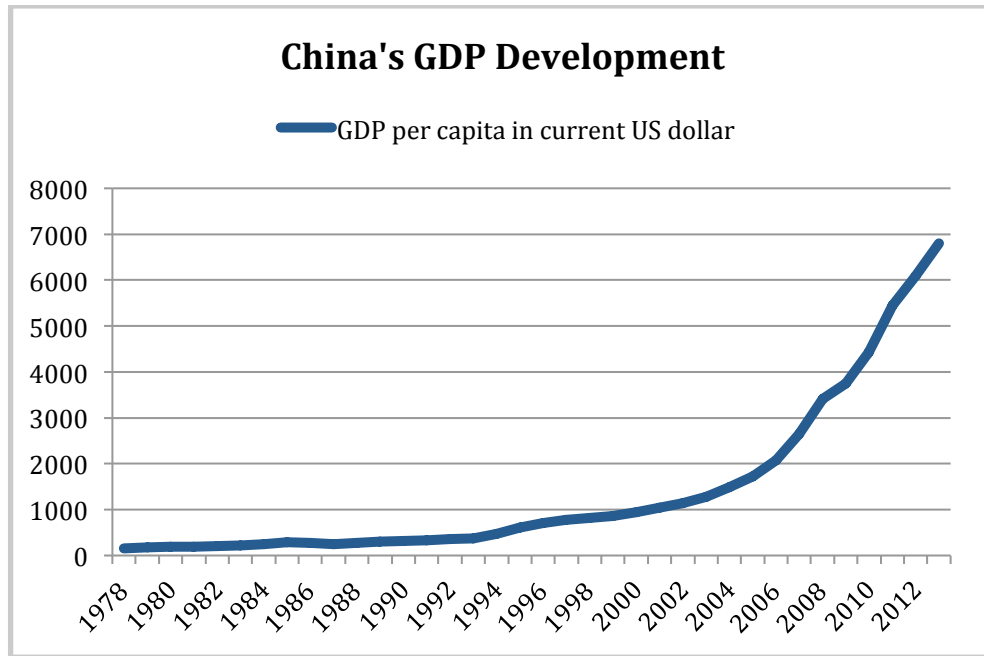
This thesis is structured as follows: Firstly, recent GDP and FDI trends are presented in order to provide an insight into China's economic development. Secondly, a detailed overview is given in the theoretical framework of what FDI generally is, how it evolved in China and the methods the government uses to control these foreign investments. In the next sections, the data and variables used for this research as well as the identification strategies, estimation model and expected results are introduced. Afterwards, the empirical results are presented, interpreted and further discussed. In the same section limitation of this study are pointed out and recommendations for future research are given. The last section concludes the thesis.

3. Recent GDP and FDI Trends in China

The promulgation of the Open Door Policy in 1978 and various reforms has formed contemporary China. Figure 1 illustrates the incredible increase in gross domestic product (GDP) per capita in China during the past three decades. The recorded GDP per capita in 1978 was approximately 155 USD, which increased to 6,807 USD in 2013.

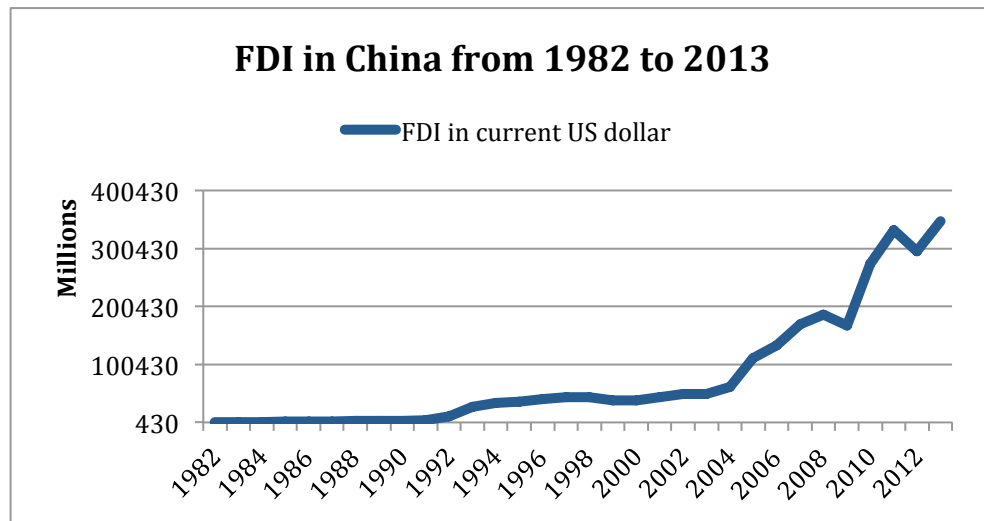
A similar pattern can be observed when examining the growth spurt of inward FDI in China. While FDIs remained at a remarkably low level during the first decade of economic transformation, the Chinese government could attract large numbers of foreign investments in the subsequent years. The development of FDIs in China during this period of time is depicted in Figure 2. According to recorded data of the World Bank, FDIs in China accounted for 430 million USD in 1982 while almost reaching the 350 billion USD (347,848,740,396.86 US \$) threshold of inflow in 2013.

Figure 1 Per Capita GDP in China from 1978 to 2013 in current USD



(Source World Bank)

Figure 2 FDI BoP net inflows from 1982 to 2013

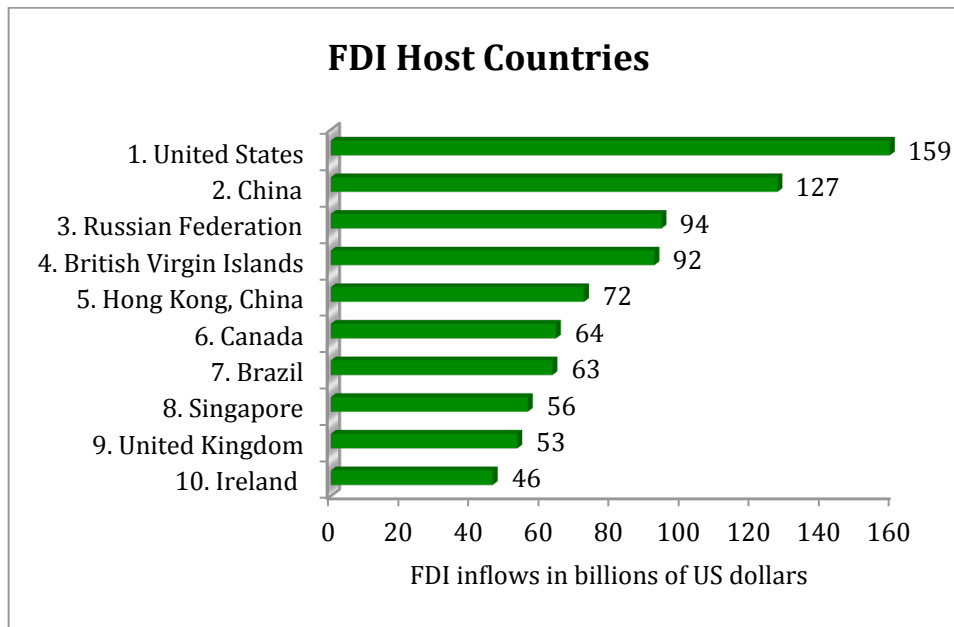


(Source World Bank)

China's success as a recipient of FDIs is also reflected in the global ranking of host countries. According to the United Nations Conference On Trade And Development (UNCTAD), China continues to be the largest recipient of FDIs among the developing countries. Moreover, China is also ranked 2nd in the world after the United States with an estimated value of 127 billion USD in

2013 (see Figure 3). As the Ministry of Commerce of the People's Republic of China (Ministry of Commerce, 2014) states on its website, the top five nations for 2013 with investments in China excluding Hong Kong and Taiwan are Singapore, Japan, the USA, the Republic of Korea and Germany.

Figure 3 Top 10 FDI Host Countries in 2013



(Source UNCTAD)

4. Theoretical Framework

4.1 Foreign Direct Investment

Foreign direct investment is a topic that has been discussed in numerous studies. And while the opinion towards the effect of foreign direct investments on the receiving country is divided, China can be regarded as a successful example of using foreign direct investment policies to stimulate its country's development.

4.1.1 Definition and Types of Foreign Direct Investments

But to begin with, it is essential to give a brief definition of FDI and its main types in order to obtain a clear understanding before going into detail. In general, foreign direct investment can be defined as the direct investment in a foreign country (host or recipient country) by an investor from another country (home or investing country). In contrast to foreign portfolio investment (FPI) that focuses on passive investments in foreign securities, FDI also involves the management of acquired assets (WTO, 1996; OECD, 2008).

According to the World Trade Organization (WTO, 1996) three main types of FDI can be identified, which are equity capital, reinvested earnings and other capital.

- The first type is equity capital, which refers to a multinational corporation's (MNC) purchase of shares of a foreign enterprise. In order to be considered as a direct investment and to exercise control over assets, at least 10 percent of equity share is generally required. However, this minimum level of ownership can vary across countries, since there is no particular threshold specified by the law (UNCTAD). Direct investments such as mergers and acquisitions or greenfield investments are both classified under equity capital.
- Reinvested earnings are the earnings not given out to shareholders as dividends but retained to use for reinvestments into the enterprise.
- Other capital refers to all the financial transactions that are categorized as FDI but not covered by equity capital or reinvested earnings. That includes both short- or long-term borrowing and lending of funds between the investor and the affiliate. (Direct Investment Technical Expert Group, 2004)

4.2 FDI in China

For the past decades, China has been successfully attracting FDIs and has become the second largest FDI host country in the world. According to the Global Investment Trends Monitor report (2012) released by UNCTAD, China even briefly overtook the United States as the world's largest recipient of FDI in the first half of 2012. More precisely, China accumulated 59.1 billion USD in global FDI inflows while the United States attracted 57.4 billion USD. These numbers

show that despite the slight decline in FDI inflow compared to 2011 China remains an appealing FDI destination for foreign MNCs.

Reasons for China's attractiveness to foreign investors as a FDI host country was explored by a large number of literatures. Zhang (2011) argues that particularly China's huge market size, low labor costs as well as its gradually liberalized FDI policy framework have given China an advantage over other countries in receiving foreign capital. Ali and Guo (2005) support this result in their study, in which the authors analyze 22 firms in China.

However, China has not always been favored by foreign MNCs as a FDI host country. It is important to not only explore the key drivers for China's economic transformation, but also contemplate the measures China employs to achieve this. Hence, the historical overview in the next section presents the development of inward FDI in China and relevant law adoptions.

4.2.1 FDI Policies in China: A Historical Overview in Three Phases

First Phase: Opening of the Chinese Economy to the World

China was essentially a closed economy, refusing trades with other countries. The Chinese economy, however, was suffering from stagnation and countermeasures had to be found in order to promote the country's performance and to stay in competition with other countries such as Japan (Dees, 1998). In response to this, Deng Xiao Ping promulgated the Open Door Policy in 1978, which permits foreign investment within the country. Opening the Chinese market to the outside world shows its desire and determination to increase productivity by reforming the country's economic system. Attracting foreign capital does not only bring pecuniary benefits to China, but also new technology, know-how and managerial skills through spillover effects. The "Law of the People's Republic of China on Joint Ventures Using Chinese and Foreign Investment" was thereafter adopted in 1979, allowing foreign investments but limiting them to equity joint ventures. Furthermore the central government established four Special Economic Zones (SEZs)¹ along the southeast coastal area in 1980: Shenzhen, Zhuhai, Xiamen and Shantou.

¹ "Special Economic Zones (SEZ), sometimes referred to as 'export processing zones' or 'EPZs' are contained geographic regions within countries—a demarcated area of land used to encourage industry, manufacturing, and services for export—typically characterized by liberal tax laws and economic policies—hence it is a 'special'

These economic zones can be regarded as an experimental base for the Chinese government to test and control the liberalization of trade as well as other policies. Foreign investors, who invest or establish an enterprise within these SEZs can benefit from special fiscal and non-fiscal incentives such as tax exemptions. However, according to Dees (1998) the number of inward FDI remained small with 230 projects in 1979 and 396 in 1983. The author further emphasized that foreign funded enterprises (FFE) were facing a number of difficulties that might have resulted in the low number of advanced-technology FFEs in the country. Some of the problems that foreign investors had to overcome are for example “convertibility issue, the incomplete legal system, the low quality of labor and the difficulties in obtaining some raw materials”. In addition, Chen et al. (1995) point out the long and complex processes of bureaucratic approval as well as the fear of the uncertain legal framework in the country.

Second Phase: Steps towards a Liberalized Market

Expanding the Concept of Special Economic Zones

The moderate FDI growth rate did not measure up to the Chinese authorities’ expectations; thus, in the following years the concept of SEZs was widely expanded in order to encourage foreign investments. From 1984 to 1985 the government opened another fourteen coastal cities² as well as three “development triangles” including the Yangtze River delta, the Pearl River delta and the Min Nan region to foreign investments. In 1988 the central government included the newly formed Hainan Province as the fifth SEZ of China and two years later in 1990 the Shanghai Pudong New Area was also opened to foreign investment. In the subsequent years the Chinese government continues to establish new economic zones and to open more cities to foreign investment. Wang (2013) focuses on the geographic evolution of China’s SEZ experiment and illustrates the results in a graph.

