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CHINESE FDI AND ECONOMIC GROWTH

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ABSTRACT

Many researchers have studied the impact of FDI on economic growth, yet there is no agreement if FDI stimulates economic growth or hinders the growth of developing countries. The majority of existing studies concentrates on FDI from the developing world to developed countries. Consequently, South-South cooperation, or FDI from emerging economies to other developing countries remains relatively unexplored. According to theoretical assumptions, country of FDI origin may be an important fact, especially that FDI from developing countries to other developing countries may have different (better) impact on economic growth in developing countries. Consequently, this research aims to contribute to the literature by testing this theoretical assumption concerning FDI from China. The results show that indeed Chinese FDI is positively correlated with economic growth in 70 developing countries.

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1. INTRODUCTION

1.1 Background

The global economic system found itself in a transition phase after the 2007-2008 financial crises and after the subsequent economic hardship in Western economies. The financial setback in the recent years has shaken the Western economic system and led to a widespread rethinking on the main features of advanced economies. At the same time, quite interestingly, emerging market economies in the global South showed that the crisis has weaker or at least a different impact on developing economies. Subsequently, this indicated the increasing importance of an economic structure outside of the traditional Western-dominated sphere. Although developed economies began to recover from the downturn and slowly retake the share they had before the crisis and although emerging economics stopped growing that fast and indeed some of them currently have negative growth rates, the importance of Southern investors remains unquestionable.

Indeed, the significance of emerging countries is evident, and investment from Southern investors to middle income and low income countries is actually on the rise, among which BRIC stands out as a leading block. Originally, the term BRIC was first used by Goldman Sachs (2003) Head Economist Jim O'Neill and it is an acronym which stands for Brazil, Russia, India and China. BRIC block belongs to the ten largest countries in the world in terms of population and in terms of GDP. These countries are developing rapidly and are expected to surpass the current richest countries of the world by 2050. Goldman Sachs predicts China and India to be the dominant global suppliers of manufactured goods and services, whereas Brazil and Russia are believed to become similarly dominant suppliers of raw materials.

In addition to the rise of emerging market economies and increased importance of BRIC in the global economy, there is another trend which scholars and economists observed – greater economic interconnectedness between BRIC countries and other developing countries. Indeed, economic linkages between low and middle income countries and emerging market countries have deepened quite dramatically in recent years. The increased self-consciousness and of developing countries is visible between countries of the global South, indicating the exchange of technology, resources and knowledge between the emerging and developing economies. The growing BRIC relations with other emerging economies can be best understood in the context of BRIC's increasing prominence in the global economy. BRIC is home to large growing multinational companies (MNCs), and in a world traditionally characterised by trade and investment flows between the global North and from these countries to the

less developed world (the global South); indeed, these MNCs give rise to new South-South flows investments (The Economist, 2011).

Within emerging market countries in the global South, BRIC is the largest destination of developing countries' exports and rapidly growing source of financial flows. Additionally, bilateral trade between LICs and BRIC has grown exponentially in recent years, making BRIC collectively a trade partner of low income countries that is comparable to the United States (IMF 2011). Moreover, for instance, since 2003 the growth rate of outward FDI from emerging markets has outpaced the growth from industrialized countries (UNCTAD, 2005). Indeed, FDI outflows from developing economies reached US$486 billion in 2014, or 36 per cent of all FDI outflows, up from just 12 per cent as recently as 2007 (UNCTAD, 2015). All these changes indicate a structural transformation of shifting wealth towards the East and South, from OECD members to emerging economies (OECD, 2010).

However, even though BRIC countries are quite often treated as a homogenous block, there are some striking differences between them, meaning that bold generalizations cannot be made. Among BRIC countries, China is by far the largest and the only one that is today a serious challenger to Western domination. According to International Monetary Fund (IMF), the Chinese economy is, at purchasing power parity (PPP), more than 2.5 times larger than India's economy; whereas, it is nearly five times greater than Brazil's or Russia's (International Monetary Fund, 2012). Starting from virtually no FDI in 1979, in 2005 China was the 4th largest investor in emerging markets; up from 14th in 2004 with 72.4% of all economies in the world receiving Chinese FDI. As of 2012, China is the world's third largest source of outward FDI, behind only the USA and Japan (Overview of Outward FDI Flows of China). Interestingly, data reveal that the vast majority (79.7 per cent) of Chinese FDI is flowing into developing countries. Indeed, in 2012, the stock of Chinese FDI reached 531 billion USD, of which (83 per cent) 445 billion USD was invested in developing countries (UNCTAD, 2014b).

In addition to research on the magnitude and impact of strengthening South-South economic relations, this paper investigates the effect of FDI on the economic development of developing countries, with an empirical focus on Chinese FDI outward flows to developing countries. Furthermore, empirical literature indicates the importance of regionalism of FDI flows from emerging economies and the important role of institutions and resource abundance. However, it rather remains inconclusive about the growth effects of South-South FDI and its complementarity or substitutability to North-South investment flows. Existing literature shows that FDI from North in many terms differs from South FDI, for instance, differences in strategies of MNCs from developed and developing countries (Mathews, 2006). For example, looking at Asia as a whole, Lipsey and Sjöholm (2011) conclude that North-South- and South-South FDI flows differ in the sector, plant size, productivity and spill overs. Compared to

North-South FDI, South-South FDI tends to concentrate in less capital- and technology-intensive sectors. The plants owned by MNCs from the Global South tend to be much smaller than those owned by developed country investors (ibid.). Additionally, Aleksynska and Havrylchyk (2013) found that FDI from the South has a more regional aspect (meaning that South investors tend to invest in countries geographically nearer or culturally similar to them) than investment from the North; for South investors, a common border, and common distance appear to be important.

Moreover, another feature of South-South FDI flows is the familiarity of investors with developing markets and business practices, hence increasing the gains from spill-overs and bigger impact on economic growth. This idea of South-South FDI flows having a significant impact on LIC economic growth has not been yet analysed from the perspective of China specifically, that is why this thesis aims to fill this gap in the literature.

In the following parts, the objectives of this thesis, the central research question, and sub questions will be presented. After that, academic relevance, policy relevance and outline of the whole thesis are going to be explained.

1.2 Aims of thesis

In general, there is vast scholarship on Chinese development aid to developing countries. The literature on this subject is quite broad and the interest on the impact of Chinese development aid is extensive. On the other hand, FDI from China and its effect on economic growth of developing countries received relatively little attention. Therefore, one of the main aims of this thesis is to contribute to yet a rather thin body of literature by analysing FDI from China to other developing countries, by particularly looking at the effects it has on the economic growth of recipient countries. Additionally, research aims to increase the interest on the topic by providing a base for further research on South-South cooperation as the following is likely to become even more important and relevant in the near future. Finally, by reviewing the literature and conducting empirical research, the paper aims to provide systematic and scientific information for future policy makers and institutions involved and interested in the topic.

1.3 Problem statement, research question and sub-questions

There are a few important reasons which motivated to analyse this subject in depth. First, in general, the role of South investors and BRIC among which China is taking leaders' position is increasing with years. Secondly, at the same time, different theoretical assumptions about the impact of country of origin of FDI and economic growth relation lead to many questions which are not yet answered. Thirdly,

the fragmentation and debates in existing literature on the subject in general and different empirical results about FDI and economic growth relation also motivated to search for answers to the central research question which sounds as following:

What is the effect of Chinese FDI on economic growth of developing countries?