Incentives Offered by the Chinese government and the “22 Regulations”

Besides the liberalization of the market geographically, the Chinese government further encourages investors by gradually offering more incentives. In 1986 the Chinese authorities implemented the “twenty-two Regulations” (Feenstra, 1998; Branstetter and Lardy, 2006;

economic zone. Many nations have relied heavily on their SEZs, and are considered to be a vital ingredient in a developing country’s economic strategy.” (Shah, 2008)

2 Dalian, Qinhuangdao, Tianjin, Yantai, Qingdao, Lianyungang, Nantong, Shanghai, Ningbo, Wenzhou, Fuzhou, Guangzhou, Zhanjiang and Beihai

Breslin, 2006), which categorize foreign investments into “export oriented” and “technologically advanced” projects³. These projects enjoy the additional advantages given by the government such as reduction in tax rates, higher managerial autonomy or facilitation of the remittance of profit in foreign currencies. Furthermore with the twenty-two regulations the approval process for FDI projects has been improved through decentralization. Local authorities gained increased control, which enables higher efficiency and therefore reduced bureaucratic process times. Aside from these aspects, Harding (1987) further points out the lower costs and fees of land use, resources as well as wages for foreign investors. Moreover, the latter gained greater flexibility and enhanced access to state-controlled inputs, for example water, electricity, communication, etc.

The Tiananmen Square demonstrations in 1989⁴ resulted in a brief retreat of foreign investors. Dees (1998) shows that the political stability of a country is a significant determinant for FDI. However, this interruption of the increasing FDI trend is only short-lived, since the number of FDIs grew remarkably in the following years. According to Breslin (2006) the amount of FDI in solely 1993 already exceeds the cumulative amount of FDI for the total period of 1979 to 1992.

Third Phase: Accession to WTO in 2001

WTO Compliance and Membership

In 1986, the Chinese government applied for a renewal of their membership in the General Agreement on Trade and Tariffs (GATT)⁵, which is replaced by the World Trade Organization (WTO) in 1995. This step can be regarded as another serious attempt of China to become a participant in the international economy. The Republic of China was one of the original members in GATT, but resigned from GATT in 1950. The process of renewing the membership was lengthy and other WTO members showed resistance towards China’s accession to WTO. After 15 years, China has received the approval to join and was officially accepted as the 143rd

3 “Export oriented projects are defined as projects exporting 50 percent or more of their production value, while technologically advanced projects describe projects which upgrade domestic production capacity through the use of advanced technology.” (Feenstra, 1998)

4 The Tiananmen demonstrations refer to the Chinese student movement in Beijing in 1989, which was triggered by the death of Hu Yaobang. The massive demonstration was later suppressed by military force, causing hundreds of civilians to die and thousands to be wounded. (Hung, 1991)

5 “The great majority of international trade is regulated under the General Agreement on Tariffs and Trade (GATT). GATT is committed to liberalizing trade through lifting import and export controls and removing non-tariff barriers.” (Shrybman, 1990)

member of WTO in December 2001, followed by Taiwan one year later. Nevertheless, the Chinese government has to make amendments to the current policy framework in order to meet the requirements for being a WTO participant. It was necessary to lower or completely remove trade barriers such as tariff rates, increase transparency and enhance property rights for foreign investors. Therefore, integration into the world economy would mean that China would constantly be under WTO's surveillance. The Chinese government's initial principle of a planned economy and to exercise control over foreign investments became complicated.

China's Incentives behind Their Accession to WTO

Despite the challenges China has to face, the authorities still seek a WTO membership and the benefits that come along with it. In her study Prime (2002) suggests four major reasons that motivate this decision. First of all the author believes that being WTO compliant could stimulate more foreign investments in the country which on the other hand would increase competition for domestic enterprises and lead to improvements. Second of all an increased number of FDI could implicate new technology spillovers, that can support China's progress. A WTO membership would further mean that China could be considered a fair partner in international trades, facilitating and increasing the export of Chinese goods. The last incentive for China is political. The accession to WTO would also entail increased bargaining power for China during negotiations about international trade regulations.

4.3 China's Control over Investments

As mentioned in the previous section, China is trying to plan its economy by controlling and directing foreign investments for its own benefits. This can be done in many ways, three of which are discussed in this study.

4.3.1 By FDI Forms

China aims for a planned economy where they can exercise control over foreign investments. A common but efficient way to achieve this was by restricting the types of FDIs for certain industries and locations. Various FDI forms have emerged during China's economic transformation such as Share Companies with Foreign Investment, Foreign Invested Holding

Companies, Venture Capital Enterprises, Joint Exploitations and many more. However, this study will focus on the FDI forms that absorb major parts of foreign capital in China (Zhuhai Investment Promotion Bureau).

According to Guangzhou International's Investment guide, which is published on their website in order to help foreign investors to start-up their business in Guangzhou, Chinese-Foreign Equity Joint Ventures are one of the major forms. An enterprise is considered as a Chinese-Foreign Equity Joint Venture when both foreign and Chinese investors not only invest but also operate together. Furthermore, both parties benefit from profits but are also obligated to share losses as well as risks according to the shares of their capital. It is stated that the foreign investor must at least own 25% of the total share in the enterprise. This kind of FDI form was among the first permitted in China and until today they account for a large part of FDIs (Ministry of Commerce, 2009).

Contractual Joint Ventures also known as contractual cooperation businesses are another FDI form that is widely adopted in China. The terms and conditions of these cooperations are written down in a contract between the Chinese and foreign party. When establishing a Contractual Joint Venture the foreign party predominantly supplies most or all of the funds while the Chinese party provides the necessary land, facilities and sometimes a limited amount of capital as well.

Another investment form in China are Wholly Foreign-Owned Enterprises (WFOEs), which are exclusively funded by foreign investors and generally take the legal form of limited liability companies. In contrast to other FDI forms no Chinese partner is required for the establishment of a WFOE. This enables a greater control over the business venture in China as well as better protection of advanced technology, skills and know-how. Due to these advantages WFOEs have gained in popularity and become one of the major FDI forms.

The following tables show the actually utilized value of foreign investment sorted by the FDI form for different years.

Table 1 Actually utilized value of foreign investment by FDI form in USD 100 million for year 1997 and 2004

FDI by Form	Year	
	1997	2004
Total Foreign Direct Investments	452.57	535.05
Joint Ventures Enterprises	194.95	153.92
Cooperative Operation Enterprises	89.3	38.36
Foreign Investment Enterprises	161.88	333.84
Foreign Investment Share Enterprises	2.88	3.28
Cooperative Development	3.56	0.32
Others		5.31

Source (Chinese Statistical Yearbooks)

Table 2 Actually utilized value of foreign investment by FDI form in USD 100 million for year 2005, 2010 and 2012

FDI by Form	Year		
	2005	2010	2012
Total Foreign Direct Investments	603.25	1057.35	1117.16
Equity Joint Venture	146.14	224.98	217.06
Contractual Joint Venture	18.31	16.16	23.08
Wholly Foreign-owned Enterprise	429.61	809.75	861.32
FDI Shareholding Inc.	9.18	6.46	15.7
Joint Exploration			
Others			

Source (Chinese Statistical Yearbooks)

The data provided by the Chinese Statistical Yearbooks are obtained from the Ministry of Foreign Trade and Economic Cooperation. Since different categories are used for the FDI forms from 2005 onward, Table 1 only shows the amount of FDIs for 1997 and 2004 whereas Table 2 covers the years 2005, 2010 and 2012. Compared to 1997, the total amount of FDIs increased by approximately 18% in 2004. In the subsequent years, the growth rate of FDIs has increased even further. In comparison to 2005, a rise of approximately 85% in total FDIs has been registered in 2012 with WFOEs accounting for more than 70% of the total amount. This number reflects the growing popularity of WFOEs among foreign investors. Equity Joint Ventures are the second largest FDI form preferred by foreign investors in China. In 2012, the investments made by WFOEs and Equity Joint Ventures alone account for more than 95% of the total FDI value.

4.3.2 By Industry Sector - The Catalogue Guiding Foreign Investments

Besides the restrictions of the FDI form, China's government also exercises control by directing foreign investment projects towards certain industry sectors that take priority in China. In 1995 the Chinese government first released "The Catalogue Guiding Foreign Investment in Industry" (Ministry of Commerce, 2004; Congressional-Executive Commission on China, 2012). The catalogue serves as a guideline for foreign investors, making it more transparent which industry sectors are encouraged, restricted or prohibited to foreign investments. Investment projects that are not listed under the previous three categories are considered as permitted. In addition to the main catalogue, we can find various separate catalogues, which concern specific industry sectors or which are created for particular regions such as the aforementioned "Catalogue of Priority Industries for Foreign Investment in the Central-Western Region" or for example the "Catalogue of Encouraged Hi-tech Products for Foreign Investment" (Breslin, 2006). Investing in China can be rather complex with respect to the legal situation or bureaucratic approval process in the country. Understanding the catalogue and knowing which category one's project belong to can benefit foreign investors substantially. Hence, an explanation of the catalogue's three categories is given in the following section.

Encouraged Investments

Breslin (2006) gives a detailed explanation of the four categories in his study. According to the author, there are three forms of encouraged industry sectors that should be taken into account. The first type is export-oriented investment into sectors, where most or all produced goods are exported. Foreign investments of this kind can benefit the country through job creation or increased fiscal revenues and foreign currencies without putting competitive pressure on domestic enterprises and producers. Industry sectors that were restricted or closed to foreign investments in previous versions of the catalogue but earned the "encouraged" status later can be categorized as the second type. The third type includes all foreign investments into sectors where further development or resources are required such as sufficient capital, advanced technology or other skills.

Restricted Investments

Foreign projects that invest in sectors that are important for the national economic development but would benefit from the support of foreign capital are classified as “restricted”. Breslin (2006) distinguishes five major forms of restriction with the first one restricting investors to transfer technology or use domestic suppliers to a certain amount. Investors might also be obligated to export a specific amount of produced goods. When a threshold for a certain amount of exported goods is passed, the foreign project would obtain the “permitted” classification. In the catalogue from 2002, the threshold was for instance set at 70%. The restrictions could also prevent foreign enterprises to gain market dominance by for example limiting the amount of shares in a Chinese firm a foreign enterprise can own. Furthermore, the Chinese government can sustain their control over foreign investments to a certain extent even for newly liberalized sectors through restrictions. The final form of restriction refers to the form of a FDI. In some cases, foreign investments require the cooperation of a Chinese enterprise, thus, wholly foreign-owned enterprises are not permitted.

Prohibited Investments

The promulgated catalogue also addresses sectors that are closed to foreign investments. These sectors are generally from great importance so that the involvement of foreign investors in these sectors could affect the national economy or endanger the central government’s power immensely. Three major circumstances can be distinguished when foreign investment projects are prohibited. It occurs when the sector involves the cultural heritage of China such as rare and endangered species, traditional craftsmanship and medicine, etc. Projects are also prohibited for investments in essential economic sectors such as fishing, supply of power and water, and so on. Finally, foreign investors are also forbidden to endanger the government’s power by meddling with any publicity vehicles like the news, media etc.

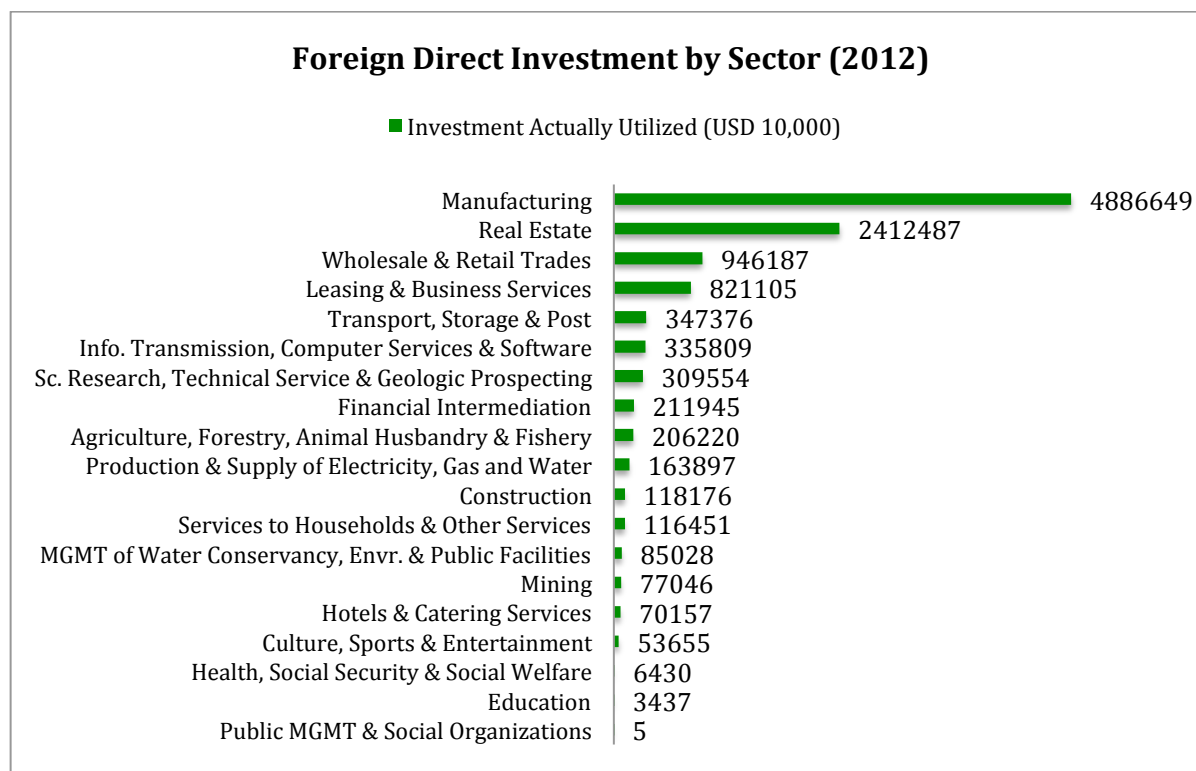
In 2011 the Ministry of Commerce of China (MOFCOM) and China’s NDRC issued the fifth and newest revision of the catalogue (Ministry of Commerce, 2012), which replaces the previous version from 2007⁶. The Chinese government sees the importance of upgrading the industries in the country and the urgency of protecting the environment and finding new energy resources. Therefore continuing its ambitions from the 2007 catalogue, the government attempts to further