Additionally, to guide reader throughout thesis two following sub-questions will be answered:

- *What does the existing literature tell about FDI and economic growth of developing countries in general, and about Chinese FDI in particular?*
- *What are empirical findings of this research on the impact of Chinese FDI on economic growth of developing countries?*

1.4 Approach

The first sub-question is going to be answered in chapter two through a review of the existing literature, identifying and introducing different assumptions and providing the theoretical framework for this research. It will mainly give attention to FDI and economic growth relations and will further emphasize literature on FDI from developing countries and the importance of country of origin for positive economic effect on the host country. Consequently, this will lead to sections on FDI from China and what kind of implication for economic growth was already found in the literature regarding it. Additionally, from literature in this chapter, theoretical assumptions will be formed which then will be tested in the empirical part of the research.

The second question is going to be answered in chapter four where the main empirical research of the thesis is presented. By reviewing existing literature about the FDI impact on economic growth, theoretical framework will be designed, on which empirical assumptions will be based. The primary focus will be paid to the relation between Chinese FDI and economic growth in developing countries. After designing this theoretical framework, quantitative analysis will be conducted to test the hypothesis which is based on the theoretical part of research. By using cross sectional regression analysis, the impact of Chinese FDI on economic growth of developing countries will be analysed. This relation will also be tested in multivariate regression with using some of the most important factors (control variables) influencing dependent variable of this research- economic growth.

Data for the independent variable (FDI flows) for the empirical part will be used from United Nations Conference on Trade and Development database (UNCTAD). Even though data on bilateral FDI is quite difficult to find, UNCTAD database provides reliable data on FDI between China and least developed and

developing countries which will be used for this research. This dataset is the best available source, even though it has limited time series (only from 2001 to 2012). However, for the majority of countries data is available only since 2007 and even that data is quite scarce. Data for the dependent variable (economic growth) will be used from World Development Indicators database on GDP annual growth. World Development Indicators database, UNCTAD database on bilateral FDI flows and United Nations Development Programme's Human Development Report are going to be used for collection of data on control variables of this research.

1.5 Academic relevance

In recent years, there has been growing attention paid to FDI and many studies have been devoted to the phenomenon and its importance in the world. Most studies analysed FDI from North to South and the impact it has on economic growth. Among those, some studies showed that foreign direct investment might have a positive effect on the country's economy (for example, Barro and Lee (1994), Blomström and Kokko (1998), Lipsey (2004)). Others emphasised that FDI may not always bring about positive changes in recipient countries (Aitken and Harrison (1999), Xu (2000) and others). The endogenous growth models show that FDI contributes to long-term growth through the generation of increasing returns in production via externalities and productivity spill-overs (de Mello, 1997). However, empirical research emphasizes that a minimum level of development has to be in place for an economy to absorb the technological transfers through FDI (Borensztein, De Gregorio, & Lee, 1998). Also, many country characteristics have an impact, determining the effects of FDI; for instance, the development of the financial system, institutional quality or trade policy regime in the recipient country matters.

Significantly less attention has been paid to FDI from South to South, particularly from BRIC countries to other developing countries. The existing literature, mostly describes FDI from BRIC to LIC, identifying main sectors, predicting trends (Mlachila & Takebe (2011), Mathur & Dasgupta (2013)). There is almost no research explaining the impact of Southern investors on economic growth. In the existing literature, there is especially a lack of empirical analysis of the impact of Chinese FDI on developing countries' economic growth.

Therefore, conclusions and analysis of this paper are crucial academically because it will add certain knowledge to the field and will aim to fill the gap in the literature. The research will contribute to the debate on FDI from a political analysis perspective. Moreover, this research will be of added value to literature on China's economic role specifically, and South-South or BRIC-South cooperation generally. Also, the study will contribute to international relations, political economy literature and the literature on the world economy and politics in the broadest sense.

1.6 Policy relevance

FDI plays an essential role in any country because it is viewed as one of the key factors for economic growth and development, which in turn then stimulates competition, brings innovative technologies, reduces poverty and increases the welfare of the developing world and in a general economic situation of the whole world. This and other important reasons encourage many countries, especially LIC, to review its policies and apply different tools to become an attractive destination for FDI. Despite this eagerness of many countries to become an appealing place for FDI, the consequences of having increased flows of FDI are not always positive. As briefly mentioned before, the results of FDI on economic growth not always display positive effects, as growth enhancing results of FDI depend on a variety of factors.

Therefore, the results of this research may contribute to better knowledge of policy makers who are interested and involved in designing economic policies. Additionally, findings of this research can provide policy makers with the relevant and actual information to develop policies stimulating economic growth. Finally, this research can infuse information for international institutions and organizations about the role of emerging countries and add factual information on dynamics of investors from developing countries, such as China.

1.7 Outline of thesis

The paper is divided into five chapters and the structure of this research proceeds as follows. This first chapter focused on the problem analysis, the research objectives and the research question and sub-question of this study on FDI flows from China to other developing countries and its impact on economic growth of host countries. Additionally, it presented policy and academic relevance of this research. Chapter two will mainly present the findings of the existing theoretical and empirical literature about the FDI impact on economic growth in general and in China case individually. Therefore, based on theory and empirics of chapter two, theoretical expatiations will be formulated and presented at the end of chapter two. Chapter three will mainly present and justify research design. Chapter three will also present all variables of this research and explain their operationalization. In chapter four descriptive statistics are presented, and results of multivariate regression are discussed from rather a technical side (for instance, it will be checked if the model of this thesis meets all assumptions of multivariate regression analysis). Finally, the interpretation of the results and concluding remarks will be presented in Chapter five to conclude and to summarize the findings of this study, provide answers to the central

research question and sub-questions. This fifth chapter, which is also the final chapter of this thesis, will mainly present the interpretation of the statistical results. Additionally, limitations of this thesis will be discussed and some recommendations for future research on the subject will be provided.

2. CHAPTER. LITERATURE REVIEW

In this chapter, the main literature on the topic is going to be presented and reviewed and the first sub - question is going to be answered which is:

What does the existing literature tell about FDI and economic growth of developing countries in general, and from Chinese perspective in particular?

To answer this sub question comprehensively it is important to review the literature on this relation from a broader perspective. The literature review will start by a brief overview of main definitions around the topic. After that main theoretical assumption on the relationship between FDI and economic growth will be presented, including the short part on possible harmful effects of FDI on economic growth. Following part will narrow down on specific topic of via which ways FDI impacts economic growth of developing countries. After that, results of empirical research on the subject will be presented. However, since it will become apparent in the literature review that theory and empirical findings do not provide a unanimous opinion about the relation between FDI and economic growth, some more specific factors on the relationship between FDI and economic growth will be presented. The primary focus in this part will be given to home country determinants, in other words, the main attention will be paid to analyse if home country characteristics of investing firms matter for economic growth of host country. Notably, the notion whether one can expect the different impact of FDI from emerging market countries such as China on host country's economic growth will be expanded and explained. It will be followed by a short summary of the literature review and theoretical framework. Based on theoretical assumptions drawn from the literature review hypothesis will be formulated and presented, which will be tested in following part of the thesis.

2.1 Defining Foreign Direct Investment (FDI)

When it comes to defining FDI, academics and institutions define it quite differently. For example, Fu argues that foreign direct investment is a foreign capital that does not include loan capital provided by foreign governments, private commercial banks or international organization and it does not include portfolio investments (stocks or bonds) purchased by foreigners (Fu, 2000, p.95-96). On the other hand, paraphrasing Dunning's words (1988, p.1) FDI comprises activities that are controlled and organized by firms outside of the country where the company is headquartered and where their principal decision makers are located.