⁶ Previous amendments were made in year 1997, 2002 and 2004 (Breslin, 2006)

strengthen foreign investments in advanced technology sectors with the new catalogue. The manufacturing of automobiles or RFID chips is for example no longer listed in the encouraged category. However, the government encourages the manufacturing of key components for new energy vehicles, touch systems or new Internet system innovations. Moreover, the rapid development of China's economy has strained its environment severely. Natural resources are diminishing and the growing pollution is alarming. Aware of these challenges, the government seeks to promote ecologically friendly and renewable energy projects. Since the 2007 catalogue the mining and exploration of for example scarce natural resources such as copper and zinc are either restricted or prohibited. However, the government includes projects that explore unconventional natural gas and oil resources for foreign investments to the encouraged category, but limit it to equity and cooperative joint ventures. Furthermore, the manufacturing of equipment that serves a special purpose such as monitoring the water quality or recycling polluted water has also been encouraged. Other sectors that are high in energy-consumption or pollution are moved from the encouraged to the permitted category, for example the coal chemical processing. Another field that the government desires to bring forward is the service sector. For many years the emphasis of foreign investments have lied on the heavy industry, but with the new catalogue the government increases the number of service industries in the encourage category. Services such as intellectual services entities, venture capital enterprises, vocational education and training or household and family care services have been added to the encouraged category. In addition, foreign investors are now allowed to invest in medical service institutions in the form of WFOEs. These are only a few examples of the amendments that were made in the recent version of the catalogue, but they reflect the direction the Chinese government is taking with their policies and reforms.

Figure 4 shows the actually utilized value of FDI for each industrial sector in year 2012. The investment is measured in USD 10,000. Results for previous years (1997, 2002 and 2007) can be found in the appendix of this thesis (Figure 5 to 7). As expected, the manufacturing industry sector accumulates a major part of the FDIs, followed by the real estate sector. This can be observed in Figure 5 to 7 as well. The manufacturing category, however, comprises all industries from traditional to high technological, and is therefore too general to see whether the government's plans to upgrade industries have been successfully implemented.

Figure 4 Actually utilized value of foreign investment by FDI industrial sector in USD 10,000 for 2012



Source (Chinese Statistical Yearbooks)

The real estate market is another sector that attracts a large number of foreign investors and has been booming for many years. The government, however, sees the danger of a strained property bubble and introduces new regulations to slow down the real estate market. Projects in the real estate sector for example have been moved away from the encouraged to the permitted or restricted category. In 1997 (Figure 5), the production and supply of electric power, gas and water ranked 3rd after the real estate industry. However, foreign investments in this sector gradually decreased over the years. In 2002 (Figure 6) it was overtaken by the social services, in 2007 it only ranked 7th (Figure 7) and finally dropped to 10th place in 2012. In general, the service sector has gained in popularity immensely and has been further classified into different sectors. Leasing and business services are now one of the top 5 industry sectors, which accumulate most of the foreign investments. Other service industries such as computer and technical services maintain a high rank as well, however, hotel and catering services fell from 8th place in 2007 to 15th place in 2012. Similar to the manufacturing and real estate sector, transport, storage and post industries can secure a great amount of foreign investments and remain

attractive to investors throughout the years. In addition, the foreign investments in wholesale and retail trades have increased considerably since 1997, resulting the sector to rank 3rd in 2012. Figure 4 further shows that sectors such as culture, sports and entertainment, education or health, social security and social welfare continue to rank low in comparison to the other industries. It is for example well-known that media is tightly controlled and highly censored by the Chinese government, which could explain the low interest of investors for this field.

Overall, the government's efforts to promote the service sector appear to be a success. However, more detailed information are necessary in order to find out whether foreign investments are moving towards a more technological and ecologically-friendly direction.

4.3.3 By Geographic Location

The Chinese government further regulates FDI by opening up more geographically to foreign investments and implementing different economic zones. As stated on the Chinese Government's Official Web Portal, China is the world's third largest country with an area of 9.6 million square kilometers.

As presented in the historical overview in this study, the government began establishing SEZs as an experiment for testing new policies and monitoring the results of FDI. These zones are known as the "Gold Coast" of China, attracting most of the FDIs and thus leading to greater prosperity in these regions. The experiment was then expanded along the eastern coast of China. The rapid development in these zones, however, has caused a growing economic gap between China's East and West. China's western part accounts for one-third of the country provinces, autonomous regions and municipalities. Furthermore, with an area of 5.4 million square meters (China Development Gateway, 2009) it covers a large part of China's landmass, and thus, the development of the western regions is crucial for China's national economy (see Figure 8 for the division of China into four parts). Therefore in 1999, to counter the uneven developing trend and to entice more investments for western cities and provinces, the Chinese government initiated the

“Open up the West”⁷ policy (Yeung and Shen, 2004; Breslin, 2006). The key elements of this policy include massive investments for the development of infrastructure and the promotion of education while improving the protection of the environment and resources of the country.

Figure 8 China divided into West (blue), Central (green), East (red) and Northeast (orange)



According to Yeung and Shen (2004), the central government will not fully cover all the investments due to the deficit of sufficient capital. Instead, greater power will be given to local authorities and a range of beneficial policies are introduced in order to attract more foreign investors for China’s western part. The advantages implicate income tax reductions, tariff exemptions and better loan offers for FDIs in these regions. In addition, certain industry sectors, for example transportation, electric power or telecommunication, are not only opened for FDIs but also hold further benefits for foreign investors. The Ministry of Commerce released the “Catalogue of Priority Industries for Foreign Investment in the Central-Western Region” in

⁷ This program includes 6 provinces (Gansu, Guizhou, Qinghai, Shaanxi, Sichuan and Yunnan), 5 autonomous regions (Guangxi, Inner Mongolia, Ningxia, Tibet and Xinjiang) and 1 municipality (Chongqing) (Yeung and Shan, 2004)

collaboration with China's National Development and Reform Commission (NDRC), which permits and promotes certain investment projects regardless of their category in the main catalogue (Breslin, 2006).

Apart from the long-term development of the West, the government further promulgated the "Revitalize Northeast China" policy (Chinese Government's Official Web Portal, 2007) in 2003, which addresses the decline challenge in Northeast China⁸. As Zhang (2008) describes it in his paper, Northeast China was known for its opulent natural resources and large industrial base before its decline after the reform in 1978. Major goals of this policy are to revitalize traditional industries, to develop new industries as well as to enhance the investment climate for FDIs. This would be achieved through preferential policies such as tax reforms, healthcare programs and other benefits. Furthermore, the policy also aims to target and restructure state-owned enterprises (SOEs), which were falling behind competitors and facing losses.

After the implementation of the "Open up the West" and the "Revitalize Northeast China" policies, there is also the necessity to boost the economic development of Central China⁹ as the Chinese government regard this region as an essential link between China's East Coast and West (Xinhua News Agency, 2006). In 2004 Wen Jiabao adopted this strategy, known as the "Rise of Central China" (Netherlands Embassy and Consulates China). Besides the preferential policies, as seen in the plans for Northeast China, and the encouragement of certain industry sectors, the Chinese government has to confront inefficient SOEs that remain a core problem across the country.

The increasing prices and costs on China's East Coast might enable a shift of FDI to other areas of China, which still holds great potential for development with abundant natural resources and vast lands. However, the success of these policies has yet to be analyzed in this study, since the lack of facilities and good infrastructure pose great risk and challenges for investors. The focus of the empirical analysis in this study will thus lie on the geographic location of FDIs and their impact on China's economic growth.

8 Northeast China includes the provinces Liaoning, Jilin and Heilongjiang as well as the cities Hulunbeier, Xinggan, Tongliao, Chifeng and Xilinguole

9 Central China includes the provinces Anhui, Henan, Hubei, Hunan, Jiangxi and Shanxi

5. Data

To shed light on the effectiveness of China's FDI policies with regard to regional development, I perform an empirical analysis with panel data on China's GDP at a provincial level. The constructed dataset is based on statistics collected and provided by the Chinese Statistical Yearbooks. It consists of information about 31 provinces (22 provinces, 4 municipalities and 5 autonomous regions) and covers the time period of 16 years. The main sample contains 496 observations.

The time frame from 1997 to 2012 seems reasonable for several reasons. The Chinese government only began the initiative to redirect FDIs to other geographic areas in 1999 with the "Open up the West" policy, followed by the Northeast and Central regions in 2003 and 2004. In addition, "The Catalogue Guiding Foreign Investment in Industry" was first released in 1995.

In order to analyze the dataset more precisely, I break the main sample into four subsamples according to the geographical divisions. Subsample 1 consists of the 10 provinces¹⁰ and has 160 observations and will be called East subsample. Subsample 2 consists of the 12 provinces¹¹ and has 192 observations and will be called West subsample. Subsample 3 consists of the 3 provinces¹² and has 48 observations and will be called Northeast subsample. Subsample 4 consists of the 6 provinces¹³ and has 96 observations and will be called Central subsample. The use of subsamples enables the differentiation of the FDI effect on GRP for different regions.

Furthermore, I also distinguish the subsamples between the time period 1997 to 2004 and 2005 to 2012. The Chinese government released their policies for Western (1999), Northeastern (2003) and Central China (2004) during 1997 to 2004. In addition China's accession to WTO (2001) was during the same time period. Hence, I choose a second time period from 2005 to 2012 in order to analyze whether the effect of the Chinese policies changes after becoming a WTO member

¹⁰ Beijing, Tianjin, Hebei, Shanghai, Jiangsu, Zhejiang, Fujian, Shandong, Guangdong and Hainan

¹¹ Inner Mongolia, Guangxi, Chongqing, Sichuan, Guizhou, Yunnan, Tibet, Shaanxi, Gansu, Qinghai, Ningxia and Xinjiang

¹² Liaoning, Jilin and Heilongjiang

¹³ Shanxi, Anhui, Jiangxi, Henan, Hubei and Hunan

country and the promulgation of a set of reforms. In Table 3, we can see that on average the total investment of FFEs are the highest in Eastern China and although Western China is the largest in landmass, it has the lowest amount of FFE investment.

5.1 Quality of the Data

One of the shortcomings of the dataset used in this paper could be the reliability of the panel data. The Chinese government in each province might have intentionally manipulated the reported data to their own benefit. Thus, the obtained results in this paper might be distorted or biased due to this limitation. But despite some inconsistencies, it can still be considered as one of the more complete and available datasets, which other researchers use broadly as well. Therefore, it is expected that the results are valid.

Furthermore, the choice of time frame can benefit the analysis, since the dataset is assumed to be unbiased by external shocks. Events such as the “Open door policy” in 1978 or the Tiananmen incident in 1989 do not influence the dataset, which consists of data only from 1997 to 2012.

5.2 Variables

5.2.1 Dependent Variable

The analysis in this paper focuses on the FDI effect on the GDP at a provincial level. Accordingly, the dependent variable is the gross regional product (GRP) of each province. The GRP is measured in 100 million yuan. While the average GRP is approximately 766,000 million yuan, it ranges from roughly 7,600 to 5,706,700 million yuan (Table 4).

Alternatively, the GRP per capita is used as a second dependent variable. Unlike the GRP that does not take account of a province’s size, the GRP is divided by the total number of population in that province. This enables a comparison of the relative performance of each province.

5.2.2 Independent Variable Foreign Direct Investments

The focus in this paper lays on the relationship between FDIs and China's GRP. Thus, it seems reasonable to use FDI in each province as the main independent variable; however, the FDI data for each province in the dataset is incomplete. For the year 2004 the Statistical yearbook no longer provides statistics about the FDIs in each province. Instead it states the total amount of foreign investment by FDI form.

There are different indicators that can be used for this variable, for example the number of foreign funded enterprises or the total investment of foreign funded enterprises in each province for each year. Nonetheless, I choose the latter over the former as an indicator for FDI. The reason for this choice is that I believe that the FDI effect on China's GRP does not rely on the quantity of FFEs but the quality, namely the actual amount of investment. The data shows that while the number of FFEs in a province can register a decline, the total investment is still increasing.

The variable is measured in 100 million USD and ranges from 200 to 625,000 million USD (Table 4). In 1997 the highest amount of FFE investment can be observed in the provinces Jiangsu, Guangdong and Shanghai, whereas Tibet and Qinghai have the lowest. In 2012 Guangdong, Jiangsu and Shanghai maintained their top position while Tibet and Qinghai, despite an increase in investment, are still at the lower end of the list.

Nevertheless, China's GDP is most likely not only affected by FDI, but also affected by other factors. Therefore, I control for common effects on GDP using the following control variables.