However, the most widely accepted definition of FDI is known as "the IMF/OECD benchmark definition." It is jointly created definition by IMF and OECD with the goal to provide equal standards to different national statistical offices working with FDI statistics. The core of the definition is that FDI is an international venture in which an investor residing in the home economy acquires a long-term "influence" in the management of a subsidiary firm in the host economy. Then, according to the definition, voting shares or rights controlled by the multinational firm should amount to the minimum 10 percent of total voting shares in the foreign company. Therefore, one of the objectives of FDI is to obtain and sustain the long-term relationship between a resident entity ("direct investor") and the enterprise, where direct investor also exercises a significant degree of influence on the management of the enterprise. Thus, "direct investment involves both the initial transaction between the two entities and all subsequent capital transactions between them and among affiliated enterprise; both incorporated and unincorporated" (OECD, 1996).

Since UNCTAD also uses this definition of FDI and since the data which will be utilized for this research is extracted from UNCTAD database, the benchmark definition is the most appropriate among many other existing definitions.

2.2 Theory: Positive impact of FDI

Since the last decades, a growing amount of literature has researched the relation between foreign direct investment and economic growth. 1990s saw the rise of endogenous growth models (e.g. Barro and Sala-i-Martin (1995), Romer 1990) which all were showing that FDI indeed could affect economic growth through the channels of spill overs (de Mello, 1997).

Before discussing three main channels of spill-overs, first, more direct effects of FDI on economic growth of host country have to be emphasized. At the macroeconomic level, FDI brings new capital for investment, contributes to the balance of payments, adds to the country's capital stock, and potentially becomes a major source for future economic growth. In reference to capital stock, it is however not always the case because it depends on if FDI is greenfield or acquisition type, because usually and mostly greenfield investment brings and creates new capital stock by for instance constructing and building new operational facilities. However, when foreign companies merge with or acquire another company it does not always increase capital stock. Other effects are related to increased employment in the country or tax revenues, which investing company brings to the country. Nevertheless, it also highly depends on the investing firm, because sometimes, investing firm tends to bring workforce from a home country which certainly does not contribute to improving the local employment situation. Additionally, most of the authors (for instance, Grossman and Helpman, 199) emphasize FDI importance

for long run growth by highlighting the spill-over effects such as formation of new technology and capital creation, the development of human capital (labour skills), research and development (R&D), technology diffusion and access to market.

Precisely, three main channels of spill overs are usually emphasized through which FDI affects growth. First, the presence of foreign firms may lead to the spread of information on new technology and production processes also known as "the demonstration effect" in local markets. Imitations or adaptations are usual mechanisms through which domestic firms may also develop or obtain new products from foreign companies. For instance local companies by observing foreign companies become aware of the possibilities and can imitate the technology via reverse engineering or for example through informal contacts (Castellaniand Zanfei, 2004).

Second, companies investing in the country may help to raise the level of knowledge and skills in the host country through labour and manager training (de Mello, 1997). Technologies and knowhow that comes along with FDI are not only embodied in machinery, equipment, patent rights and technicians, but it also includes training of local employees in foreign affiliates. Considering that the educational level in developing countries is low, training of local employees may be an important channel through which new technology and knowledge are spread. De Mello (1997) further argues that labour training also encourages incorporating alternative management practices and organisational arrangements to the production cycle. Wan (2010) agrees on that and adds that labour training further may raise host country's productivity and improve its domestic stock of knowledge.

The third channel through which FDI may also affect growth is the increase in competition. The entrance of multinationals in the local market may spur innovation and investment by established domestic companies, which should make them more productive and competitive. FDI may strengthen local market competition in the host country, thereby leading eventually to higher productivity, lower prices and more efficient resource allocation. Additionally, this increased competition can also stimulate incentives for domestic firms to become more innovative and productive, and thereby raise efficiency within the industry. Blomström and Kokko (1998) mention the increase in competition and market access spill overs. The already existing domestic firms are faced with the presence of higher technology and are forced to improve their already existing production processes and thus yield productivity.