5.2.3 Control Variables

Population (POP)

Many researches have pointed out that the total number of the population affects a country's GDP. A rise in the number of the population could increase the country's workforce, which on the other hand would mean that there would be more people to contribute to China's growth. Thus, it is expected that population affects GDP positively. However, other studies have shown that a growing population can also decrease a country's GDP per capita. The particularly large

population in China can have a negative effect on the GDP per capita if the China's GDP does not grow as fast as its population. The controversial effect of population shows the necessity to include it in the model as a control variable. The total population at year-end for each province is expressed in 10,000 persons. In 2012 Guangdong has the highest population with 105,940,000 people, whereas Tibet has a population of 3,080,000 people.

Exports (EXP)

Another major driver for GDP are the exports in the country. Having a large number of exports in a country does not only improve the country's economy but also strengthens the competitiveness of local firms. Export is therefore assumed to affect GDP positively (Balassa, 1978; Feder, 1983). Although the exports by FFEs are listed separately as well, the total exports for each province are used in this study, because exports in total can have an essential impact on GDP. The variable is measured in 10,000 USD and has an average export value of 27,298,100,000 USD (Table 4). In 2012 Guangdong registers the highest export value in China with 574,050,770,000 USD, followed by the provinces Jiangsu (328,523,520,000 USD) and Zhejiang (224,517,140,000 USD).

Government consumption (GOVCON)

Government consumption is part of the government's final consumption expenditures and can be divided into collective or individual consumption. In this study the expected effect of government consumption on GRP is significant and positive. The government's expenditures to improve public goods and services as well as healthcare or education systems can lead to an increased performance of individuals and thus a higher economic growth. The results of Hansson and Henrekson's (1994) research are consistent with other studies that see the importance of educational expenditure. Nevertheless, the researchers find a general negative relation between government consumption and GDP. For this research I include government consumption as a control variable that is expressed in 100 million yuan. While the average government consumption is approximately 103,950 million yuan, it ranges from 1,213 to 732,900 million yuan (Table 4).

Average wage (AWAGE)

One way to calculate GDP is the income approach, where generally employee's compensation, corporate profits and other incomes are added up. Therefore, it is assumed that average wage has an effect on GDP and is included as a control variable in this study. An increasing average wage stands for the population's rising wealth. If individuals on average have more money to spend on goods and services, it should have a positive effect on China's economic growth. More money could also motivate individuals to work harder and more efficiently, since they feel happier and satisfied with their job. The average annual wage in China for the given time frame is approximately 20,929 yuan and ranges from 4,889 to 84,742 yuan (Table 4).

Education (PEDUC, SEDUC, HEDUC)

It is well-known that education is essential to the development of human capital. Education can foster and strengthen one's abilities to think critically, to solve problems and to cope with a task efficiently. A number of studies have shown that FDI can only increase growth in developing countries when a certain level of educational attainment is achieved (Borensztein et al., 1998; Xu, 2000). The educational level of a country's population is an important determinant for investors, since in some industries a certain educational standard of the labor force is required in order to fulfill tasks. Thus, education will be included as a control variable in the model and is divided into 3 categories: primary, secondary and high education. While primary education refers to primary school, secondary education refers to junior, senior and specialized middle school. High education includes college and higher level. I expect high education to have a positive effect on GRP, whereas primary education should affect GRP negatively. Secondary education should have a less positive effect on GRP than high education.

6. The Model

6.1 Identification Strategy

The focus in this study is to analyze the effectiveness of China's FDI policies regarding the geographic region and the industrial sector of FDIs. For this I use the presented panel dataset to

conduct a regression analysis. In the first step, I examine the relation between FDI and GRP. I expect the following:

H1: FDI increases China's GRP.

In a second step, I examine the relation between FDI and GRP for the four subsamples (East, West, Northeast, Central). For the four subsamples I expect the following:

H2-1: FDI increases Eastern China's GRP.

H2-2: FDI increases Western China's GRP.

H2-3: FDI increases Northeastern China's GRP.

H2-4: FDI increases Central China's GRP.

In a third step, I analyze whether China's policies has achieved their desired results by investigating the relation between FDI and GRP for the four subsamples and two time periods (1997-2004, 2005-2012). In detail, I expect:

H3-1: FDI increases Eastern China's GRP more in 1997-2004 than in 2005-2012.

H3-2: FDI increases Western China's GRP more in 2005-2012 than in 1997-2004.

H3-3: FDI increases Northeastern China's GRP more in 2005-2012 than in 1997-2004.

H3-4: FDI increases Central China's GRP more in 2005-2012 than in 1997-2004.

6.2 Estimation Model and Expected Results

6.2.1 Main Estimation Model

In this section I will describe the estimation model, which will be used in this study in order to test the aforementioned hypotheses. The dependent variable GRP describes the gross regional product of province i in year t and is measured in 100 million yuan.

$$GRP_{it} = \beta_0 + \beta_1 * FDI_{it} + \varepsilon$$

FDI measures the total investment of FFEs and a significantly positive effect on GRP is expected. Previous literatures (Dees, 1998; Tuan et al., 2009; Zhang, 2011) argue that FDI inflows have a positive effect on GDP due to spillover effects. Investments of MNCs can accelerate the technological progress and improve managerial skills and know-how of domestic firms. Moreover, the presence of foreign firms increases competition on the Chinese market, forcing domestic firms to enhance their productivity. Bütke and Milner (2008) further point out the greater FDI inflow to a developing country, and thus, leading to a higher economic growth if it for example becomes a WTO member, which is the case for China. However, there are also studies that find a negative effect of FDI. The increased competition for domestic firms could suppress local businesses, since foreign firms enjoy favored conditions. Ran et al. (2007) present results, which show that while Eastern China benefit from the FDI inflows, Western and Central China are at a disadvantage and the regional economic gap is growing.

The distribution of both GRP and FDI are, however, highly skewed (Figure 9) and it is therefore important to take the natural logarithm of these two variables. The transformation can make the distribution more normal, since it improves the fitting of the variables into the estimation model (Figure 10). A natural log transformation of both the dependent and independent variable further enables an interpretation of the coefficients as elasticities.

$$Ln_GRP_{it} = \beta_0 + \beta_1 * Ln_FDI_{it} + \varepsilon$$

Lastly, the set of control variables is included in the final model:

$$Ln_GRP_{it} = \beta_0 + \beta_1 * Ln_FDI_{it} + \beta_2 * POP_{it} + \beta_3 * EXP_{it} + \beta_4 * GOVCON_{it} + \beta_5 * AWAGE_{it} + \beta_6 * PEDUC_{it} + \beta_7 * SEDUC_{it} + \beta_8 * HEDUC_{it} + \varepsilon$$

6.2.2 Estimation Model with the Effects across Different Time Periods

The main estimation model will be used for the full sample as well as all regional subsamples. In order to examine the FDI effect across different time periods, however, two additional variables are required.

$$\begin{aligned}
Ln_GRP_{it} = & \beta_0 + \beta_1 * Ln_FDI_{it} + \beta_2 * Dtime_i + \beta_3 * (Ln_FDI_{it} * Dtime_{it}) + \beta_4 * POP_{it} \\
& + \beta_5 * EXP_{it} + \beta_6 * GOVCON_{it} + \beta_7 * AWAGE_{it} + \beta_8 * PEDUC_{it} + \beta_9 \\
& * SEDUC_{it} + \beta_{10} * HEDUC_{it} + \varepsilon
\end{aligned}$$

The first one is a binary variable (*Dtime*) that takes the value of 1 if the time period is 2005 to 2012 and the value of 0 otherwise. The second variable is the interaction term of the natural log of FDI and the binary variable (*Ln_FDI*Dtime*).

7. Empirical Results

7.1 Results

7.1.1 What is the impact of FDI on GRP?

The analysis begins with the estimation of the FDI effect on GRP for the full sample and the findings are presented in Table 5. Column 1 shows the Basic model that solely examines how FDI affects GRP without accounting for control variables. FDI has a significantly positive effect on GRP at a significance level of 1%. In Column 2, the basic model is extended to the full model by including all the control variables. In Column 3 in addition to the control variables I also control for time and province fixed effects, which results in a slightly higher R^2 of 0.99551 (instead of 0.94079) and an adjusted R^2 value of 0.99497 (instead of 0.93982). This means that the full model with fixed effects explains approximately 99% of the total variation in the dataset. In contrast to the Basic model, FDI has a smaller positive effect on GRP in both Column 2 and 3, but remains highly significant in the full models. An increase in FDI by 1% would lead to an increase in GRP by 0.29715% in the full model and an increase by 0.07147% in the full model with fixed effects. The results support hypothesis 1, which expects a positive FDI effect on GRP. With regard to the control variables, the results show that population has a significantly positive effect in the full models. Export is statistically significant at a 1% significance level in Column 3 and has a negative effect on GRP that is close to 0. While government consumption is not significant in any model, average wage is at a 1% significance level and has a positive effect on GRP. Significant results can only be observed for primary education in Column 3 and high

education in Column 2. Primary education has a negative effect on GRP whereas high education affects GRP positively, however both coefficients are very small and approaching 0.

Consistent with hypothesis 1 and previous studies, the findings in Table 5 show that FDI affects China's GRP positively. Nonetheless, it is necessary to examine whether the positive FDI effect on GRP is sustained when examining the regional subsamples.

7.1.2 What is the impact of FDI on GRP for the subsamples?

In the next step of the analysis, the full sample is divided into four subsamples in order to analyze whether the FDI effect on GRP differs for different regions in China. I conduct the same regression as in section 7.1.1 using the full model with and without time and province fixed effects for the four subsamples.

Table 6 shows the regression results for the full model without time and province fixed effects. The discussed results of the full sample are presented in Column 1. Apart from the East subsample (Column 2), the FDI variable is statistically significant in all other samples. Furthermore, the FDI coefficients for all samples indicate a positive effect on GRP. The largest significant FDI effect is observed for the Central subsample (Column 5), where an increase in FDI by 1% would increase the GRP there by 0.41279%. On the other hand, an increase in FDI by 1% would increase the GRP in Northeastern China (Column 4) by 0.19071% and by 0.15558% in Western China (Column 3). Similar to the full sample, population continues to have a positive effect on GRP across all subsamples. However, the coefficient for the Northeast subsample is not significant. The export effect is significantly negative at a 1% significance level in the West subsample, but close to 0. Government consumption is statistically significant at a 1% significance level in both the Northeast and Central subsample. While an increase in government consumption decreases the GRP in Northeastern China, it increases the GRP in Central China. Average wage has a significantly positive effect on GRP across all samples. Finally primary and secondary education are only statistically significant at a 10% significance level in the East subsample whereas high education is statistically significant at a 5% significance level in the West subsample. And while both secondary and high education have a positive effect on GRP; it appears that primary education affects GRP negatively.

Table 7 shows the regression results for the full model with time and province fixed effects. Compared to the full model in Table 6, similar results can be found with regard to the sign of the coefficients; however, there are differences in the significance. The FDI effect on GRP remains positive across the samples, and besides in the East subsample (Column 2) the FDI coefficient in the Northeast subsample (Column 4) is no longer significant after including time and province fixed effects in the model. Again the FDI effect is the strongest in the Central subsample (Column 5), an increase in FDI by 1% raises the GRP by 0.11076%, followed by the West subsample (Column 3) where an increase in FDI by 1% increases the GRP by 0.05958%. Population is statistically significant in the East and Central subsample and continues to affect GRP positively. Apart from the Central subsample, export is statistically significant at a 1% significance level across all samples and has a negative effect on GRP that is close to 0. In contrast to Table 6, government consumption is now statistically significant at a 1% significance level in all regional subsamples. An increase in government consumption decreases the GRP in Northeastern China, whereas it increases the GRP in the other regions. Moreover as seen in Table 6, the average wage effect on GRP is statistically significant and positive across all samples. The coefficients for the three education variables are all very small and approaching 0. Primary education is statistically significant and negative in the West and Central subsample. Secondary education on the other hand is only statistically significant in the Central subsample and has a positive effect on GRP. And finally high education is statistically significant in the East and Central subsample; however, the estimated effect is positive for Eastern China and negative for Central China.

The findings in Table 6 and 7 support the hypotheses 2-2, 2-3 and 2-4. Indeed, it appears that an increase in FDI does increase the GRP of Western, Northeastern and Central China. The FDI coefficient for Eastern China suggests a positive effect on GRP as well, which would be consistent with hypothesis 2-1, however, the results are not significant in both models.

7.1.3 Comparing Datasets among Different Time Periods

After testing whether the FDI effect on GRP differs between different regions in China, I am going to examine whether the FDI effect varies for different time periods.