Beside three main spill-overs channels and other effects of FDI discussed before, some authors emphasize other benefits of FDI. For instance, Rodríguez-Clare (1996) claims that FDI can generate multiple effects on domestic employment (beside the rising level of knowledge and skills) such as generate new jobs for local communities and increase employment opportunities. Interesting arguments are brought forward by Ajayi (2006) who talks about yet another possible positive impact of

FDI in the host country, arguing that FDI may reduce poverty in many developing countries by increasing employment and stimulating economic growth and provide countries with needed resources for the attainment of Millennium Development Goals (MDGs).

2.3 Negative effect of FDI

However, literature on the subject talks not only about the benefits of FDI. Dependency theory, having risen during the 50s and the 60s, argues that FDI could be seen as constraints on developing countries' economic performance (Aitken and Harrison, 1999). Authors mainly claim that FDI can be a cause of deterioration of the balance of payments as profits are repatriated and that it can be a cause of adverse effects associated with over-exploitation of resources and under-utilisation of local inputs. In addition, the industrial organization theory Caves (1971) has stipulated that FDI is an aggressive global strategy exercised by powerful actors and rich MNEs to advance monopoly power over and above local firms of the host economy. The advantages of multinational corporations (such as advanced technologies) could be transformed into monopoly power, which could be further strengthened by market internalization advantage and local-specific advantage which are both usually possessed by multinational cooperation's (Dunning, 1981). For instance, foreign companies could control supplies of inputs in the host country and gain the benefits of tax subsidy which are provided by the host government. This certainly may strengthen the competitive advantages of MNEs over indigenous firms, leading to the fact that domestic companies at some point will be forced to exit from the market. Finally, due to MNEs' higher production capacity, FDI can cause large scale environmental damage which sometimes is not well taken care of especially in the mining sector (Bora, 2002). FDI flows accompanied with globalization have raised the concern of a "race to the bottom" in which environmental standards across countries level down, which in turn may create "pollution havens" in developing countries causing serious environmental problems not only to local societies but on the country or even international level.

Therefore, it seems that there are many conflicting theoretical views on the relation between FDI and economic growth. A group of authors argues that FDI is an important factor to contribute to the economic growth, while others emphasize the possible negative and harmful impact of FDI on economic growth. Summary of arguments presented by both groups can be seen in Table 2.1 below.

Positive effect of FDI	Negative effect of FDI
New capital formation	Deterioration of balance of payment
Improve balance of payments	Over-exploitation of natural resources
Increase employment	Profit repatriation
Development of human capital	"Pollution haven"- environmental problems
R&D, spur innovation	Monopoly power
Demonstration effect	Under-utilisation of local inputs
Increase productivity and competitiveness	Unequal powers- domestic firms forced to exit market
Tax revenues	Under-utilisation of local workforce

Table 2.1 Summary of FDI effects

2.4 Does country of origin matter?

Since FDI impact on economic growth is rather ambiguous, some authors also emphasize specific factors which may influence the growth enhancing effects of FDI. One group of researchers analyse the impact of home country on FDI-economic growth relation, or in other words, they investigate whether the location/ home country where FDI comes from matters for economic growth effect. According to Banga (2006), different effects of FDI can be expected by the investment flows from the developed countries and the emerging market because of the variation regarding financial, economic, and institutional environment among investors from developed and developing countries. This variance, in turn, may result in a different impact on economic growth of host country. Assuming that the more countries are similar to each other regarding economic environment, the more it is likely to lead to positive impact of FDI on economic growth. For instance, Luo (1998) highlighted that the effects of FDI differ across the country of origin; it is mainly because of the correlation between home and host market structures. Moreover, a different impact of FDI from different countries may be due to differences in motivations, goals and strategies between investors from developed and developing world (UNCTAD, 2006). In other words, similarities between investor country and the recipient country may be related to more positive effect of FDI on economic growth.