The regression results of the full model without fixed effects are shown in Table 8. A dummy variable for the time period as well as an interaction term between FDI and the dummy variable are added to the same regression model as in the previous section. After including new variables in the model, FDI remains statistically significant and positive across all subsamples. In general an increase in FDI by 1% increases the GRP in Central China the most by 0.28078% (Column 4), followed by an increase in GRP by 0.24479% in Eastern China (Column 1). An increase in FDI by 1% further raises the GRP in Northeastern China by 0.13959% (Column 3) and increases the GRP in Western China by 0.08509% (Column 2), which is the smallest effect among the different subsamples. The dummy variable is highly significant at a 1% significance level and positive in the East and Central subsample. If the time period is 2005 to 2012 then the GRP in Eastern and Central China would increase. The interaction term in the East subsample is statistically significant at a 5% significance level and has a negative effect on GRP. If the time period is 2005 to 2012 the FDI effect on GRP is weaker than FDI by itself. More precisely, if the time period is 2005 to 2012 an increase in FDI by 1% would increase the GRP in Eastern China by 0.07867%. Contrarily to the East subsample, the interaction term in the West subsample is statistically significant at a 5% significance level and positive. This means that if the time period is 2005 to 2012 FDI has a stronger effect on GRP than when looking at FDI alone. An increase in FDI by 1% would increase the GRP in Western China by 0.14826% if the time period is 2005 to 2012. The interaction term in the Northeast subsample is not significant, however, it is noticeable that the coefficient is negative. With respect to the interaction term in the Central subsample, the coefficient is statistically significant at a 1% significance level and has a negative effect. An increase in FDI by 1% in this case would increase the GRP by 0.0676% if the time period is 2005 to 2012. It is further apparent that during the 2005 to 2012 time period FDI has the strongest positive effect on GRP in Western China. Concerning the control variables, population is statistically significant and positive in the East, West and Central subsample. Export is statistically significant at a 1% significance level and negative in the West subsample, though the effect is rather small and close to 0. Government consumption is statistically significant at a 1% significance level in the Northeast and Central subsample. An increase in government consumption decreases the GRP in Northeastern China whereas it increases the GRP in Central China. Average wage is statistically significant at a 1% significance level in all subsamples and affects GRP positively. Primary education is statistically significant at a 5% significance level in both the East and Central subsample and has a negative effect on GRP. In contrast to primary

education, secondary education has a significantly positive effect on GRP in the East and Central subsample. High education has a significantly positive effect on GRP in the West and Central subsample. The coefficients for the education variables are again very small and close to 0.

Table 9 provides the estimated regression results for the full model with fixed effects. Like in the previous model, I add the dummy variable and the interaction term to the regression model. After including new variables and fixed effects in the model, the FDI coefficient in the Northeast subsample (Column 3) is no longer statistically significant. Nevertheless, the FDI coefficients in all subsamples remain positive with the strongest effect in the Central subsample (Column 4), where an increase in FDI by 1% increases the GRP by 0.12082%. An increase in FDI by 1% further raises the GRP in the West subsample by 0.04484% (Column 2) and in the East subsample by 0.03899% (Column 1). The dummy variable is highly significant at a 1% significance level and positive across all subsamples. The effect is the strongest in the Central subsample and the weakest in the West subsample. The interaction term in the East subsample is not significant but like in Table 8 the coefficient is negative. In contrast to the East subsample, there is a positive effect of the interaction term on GRP in the West subsample and the coefficient is statistically significant at a 1% significance level. If the time period is 2005 to 2012 an increase in FDI by 1% increases the GRP in Western China by 0.09696%. The FDI effect during this time period is thus stronger than testing the FDI effect by itself. The interaction term in the Northeast subsample is again not significant, however, the sign of the coefficient is positive this time. If the time period is 2005 to 2012 the FDI effect on Central China's GRP is weaker, since the coefficient of the interaction term is statistically significant at a 1% significance level and negative. More precisely, an increase in FDI by 1% decreases the GRP in Central China by 0.11506% if the time period is 2005 to 2012. The estimated population effect on GRP is positive and statistically significant at a 1% significance level in the East and Central subsample. The export coefficients in the East, West and Northeast subsamples are negative, close to 0 and statistically significant at a 1% significance level. Government consumption is statistically significant in all subsamples. The estimated effect of government consumption is negative in the Northeast subsample and positive in the other subsamples. Average wage is statistically significant and positive in the East, West and Central subsample. Primary education is only statistically significant at a 5% significance level in the Central subsample and has a negative effect on GRP. Secondary education is statistically significant at a 1% significance level in the

Central subsample as well, but affects GRP positively. High education has a significantly positive effect on GRP in the East subsample, but a significantly negative effect in the Central subsample. In addition, the coefficients for the education variables are again close to 0.

To sum up, the regression models in Table 8 and 9 present results that are in consistence with hypothesis 3-1. The estimated positive FDI effect on GRP is lowered in the East subsample if the time period is 2005 to 2012. Furthermore, the findings also support hypothesis 3-2, since the FDI effect on GRP is raised in the West subsample if the time period is 2005 to 2012. However, the FDI results for the Northeast subsample are not explicit since it contains insignificant coefficients. Nonetheless, they indicate a stronger FDI effect during the 2005 to 2012 time period, which on the other hand would support hypothesis 3-3. Based on the results, hypothesis 3-4 is rejected since the FDI effect is lowered during the 2005 to 2012 time period. In one of the models, the FDI effect is not only lowered but actually becomes negative if the time period is 2005 to 2012.

7.1.4 Robustness Check GRP

In order to test whether the previous coefficient results are robust to changes, the estimation model is modified by replacing the dependent variable GRP with the GRP per capita of China. An advantage of using the GRP per capita over the GRP is that it takes into account the population of each province, and thus, facilitates the comparison of the results across different regions. The regressions from the previous models are conducted again with the new dependent variable. At this point it is possible to exclude the control variable “Population” to avoid possible biased results. Nonetheless, the regression results of the model including “Population” are presented in this study, since there are no crucial differences of the findings between both models and the adjusted R^2 is higher when the control variable is included.

Table 10 shows the full sample regression results for the Basic model (Column 1), the Full model (Column 2) and the Full model with fixed effects (Column 3). In general, the FDI effect on GRP per capita is in line with the results from Table 5. FDI is significant at a 1% significance level and has a positive effect on GRP per capita. In Table 11 the regression results of the full model are compared across different samples. Similar to Table 6, FDI has a positive effect on GRP per

capita in all samples; however, the coefficient is only significant in the West (Column 3), Northeast (Column 4) and Central subsample (Column 5). The findings of the full model with fixed effects are presented in Table 12 and in consistence with Table 7 the FDI effect is throughout positive. Besides in the Central subsample (Column 5), the FDI coefficient is also statistically significant at a 10% significance level in the East subsample (Column 2) whereas it was insignificant in Table 7. The FDI coefficient is statistically significant at a 1% significance level in the West subsample (Column 3). The full model is then conducted for the different subsamples and compared across different time periods (Table 13). The FDI coefficient is again statistically significant and positive in all subsamples. The dummy variable for the time periods is statistically significant at a 1% significance level in the East (Column 1) and Central subsample (Column 4) and has a positive effect on GRP per capita. Apart from the Northeast subsample (Column 3), the interaction term is statistically significant in all other subsamples. While the interaction term has a negative effect in the East and Central subsample, it has a positive effect in the West subsample. These regression results conform to the findings from Table 8. Finally, Table 14 points out similar regression results for the full model with fixed effects as Table 9. FDI has a significantly positive effect on GRP per capita in the East (Column 1), West (Column 2) and Central subsample (Column 4). The dummy variable is further significantly positive in all subsamples. In addition, the interaction term is significantly positive in the West subsample and significantly negative in the East and Central subsample, which is consistent with the results from Table 9 and 13. With regard to the control variables, the general effects remain about the same during the robustness check and will therefore not be discussed in detail.

As a whole, substituting the dependent variable GRP with the GRP per capita does not change the outcome of this research. In fact, hypothesis 2-1 is supported when using the GRP per capita as a dependent variable since an increase in FDI significantly increases Eastern China's GRP. Hence, a brief interpretation and discussion of the robust findings will be given in the following section.

7.2 Interpretation and Discussion of the Results

Main Independent Variable FDI

The FDI variable is the main independent variable of interest in this study, and a positive FDI effect on China's GRP was expected in hypothesis 1. The research results support this hypothesis and showed that an increase in FDI by 1% significantly increases China's GRP by 0.29715% in

the full model. The prevalent notion that FDI is beneficial for China's GDP is therefore in line with this study. Previous literatures such as Tuan et al. (2009) or Zhang (2011) have already pointed out the advantages that FDI can bring to the host countries. To give a brief recap of the benefits, foreign investments in a region would not only improve capital formation and exports in China but also create jobs for workers that would lead to the transfer of knowledge and skills.

In hypotheses 2-1 to 2-4 a positive effect of FDI on GRP was expected for the four geographic regions in China as well. Using subsamples to differentiate the FDI effect for the geographic regions of China does not alter the positive effect it has on GRP. As can be seen in the findings, the FDI coefficients for all subsamples are positive, which imply an increase in economic growth when FDI increases. The possible reasons behind this are explained thoroughly in this study. The result suggests a support of hypotheses 2-1 to 2-4, however, the positive FDI effect on Eastern China's GRP is only significant in the robustness check. This study might be limited for several reasons that could have caused the insignificance of the coefficient in the main model. The limitations will be discussed in the next section of the study. Furthermore, although Western China covers most of the provinces and landmasses, the FDI effect on Western China's GRP is the smallest across the subsamples. This could show that there is still room for improvement and more FDI needs to be attracted to the Western regions. In addition, among the set of policy reforms for the regional development, the policies for Central China were released the latest. Nevertheless, the FDI effect on Central China's GRP is the largest. Since Central China is in between the other regions, it can serve as a link. It is possible that after the promotion of the West and Northeast of China by the Chinese government, investors see a great benefit in investing in Central China because of its closer location to the eastern major cities and coast. However, in order to have a clearer picture of the FDI effect it is necessary to look at it from different time perspectives, which leads us to hypotheses 3-1 to 3-4.

Past and current literatures have shown that FDI has a positive effect on Eastern China's economy. The research results support this notion, since FDI has a significantly positive effect on Eastern China's GRP. Nonetheless, the effect is weakened if the time period is 2005 to 2012, which is in consistence with hypothesis 3-1 that expects a weaker positive FDI effect on GRP during 2005 to 2012 than during 1997 to 2004. Since the Open Door Policy Eastern China and in particular the coastal cities have been flourishing from the engagement of foreign investors. But

with the establishment of numerous firms in these cities, they have become centers of global trade with high living costs, increasing land prices and tighter environmental regulations. Therefore, it is possible that due to these reasons FDI does not affect China's GRP to the same extent anymore. Instead the higher costs could lower the productivity. Hypothesis 3-2 is supported by the findings as well, since an increase in FDI increases Western China's GRP even more if the time period is 2005 to 2012. Hence, FDI benefits the productivity growth in Western China and contributes even more to the GRP in the long-run. After opening up the Eastern provinces and coastal cities, promoting Western China's economy has obtained priority in China before other regions. It is likely that building infrastructures and government expenditures in education systems have improved the investment environment for foreign investors in this region. During 2005 to 2012 the FDI effect on GRP is the largest for China's Western region. Nonetheless, it is important to recognize that, despite the government's early initiative to open up the West, on average the value of foreign investments and the number of foreign funded enterprises in Western China remain the lowest among the four regions (Table 15). More time is necessary for the development of China's Western provinces, only then a suitable environment for FDIs can be provided to investors.

Table 15: Summary of mean value: Total value of investment (no. of enterprises)

Mean	(1) East Subsample	(2) West Subsample	(3) Northeast Subsample	(4) Central Subsample
FDI 1997-2004	706.3179 (16689.7)	46.13 (1359.052)	259.4533 (6529.917)	102.419 (2722.979)
FDI 2005-2012	1794.862 (29048.14)	138.8854 (2523.333)	569.125 (8658.417)	303.333 (5152.833)

For the Northeast subsample a significantly positive effect of FDI on GRP can be observed. However, the findings present insignificant and ambiguous results for the interaction term. The Northeast of China was renowned for its industrial bases. The already existing infrastructures and required workforce might be factors that induce foreign investors to favor this region over others. This could explain the stronger, though not significant, positive effect of FDI on GRP during 2005 to 2012, after the adoption of the "Revitalize Northeast China" policy in 2003. Northeastern China was further known for its struggling SOEs that might have failed under the pressure of new

competitive market entrants, which could explain the weaker effect of FDI on GRP during 2005 to 2012. This study does not support hypothesis 3-3 by any means and further research is required at this point to identify and break down the FDI effect on Northeastern China's GRP during different time periods. Finally, the estimated regression results for the Central subsample imply a rejection of hypothesis 3-4 that expects a stronger positive FDI effect on GRP during 2005 to 2012. In the full model with fixed effects, an increase in FDI in Central China does not only significantly lower the positive effect on GRP during 2005 to 2012 but decreases the GRP. There are a number of reasons that could explain this finding. First of all the result could imply that China's policies have not taken effect yet. FFEs do not have suitable infrastructures or suppliers for their production and shipping in Central China, resulting in a slow and costly procedure. Another possibility could be that domestic firms and producers no longer benefit from spillover effects. Foreign investors improved the protection of their intellectual properties and impede the transfer of valuable technology and know-how. However, due to the government's policies foreign investors will still benefit from certain fiscal and non-fiscal incentives such as tax reductions. Competition rises with the arrival of new products at lower prices and local small businesses are forced to reduce their own prices or to be pushed out of the market. Hence, it is possible that FDI is decreasing the GRP in Central China indirectly by crowding out domestic investments.

Control Variables

Population

Apart from the Northeast subsample, population has a significantly positive effect on GRP in all samples. Despite its insignificance, the FDI coefficient in the Northeast subsample indicates a positive sign as well. It is possible that the result for the population variable is distorted since the Northeast subsample only contains data of three provinces. Nonetheless, other limitations will be discussed later in the study. In general, an increase in population can raise the economic performance of the country since there is a larger workforce and more consumers who can contribute to China's growth.

Exports

Contrarily to expectations, export affects GRP negatively in all samples. Furthermore, no significant results could be found in the Central subsample. However, the export coefficients are very small and close to 0. Export was tested for the total time period of 1997 to 2012. It is possible that while the import value was rather high in the beginning of the time period, it fell gradually whereas the export value of China rose over time. This might have led to the small export coefficient, since the two factors nullified each other's effect. Nonetheless, further research is required to detect the definite reasons behind this finding that goes against the prevalent notion. The limitations of this study also contributed to this result.

Government consumption

Government consumption is expected to have a positive effect on GRP in this study. This expectation is, however, not supported by all sample results. An increase in government consumption indeed significantly increases the GRP in Eastern, Western and Central China, but decreases the GRP in Northeastern China. As explained in the data section of this study, government spending on public goods and services can enhance the standard of living for individuals, which then again raises their performance. This is beneficial for the country's economic growth, as can be seen in the results. Higher government consumption expenditures can, however, also diminish GRP as in the case of Northeastern China. There are several possible explanations. First of all, it could be a matter of time for the government expenditures to take effect and benefit the economy. Second of all, higher government expenditures mean that more money is required to finance the costly programs. A way to secure government income is tax. Increasing the level of taxes would put a greater burden on individuals and discourage investors, which would lower the economic performance and productivity in the region. It is further possible that although the government consumption expenditures have increased, the money and resources are used inefficiently, inducing opposite consequences than desired.

Average wage

The regression results support the expectation that an increase in the average wage would increase the GRP of the country. A significantly positive effect of average wage on GRP can be observed for all samples. An increase in the average wage can boost the overall economic performance since workers have additional money to spend on goods and services. Besides the

higher consumption, an increasing average wage can also enhance the quality of life for individuals, who might experience a greater level of happiness and satisfaction. The improved mental state can further motivate workers and push them to higher productivity.

Education

The coefficients for education are all small and near 0, however, the sign of the coefficient vary for different levels of educational attainment. As expected, primary education has a throughout negative effect on GRP. Contrarily, both secondary and high education affects GRP positively, but no difference in the magnitude of the effect can be noted. The findings are in line with previous studies that see the importance of education in the development of human capital, which is an essential determinant of economic growth. Improving the educational level of a country's population is important, since a specific standard of skills is anticipated of workers in order to function efficiently.

7.3 Limitations and Future Research

The analysis in this study presents regression results that confirm most of the hypotheses. It is, however, important to point out that this research is limited for several reasons.

First of all, as mentioned in the data section of this study, the self-reported data from the statistical yearbooks might be inaccurate in the first place. During the data input, mistakes could have been made unintentionally that would lead to distorted results. Furthermore, manipulative behavior cannot be ruled out, since it would enable more presentable numbers. In addition, the estimated model might suffer from omitted variable bias. There are different ways to determine the GDP of a country, and thus, there might be other important factors that affect GDP but were not included in this research model. It is further apparent that human capital has a considerable effect on FDIs and a country's economic performance. Nonetheless, the statistical yearbooks only provide data that were taken out of small samples that might not apply to the total population.

Future researches on this topic should therefore modify the estimation model used in this study by adding other determinants of growth to the model. These control variables could be for example political instability, financial development or a measure for political rights (Borensztein et al., 1998). In addition, the presented research model can also be expanded by substituting the

FDI variable. The total investment value of FFEs were used to measure FDI here, however, it is possible to use the ratio of this to the total investment value or even to the GRP itself. Due to the important role of human capital, the educational attainment of China's population should further be examined more accurately.

Another field that was not covered in this paper but would be of interest for further studies are the environmental changes caused by the rapid progress in China. The increase in FDI inflows in China has not only benefited the country, but also put a great burden on its environment and natural resources. The Chinese government has introduced a set of new environmental regulations as a countermeasure. Hence, it would be interesting to analyze these regulations specifically and how they affect domestic and foreign enterprises. Lastly, the industrial sectors were only addressed briefly in this study. It would, therefore, enrich the understanding on this topic if the sectoral FDI effect would be investigated instead of the total FDI effect on GRP. It would then be possible to observe how and to what extent an increase in investment in a particular sector would influence the GRP and whether they differ. Aside from the main catalogue, other catalogues such as the catalogue for the Mid-West of China should be taken into consideration as well.

8. Concluding Remarks

The purpose of this thesis was to examine the effectiveness of FDI policies in contemporary China. The historical overview shows how China is gradually liberalizing its market and becoming an essential trading partner in the world economy. During its economic transition, the Chinese government continues to open more industrial sectors to foreign investment with WFOEs as the preferred FDI form among foreign investors. The government further seeks to direct FDIs towards advanced technology industries and promotes ecologically friendly and energy-saving projects.

However, FDIs are mainly found in the East of China and the economic gap is widening between the East and the other regions. A set of policies concerning the regional development of China was introduced as a measure to confront this problem. In order to assess the effectiveness of these

policies, an empirical model was set up to investigate how FDI affects China's GRP. Moreover, this thesis examined and compared the sign and magnitude of the FDI's effect across different regions and time periods. The main findings with respect to the hypotheses are as follows: In general, FDI has a highly significant and positive effect on GRP. This significantly positive FDI effect can still be observed when the full sample is divided into the regional subsamples. The coefficient of FDI in the East subsample is, however, only significant when the dependent variable is substituted with the GRP per capita. The estimation model was then expanded by a dummy variable and an interaction term that indicates the FDI effect on GRP during 2005 to 2012. If the time period is 2005 to 2012, FDI has a significantly stronger positive effect on GRP in Western China than during 1997 to 2004. Contrarily, the effect is weakened in Eastern and Central China, making the positive FDI effect in Western China the largest among the subsamples during 2005 to 2012. The results for Northeast China are insignificant and ambiguous, indicating both a positive and negative coefficient for the interaction term.

Summing up, this thesis provides evidence that supports the prevalent notion of FDI having a positive effect on China's economic growth. The findings further show that the positive FDI effect on Eastern China's GRP is diminishing despite the high amount of FDIs the region accumulates. In contrast to the East, the positive influence of FDI on Western China is increasing considerably. These results suggest a successful implementation of the Chinese government's policies. However, the weakened and even negative FDI effect observed for Central China could imply the opposite. From this research it is not clear what could have caused this effect explicitly, although several possible reasons were stated. But it is apparent that the government's policies are not as effective as before, since the government's desired outcome for Central China has not been achieved yet. Lastly, due to the insignificant results for Northeast China, it cannot be concluded whether the policies for this regions have succeeded.

Future Prospect

The growth of the Chinese economy will likely continue since the country still holds great potential. However, it is also likely that China's growth will decelerate. Decades of reforms and improvements have formed modern China with rising prices for workers, land and other factors. Integration in the world economy has forced China to be confronted with global crises. Increasing competition within the domestic market is another factor that might slow down China's growth.

The severe pollution problems and the diminishing natural resources are byproducts of China's rapid development. Despite the government's early attempts to thwart these challenges, they proceed at a critical speed. A recent study from Tsinghua and Peking universities found that smog from coal-powered plants was related to 670,000 premature deaths in 2012 (Lan, 2014). This number shows the fatal consequences of China's booming economy and the government's failure in stopping pollution more efficiently. The government will have to increase the pressure on energy-intensive and high-polluting industries by raising taxes and removing more projects from the encouraged category. At the same time, promoting unconventional energy resources and new sustainable technologies will have to remain the top priority in the government's policy program.

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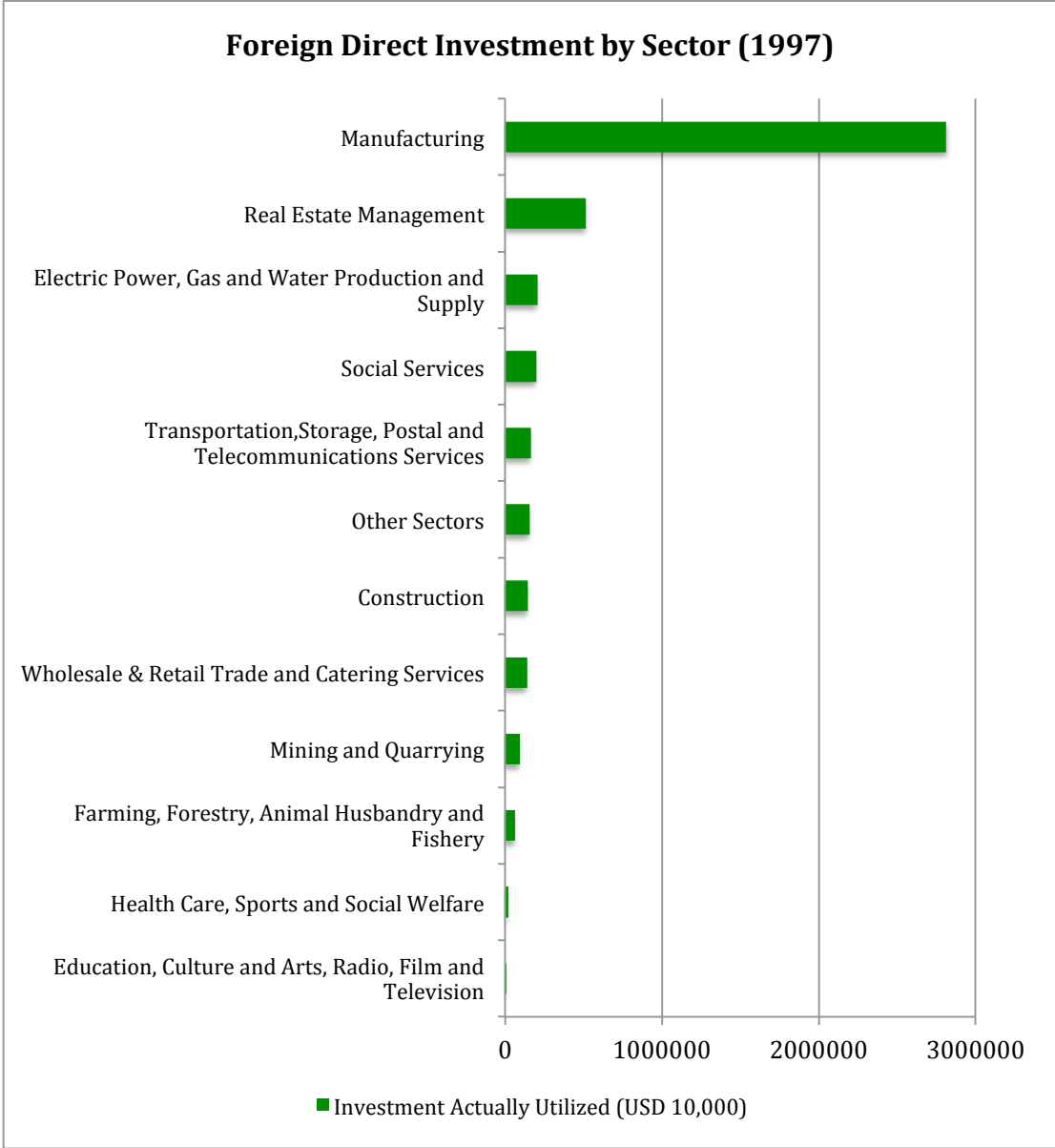
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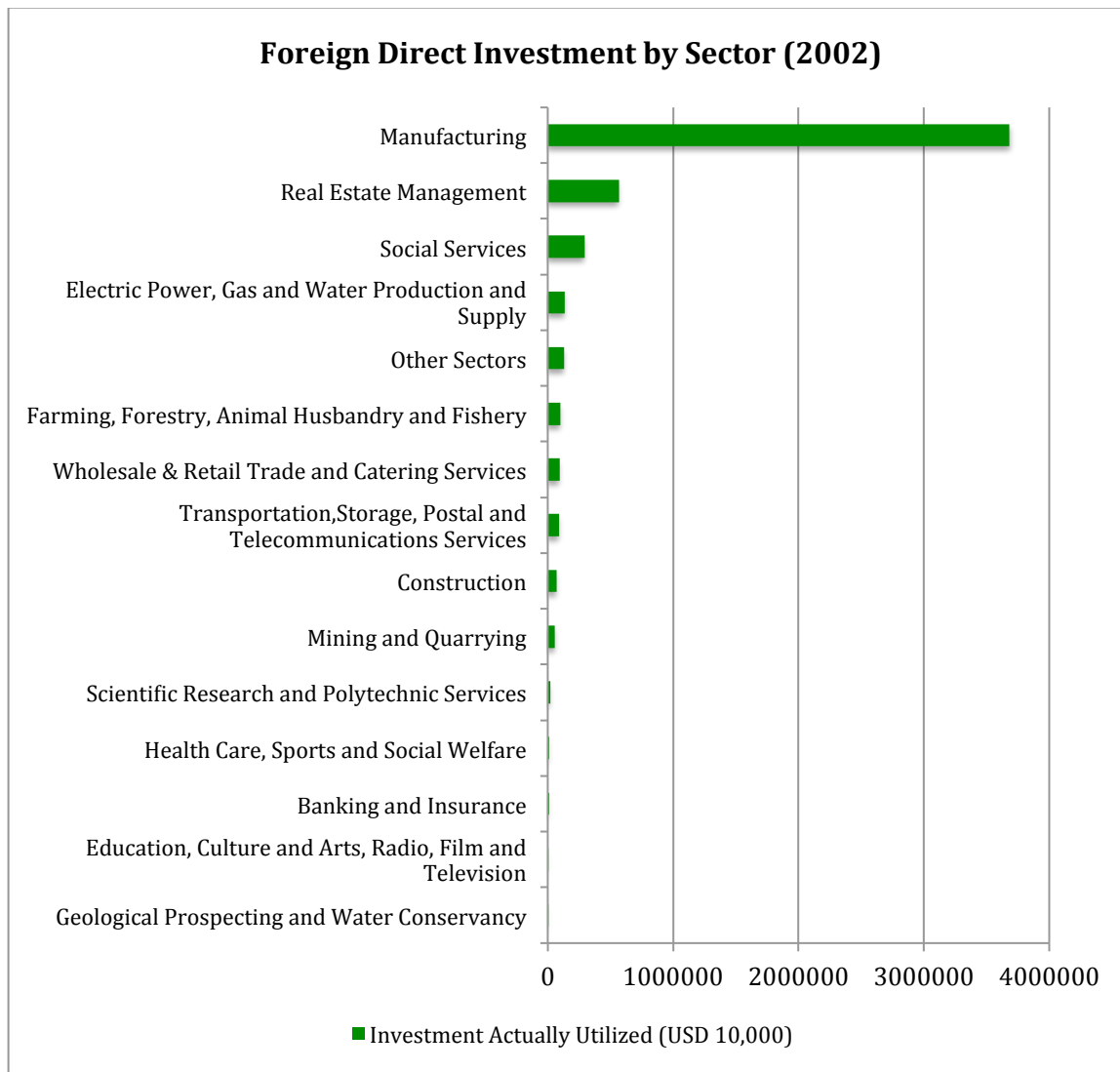
Appendix