Speaking more precisely, some authors believe that investments from the developed market are more of expansionary types, whereas the emerging countries' FDI could be classified as more of defensive types (Chen and Ku, 2000). In this case, expansionary FDI firms can be defined as ones which aim to expand their industries experience, market share, and size. It is related to the fact that firms from the

developed market typically produce and export high-quality products which involve high marketing and technology inputs. Hence, one can expect that this type of investment is driven by the objective to gain more economic benefits (since firms already have high costs of technology and marketing) from the host countries by manipulating the market structure imperfections, rather than to bring benefits to the host country (Brewer, 1993). On the other side, investors from emerging market are expected to focus more on labour intensive industries and less technologically advanced industries (Chen and Wong, 1994). These markets can be in general classified as smaller and focused more on export-oriented strategy by taking advantage of unskilled and cheaper local labour to overcome small-scale production (Carr, Markusen & Maskus, 2001). This type of investment usually benefits the host country in terms of export. Additionally, since investment from emerging economies also relies more on labour than technology, it is more likely that such investment may contribute more to improving the employment situation of local economies by increasing job opportunities and reducing unemployment in the host country

However, even more interesting idea discussed in the literature is that FDI from emerging markets may be better suited to developing-country conditions. It mainly concerns the introduction of technologies that are not as advanced in host country developing markets, meaning that investment from the North and more economically advanced countries may be less labour intensive and require skill and education levels that are not within the capabilities of the workforce of developing country (Gómez Mera, Kenyon, Margalit, Reis, & Varela, 2014). According to Cuervo-Cazurra and Genc (2008), developing-country MNEs can be successful abroad because of their heir ability to manage in difficult institutional conditions, a capability they were required to foster in their home countries to survive and be successful there, may be useful in other developing countries that also have difficult conditions and therefore present similar problems. Additionally, they argue that developing-country MNEs tend to have a relative disadvantage (they are usually smaller than developed MNEs and have poor institutions at home). Nevertheless, this can become a source of relative advantage. Having a home country with poorly developed institutions can help when the MNE moves into other countries with poor institutional environments, because they already know how to operate in the challenging institutional environment.

Luo and Rui (2009) argue that investors from developing countries behave co-evolutionarily, which means that those investors are better at dealing with a more challenging external environment they face. Therefore, investors from emerging economies are believed to be more adaptive in terms of goals and strategies they pursue and are more willing to change the business mind-set into the framework which would fit host country better. According to Yamin and Sinkovics (2009), business strategies which are more in accordance with mind-set of host country firms may be considered as one of the important factors determining the impact of FDI on economic development.

Aykut and Goldstein (2006) argue in a similar way and add that specific characteristic of developing countries such as the entrepreneurial experience of multinational companies from the global South (such as China) can allow investors from South to navigate better in developing country markets and political conditions. In other words, investors from the global South are familiar with how to work in the developing economy market and would know better not only challenges of working in developing countries, but also ways how to overcome those challenges. Therefore, this experience of navigating in developing country markets may lead to better results on economic growth of host countries.

Furthermore, MNCs from developing countries may have greater familiarity with technology and business practices suitable for developing-country markets (Aykut and Goldestein, 2006). Shenkar and Luo (2004) argue in the same vein and assume that the fact that emerging countries usually lack newer technologies, thus use the old technology may be beneficial for developing countries because it may be more suitable to be customized and exploited in less developed country markets. It is also related to the fact that workforce in developing countries may be less skilled; more advanced technology and machinery may be just too difficult to use. Khanna and Pallepu (2006) add on the topic, that the "emerging giants" know how to work around institutional voids. This knowledge of how to work around institutional voids allows countries like China to adjust their investment and business strategies in the way to better match market of the developing country, where they invest.

So, in general, it seems that the theory assumes that FDI from developing countries can be more effective than that from developed countries because of the greater similarity of economic, institutional and political conditions between the home and host countries. Investors from developing countries may possess greater familiarity of technology and business practices and right mind-set needed for low income countries where they invest. Therefore, the origin of FDI can have an impact for causing more positive changes in developing countries. More precisely, FDI from emerging economies is simple better suited to match the environment of the host country.