Figure 5 Actually utilized value of foreign investment by FDI industrial sector in USD 10,000 for 1997



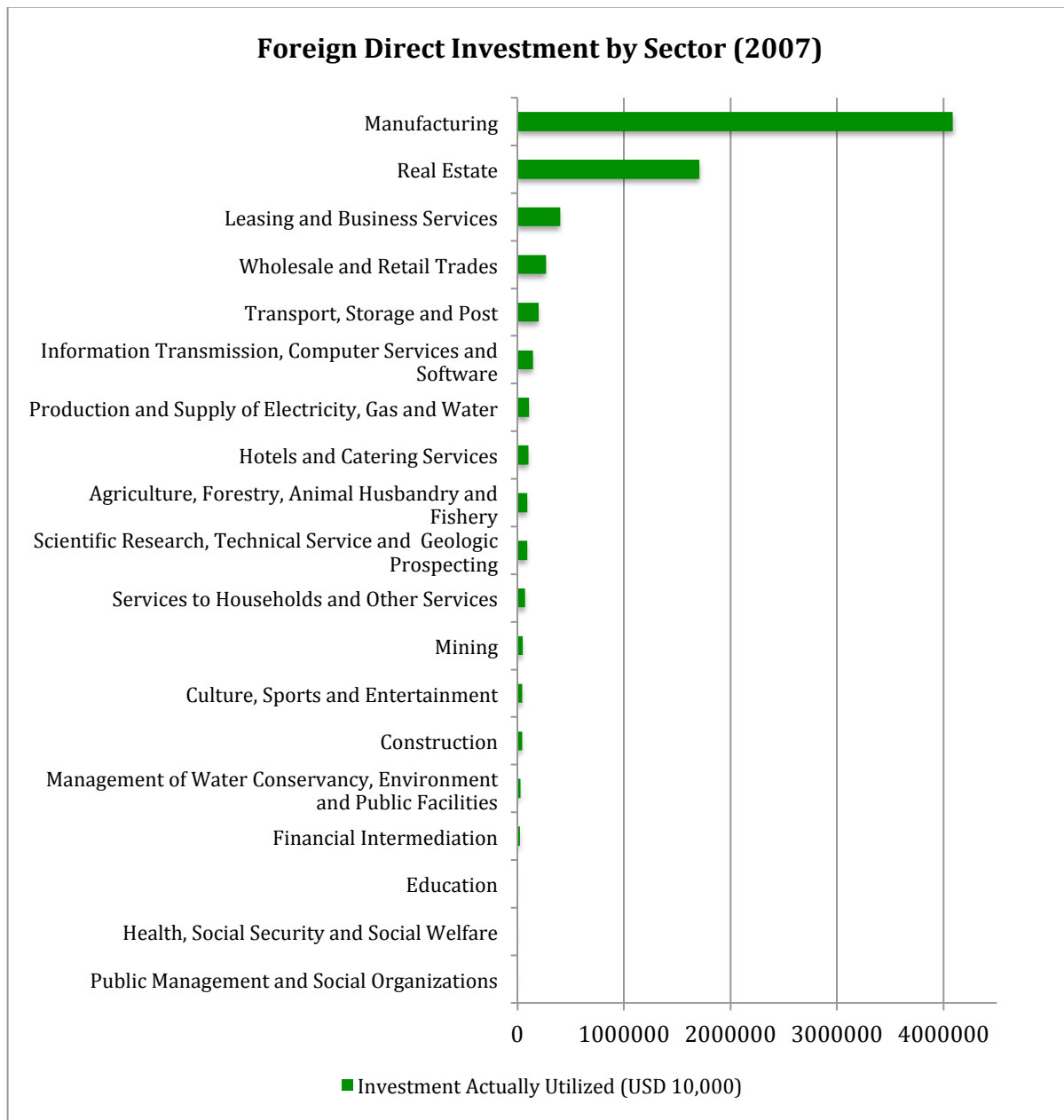
Source (Chinese Statistical Yearbooks)

Figure 6 Actually utilized value of foreign investment by FDI industrial sector in USD 10,000 for 2002



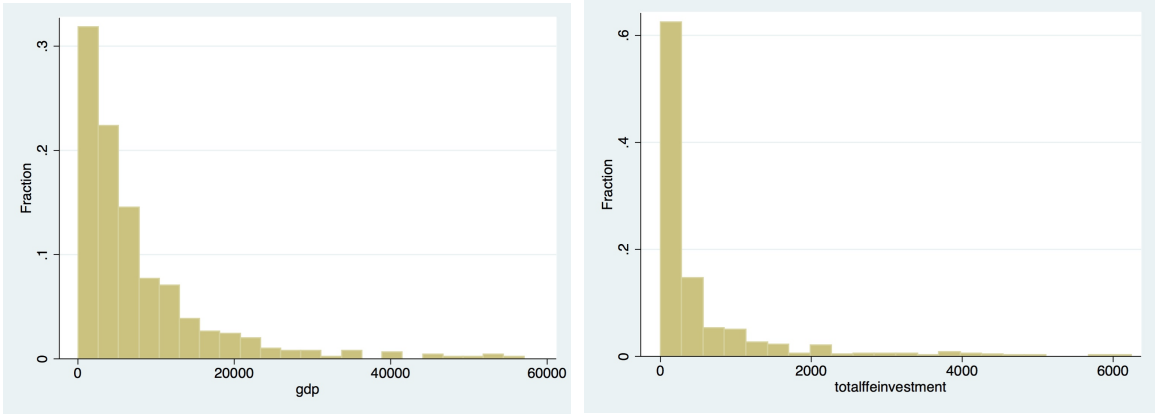
Source (Chinese Statistical Yearbooks)

Figure 7 Actually utilized value of foreign investment by FDI industrial sector in USD 10,000 for 2007



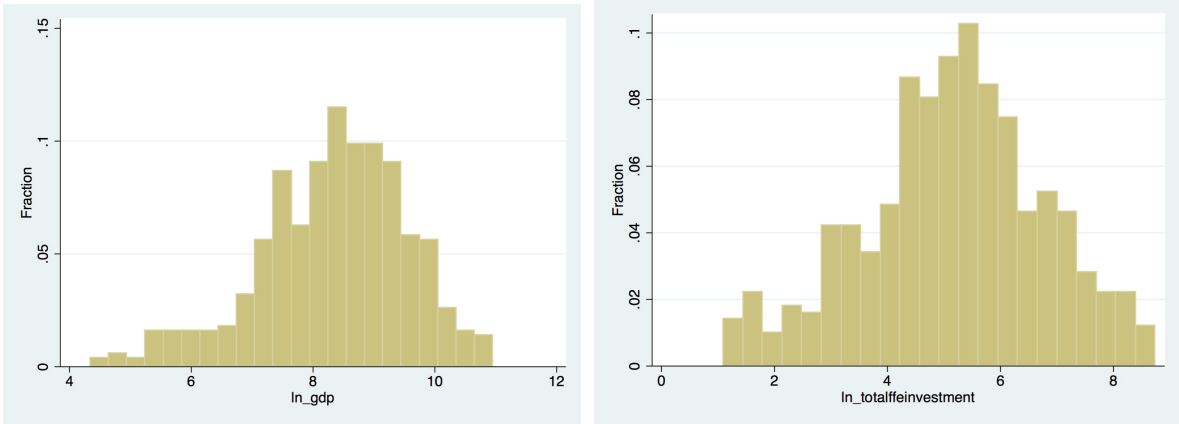
Source (Chinese Statistical Yearbooks)

Figure 9 Distributions of GRP and FDI



Source (Chinese Statistical Yearbooks)

Figure 10 Distributions of GRP and FDI after taking the natural logarithms



Source (Chinese Statistical Yearbooks)

Table 3: Comparing Different Samples

Average Statistics	(1) Full Sample	(2) East Subsample	(3) West Subsample	(4) Northeast Subsample	(5) Central Subsample
GRP	7660.779	12644.44	3598.576	7030.485	7794.234
FDI	518.5845	1250.59	92.50771	414.2892	202.8761
POP	4153.663	4613.813	3019.198	3590.188	5937.417
EXP	2729810	7348313	336185	1184118	592400.6
GOVCON	1039.505	1658.791	562.0733	986.189	988.8817
AWAGE	20929.59	25333.14	19862.21	17618.81	17380.5
PEDUC	2.03e+07	2.06E+07	1.73E+07	1.54E+07	2.84E+07
SEDUC	3.10e+07	3.68E+07	1.87E+07	3.14E+07	4.56E+07
HEDUC	3530809	4797670	2087498	3973446	4084676
No. of Obs.	496	160	192	48	96

Table 4: Descriptive Statistics of the full Sample

	Mean	Std. Dev.	Minimum	Maximum
GRP	7660.779	8918.135	76.98	57067.92
FDI	518.5845	895.3895	2	6250
POP	4153.663	2640.543	248	10594
EXP	2729810	6695582	3742	5.74e+07
GOVCON	1039.505	1111.429	12.13	7329
AWAGE	20929.59	13908.54	4889	84742
PEDUC	2.03e+07	3.61e+07	796442	3.31e+08
SEDUC	3.10e+07	5.62e+07	102851	5.06e+08
HEDUC	3530809	5849831	2036	5.02e+07

Table 5: Estimating GRP – Full Sample

Ln_GRP	(1) Basic model	(2) Full model	(3) Full model with fixed effects
Ln_FDI	0.97358*** (0.05456)	0.29715*** (0.07954)	0.07147*** (0.01706)
POP		0.00023** (0.00011)	0.00011*** (0.00003)
EXP		-0.00000 (0.00000)	-0.00000*** (0.00000)
GOVCON		0.00004 (0.00008)	-0.00000 (0.00001)
AWAGE		0.00004*** (0.00001)	0.00001*** (0.00000)
PEDUC		-0.00000 (0.00000)	-0.00000** (0.00000)
SEDUC		0.00000 (0.00000)	0.00000 (0.00000)
HEDUC		0.00000*** (0.00000)	0.00000 (0.00000)
Time fixed effects	No	No	Yes
Province fixed effects	No	No	Yes
Observations	496	496	496
R^2	0.76493	0.94079	0.99551
Adjusted R^2	0.76446	0.93982	0.99497

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 6: Comparing Samples - Full model

Ln_GRP	(1) Full Sample	(2) East Subsample	(3) West Subsample	(4) Northeast Subsample	(5) Central Subsample
Ln_FDI	0.29711*** (0.07950)	0.30624 (0.17169)	0.15558*** (0.04955)	0.19071** (0.02788)	0.41279*** (0.05254)
POP	0.00023** (0.00011)	0.00030* (0.00014)	0.00020*** (0.00006)	0.00067 (0.00062)	0.00026*** (0.00005)
EXP	-0.00000 (0.00000)	-0.00000 (0.00000)	-0.00000*** (0.00000)	-0.00000 (0.00000)	-0.00000 (0.00000)
GOVCON	0.00004 (0.00008)	0.00005 (0.00007)	0.00012 (0.00008)	-0.00020*** (0.00002)	0.00017*** (0.00004)
AWAGE	0.00004*** (0.00001)	0.00003** (0.00001)	0.00005*** (0.00001)	0.00007*** (0.00000)	0.00003*** (0.00001)
PEDUC	-0.00000 (0.00000)	-0.00000* (0.00000)	-0.00000 (0.00000)	-0.00000 (0.00000)	-0.00000 (0.00000)
SEDUC	0.00000 (0.00000)	0.00000* (0.00000)	-0.00000 (0.00000)	0.00000 (0.00000)	-0.00000 (0.00000)
HEDUC	0.00000*** (0.00000)	0.00000 (0.00000)	0.00000** (0.00000)	-0.00000 (0.00000)	0.00000 (0.00000)
Time fixed effects	No	No	No	No	No
Province fixed effects	No	No	No	No	No
Observations	496	160	192	48	96
R^2	0.94083	0.93799	0.97016	0.98562	0.98494
Adjusted R^2	0.93986	0.93470	0.96886	0.98267	0.98355

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 7: Comparing Samples - Full model with fixed effects

Ln_GRP	(1) Full Sample	(2) East Subsample	(3) West Subsample	(4) Northeast Subsample	(5) Central Subsample
Ln_FDI	0.07147*** (0.01706)	0.02665 (0.02377)	0.05958*** (0.02042)	0.04007 (0.03076)	0.11076** (0.04213)
POP	0.00011*** (0.00003)	0.00010*** (0.00003)	0.00003 (0.00006)	0.00045 (0.00030)	0.00033*** (0.00006)
EXP	-0.00000*** (0.00000)	-0.00000*** (0.00000)	-0.00000*** (0.00000)	-0.00000*** (0.00000)	-0.00000 (0.00000)
GOVCON	-0.00000 (0.00001)	0.00003*** (0.00001)	0.00013*** (0.00004)	-0.00036*** (0.00005)	0.00008*** (0.00002)
AWAGE	0.00001*** (0.00000)	0.00001*** (0.00000)	0.00002*** (0.00000)	0.00002* (0.00001)	0.00002*** (0.00001)
PEDUC	-0.00000** (0.00000)	-0.00000 (0.00000)	-0.00000* (0.00000)	0.00000 (0.00000)	-0.00000*** (0.00000)
SEDUC	0.00000 (0.00000)	-0.00000 (0.00000)	-0.00000 (0.00000)	-0.00000 (0.00000)	0.00000*** (0.00000)
HEDUC	0.00000 (0.00004)	0.00000*** (0.00000)	0.00000 (0.00000)	0.00000 (0.00000)	-0.00000*** (0.00000)
Time fixed effects	Yes	Yes	Yes	Yes	Yes
Province fixed effects	Yes	Yes	Yes	Yes	Yes
Observations	496	160	192	48	96
R^2	0.99551	0.99697	0.99610	0.99853	0.99691
Adjusted R^2	0.99497	0.99621	0.99526	0.99687	0.99562

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 8: Comparing samples across different time periods - Full model

Ln_GRP	(1) East Subsample	(2) West Subsample	(3) Northeast Subsample	(4) Central Subsample
Ln_FDI	0.24479* (0.12031)	0.08509* (0.04054)	0.13959** (0.03148)	0.28078*** (0.05771)
Dtime	1.43799*** (0.35315)	0.04629 (0.08437)	0.59719 (0.32004)	1.33607*** (0.17186)
Ln_FDI*Dtime	-0.16612** (0.05459)	0.06317** (0.02734)	-0.08174 (0.04572)	-0.21318*** (0.03573)
POP	0.00022** (0.00008)	0.00029** (0.00012)	0.00104 (0.00062)	0.00040*** (0.00007)
EXP	-0.00000 (0.00000)	-0.00000*** (0.00000)	-0.00000 (0.00000)	-0.00000 (0.00000)
GOVCON	0.00005 (0.00004)	0.00006 (0.00005)	-0.00024*** (0.00001)	0.00019*** (0.00002)
AWAGE	0.00002*** (0.00001)	0.00004*** (0.00000)	0.00006*** (0.00000)	0.00003*** (0.00000)
PEDUC	-0.00000** (0.00000)	-0.00000 (0.00000)	-0.00000 (0.00000)	-0.00000** (0.00000)
SEDUC	0.00000* (0.00000)	-0.00000 (0.00000)	0.00000 (0.00000)	0.00000** (0.00000)
HEDUC	0.00000 (0.00000)	0.00000** (0.00000)	-0.00000 (0.00000)	0.00000* (0.00000)
Time fixed effects	No	No	No	No
Province fixed effects	No	No	No	No
Observations	160	192	48	96
R^2	0.96607	0.98138	0.98947	0.99204
Adjusted R^2	0.96379	0.98036	0.98662	0.99110

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 9: Comparing samples across different time periods - Full model with fixed effects

Ln_GRP	(1) East Subsample	(2) West Subsample	(3) Northeast Subsample	(4) Central Subsample
Ln_FDI	0.03899* (0.02063)	0.04484** (0.01848)	0.03239 (0.02970)	0.12082*** (0.03267)
Dtime	1.75089*** (0.14315)	0.86211*** (0.17301)	1.96420*** (0.48397)	2.65248*** (0.37302)
Ln_FDI*Dtime	-0.02733 (0.02019)	0.05212*** (0.01387)	0.03964 (0.02789)	-0.23588*** (0.04705)
POP	0.00009*** (0.00003)	0.00009 (0.00006)	0.00040 (0.00027)	0.00028*** (0.00005)
EXP	-0.00000* (0.00000)	-0.00000*** (0.00000)	-0.00000*** (0.00000)	0.00000 (0.00000)
GOVCON	0.00003** (0.00001)	0.00007* (0.00004)	-0.00036*** (0.00005)	0.00010*** (0.00003)
AWAGE	0.00001*** (0.00000)	0.00003*** (0.00000)	0.00001 (0.00002)	0.00001** (0.00000)
PEDUC	-0.00000 (0.00000)	-0.00000 (0.00000)	0.00000 (0.00000)	-0.00000** (0.00000)
SEDUC	-0.00000 (0.00000)	-0.00000 (0.00000)	-0.00000 (0.00000)	0.00000*** (0.00000)
HEDUC	0.00000*** (0.00000)	0.00000 (0.00000)	0.00000 (0.00000)	-0.00000* (0.00000)
Time fixed effects	Yes	Yes	Yes	Yes
Province fixed effects	Yes	Yes	Yes	Yes
Observations	160	192	48	96
R^2	0.99701	0.99638	0.99864	0.99781
Adjusted R^2	0.99622	0.99557	0.99696	0.99685

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 10: Robustness Check Estimating GRP per capita – Full Sample

Ln_GRP per capita	(1) Basic model	(2) Full model	(3) Full model with fixed effects
Ln_FDI	0.91508*** (0.04914)	0.33200*** (0.09564)	0.08059*** (0.01986)
POP		0.00010 (0.00015)	-0.00004 (0.00003)
EXP		-0.00000 (0.00000)	-0.00000** (0.00000)
GOVCON		0.00007 (0.00009)	0.00002 (0.00002)
AWAGE		0.00003*** (0.00001)	-0.00001** (0.00000)
PEDUC		-0.00000 (0.00000)	-0.00000*** (0.00000)
SEDUC		0.00000 (0.00000)	0.00000 (0.00000)
HEDUC		0.00000* (0.00000)	-0.00000 (0.00000)
Time fixed effects	No	No	Yes
Province fixed effects	No	No	Yes
Observations	496	496	496
R^2	0.76753	0.91057	0.98678
Adjusted R^2	0.76706	0.90910	0.98519

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 11: Robustness Check Comparing Samples - Full model

Ln_GRP per capita	(1)	(2)	(3)	(4)	(5)
	Full Sample	East Subsample	West Subsample	Northeast Subsample	Central Subsample
Ln_FDI	0.33200*** (0.09564)	0.34797 (0.19279)	0.15418** (0.05061)	0.18163** (0.02046)	0.39541*** (0.05106)
POP	0.00010 (0.00015)	0.00024 (0.00017)	-0.00000 (0.00006)	0.00061 (0.00057)	0.00014* (0.00006)
EXP	-0.00000 (0.00000)	-0.00000 (0.00000)	-0.00000*** (0.00000)	-0.00000 (0.00000)	-0.00000 (0.00000)
GOVCON	0.00007 (0.00009)	0.00010 (0.00008)	0.00018* (0.00009)	-0.00018*** (0.00001)	0.00019*** (0.00004)
AWAGE	0.00003*** (0.00001)	0.00002 (0.00001)	0.00005*** (0.00001)	0.00006*** (0.00000)	0.00003*** (0.00001)
PEDUC	-0.00000 (0.00000)	-0.00000* (0.00000)	-0.00000 (0.00000)	-0.00000 (0.00000)	-0.00000 (0.00000)
SEDUC	0.00000 (0.00000)	0.00000* (0.00000)	-0.00000 (0.00000)	0.00000 (0.00000)	-0.00000 (0.00000)
HEDUC	0.00000* (0.00000)	-0.00000 (0.00000)	0.00000** (0.00000)	-0.00000 (0.00000)	0.00000 (0.00000)
Time fixed effects	No	No	No	No	No
Province fixed effects	No	No	No	No	No
Observations	496	160	192	48	96
R^2	0.91057	0.89576	0.96646	0.98565	0.98469
Adjusted R^2	0.90910	0.89024	0.96499	0.98270	0.98328

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 12: Robustness Check Comparing Samples - Full model with fixed effects

Ln_GRP per capita	(1)	(2)	(3)	(4)	(5)
	Full Sample	East Subsample	West Subsample	Northeast Subsample	Central Subsample
Ln_FDI	0.08059*** (0.01986)	0.06034* (0.03366)	0.05765*** (0.02025)	0.03468 (0.03117)	0.06893* (0.03506)
POP	-0.00004 (0.00003)	0.00001 (0.00003)	-0.00018*** (0.00007)	0.00044 (0.00028)	0.00021*** (0.00005)
EXP	-0.00000** (0.00000)	-0.00000*** (0.00000)	-0.00000** (0.00000)	-0.00000*** (0.00000)	0.00000 (0.00000)
GOVCON	0.00002 (0.00002)	0.00006*** (0.00001)	0.00017*** (0.00004)	-0.00032*** (0.00005)	0.00009*** (0.00002)
AWAGE	-0.00001** (0.00000)	-0.00001*** (0.00000)	0.00002*** (0.00000)	0.00002* (0.00001)	0.00002*** (0.00001)
PEDUC	-0.00000*** (0.00000)	0.00000 (0.00000)	-0.00000** (0.00000)	0.00000 (0.00000)	-0.00000*** (0.00000)
SEDUC	0.00000 (0.00000)	-0.00000 (0.00000)	-0.00000 (0.00000)	-0.00000 (0.00000)	0.00000*** (0.00000)
HEDUC	-0.00000 (0.00000)	0.00000* (0.00000)	0.00000 (0.00000)	0.00000 (0.00000)	-0.00000*** (0.00000)
Time fixed effects	Yes	Yes	Yes	Yes	Yes
Province fixed effects	Yes	Yes	Yes	Yes	Yes
Observations	496	160	192	48	96
R^2	0.98678	0.99129	0.98774	0.99817	0.99687
Adjusted R^2	0.98519	0.98910	0.98509	0.99608	0.99556

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 13: Robustness Check Comparing samples across different time periods - Full model

Ln_GRP per capita	(1)	(2)	(3)	(4)
	East Subsample	West Subsample	Northeast Subsample	Central Subsample
Ln_FDI	0.31877* (0.14179)	0.07849* (0.04009)	0.12845** (0.02372)	0.26124*** (0.05201)
Dtime	1.73819*** (0.44133)	-0.03791 (0.08190)	0.59347 (0.30343)	1.26266*** (0.09225)
Ln_FDI*Dtime	-0.21834** (0.07098)	0.08281** (0.02739)	-0.08016 (0.04292)	-0.19910*** (0.01905)
POP	0.00015 (0.00011)	0.00011 (0.00013)	0.00098 (0.00056)	0.00028** (0.00007)
EXP	0.00000 (0.00000)	-0.00000*** (0.00000)	-0.00000 (0.00000)	-0.00000 (0.00000)
GOVCON	0.00009 (0.00005)	0.00008 (0.00005)	-0.00022*** (0.00001)	0.00019*** (0.00002)
AWAGE	0.00001 (0.00001)	0.00004*** (0.00000)	0.00006*** (0.00000)	0.00003*** (0.00001)
PEDUC	-0.00000** (0.00000)	-0.00000 (0.00000)	-0.00000 (0.00000)	-0.00000** (0.00000)
SEDUC	0.00000* (0.00000)	-0.00000 (0.00000)	0.00000 (0.00000)	0.00000 (0.00000)
HEDUC	-0.00000 (0.00000)	0.00000** (0.00000)	-0.00000 (0.00000)	0.00000** (0.00000)
Time fixed effects	No	No	No	No
Province fixed effects	No	No	No	No
Observations	160	192	48	96
R^2	0.93671	0.97879	0.98981	0.99161
Adjusted R^2	0.93246	0.97762	0.98706	0.99063

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 14: Robustness Check Comparing samples across different time periods - Full model with fixed effects

Ln_GRP per capita	(1)	(2)	(3)	(4)
	East Subsample	West Subsample	Northeast Subsample	Central Subsample
Ln_FDI	0.08126*** (0.02980)	0.03767** (0.01745)	0.02785 (0.03069)	0.07771*** (0.02874)
Dtime	2.23063*** (0.16968)	0.82653*** (0.17512)	1.85741*** (0.49466)	2.43872*** (0.36150)
Ln_FDI*Dtime	-0.04629* (0.02484)	0.07064*** (0.01523)	0.03529 (0.02778)	-0.20571*** (0.04410)
POP	0.00000 (0.00003)	-0.00009 (0.00007)	0.00041 (0.00025)	0.00018*** (0.00004)
EXP	-0.00000 (0.00000)	-0.00000*** (0.00000)	-0.00000*** (0.00000)	0.00000 (0.00000)
GOVCON	0.00006*** (0.00001)	0.00009** (0.00005)	-0.00033*** (0.00005)	0.00010*** (0.00002)
AWAGE	-0.00001*** (0.00000)	0.00002*** (0.00000)	0.00001 (0.00002)	0.00001** (0.00000)
PEDUC	0.00000 (0.00000)	-0.00000 (0.00000)	0.00000 (0.00000)	-0.00000** (0.00000)
SEDUC	-0.00000 (0.00000)	-0.00000 (0.00000)	-0.00000 (0.00000)	0.00000*** (0.00000)
HEDUC	0.00000** (0.00000)	0.00000 (0.00000)	0.00000 (0.00000)	-0.00000* (0.00000)
Time fixed effects	Yes	Yes	Yes	Yes
Province fixed effects	Yes	Yes	Yes	Yes
Observations	160	192	48	96
R ²	0.99153	0.98912	0.99827	0.99775
Adjusted R ²	0.98931	0.98668	0.99614	0.99676

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$