2.5 FDI impact on economic growth: empirical research

In this part, empirical studies on the relation between FDI and economic growth will be presented. Indeed results are mixed and vary between studies which confirm the positive relation between FDI and economic growth and studies which do not find any significant relation or even a negative relation between FDI and economic growth. Thus, in the following parts, a brief summary of empirical studies will be presented distinguishing four big groups of studies. Namely, the first group emphasizes positive effect of FDI on economic growth. The second group talks about the negative impact while the third group argues that there is no relation between FDI and economic growth. The fourth group questions

the causality of this relation and claim that not FDI causes economic growth, but economic growth leads more FDI. Additionally, there will be a particular section on empirical findings of FDI from China.

2.5.1 Positive relation between FDI and economic growth

The first group of researchers argues that FDI has a positive relation to economic growth. One of the most influential studies on the subject is one by Balasubramanyam, Salisu and Sapsford (1996) which used cross-section data and OLS regressions for 46 developing countries over the period 1970 to 1985 to estimate how FDI affects economic growth. According to authors, it was found that FDI has positive spill over effects on economic growth. However, the effects are limited to host countries that adopt export promoting policies. On the other hand, for import substituting economics, positive results were weaker.

In a widely cited work, Borensztein, De Gregorio, & Lee (1998) examine the impact of FDI on economic growth using cross country regression framework for FDI outflows from OECD countries to 69 developing countries over the period 1970-1989. By controlling for factors such as financial development, the inflation rate and human capital, they found that FDI is an important tool for the adoption of new technologies, contributing relatively more to growth than domestic investment. In addition, they found, FDI has a significant positive effect on economic growth. However, they also found that bigger growth enhancing effect of FDI only in countries which have a minimum threshold stock of human capital.

Bengoa & Sanchez-Robles (2003) by using panel data analysis for a sample of 18 developing countries in Latin America for 1970 – 1999 and controlling for inflation, public consumption and human capital found that FDI is positively correlated with economic growth in the host countries. The host country requires, however, adequate human capital, financial stability and liberalized markets to benefit from long-term capital flows. So they argue similarly as Borensztein, De Gregorio, & Lee (1998) that the magnitude of FDI growth enhancing effects depends on host country conditions.

Research by Li and Liu (2005) investigated how FDI affects economic growth by using a panel data for 84 countries over the period 1970–1999. To examine this relation, both single equation and simultaneous equation system techniques were applied. A significant relationship between FDI and economic growth was identified from the mid-1980s onwards after controlling for investment, population growth, initial per capita GDP and initial human capital. Additionally, they found that the interaction of FDI with human capital composes statistically significant and positive effect on economic growth in developing

economies, while that FDI in cases where technology gap is big between investors and host country has a significant negative impact on economic growth.

Johnson (2006) aimed to compare the influence of FDI to developing and developed countries economic growth. Using a panel of 90 countries and by performing both panel and cross-section analysis and controlling for average year of schooling, domestic investment and wars, he found that FDI inflows improve economic growth in developing economies, but FDI does not contribute that much to economic growth in the advanced economies.

Hosein (2015) in his research aimed to examine the growth-effect of FDI in a selected sample of developing countries from 1970 to 2005. By applying GMM panel data technique, the paper finds that FDI has, in general, a positive impact on economic growth in developing countries from 1970 to 2005, but its magnitude depends on the host country conditions which help to achieve economic growth and sustainable development. By controlling for many possible variables, he found that domestic investment, human capital, infrastructure development, financial market development, trade openness and institution quality are positively related to economic growth. So in general, there are quite a lot of scholars who found a positive and significant relation between FDI and economic growth. However, quite a few of them also identify the greater importance of other factors such as human capital or financial development to economic growth in developing countries.

2.5.2 Negative effect of FDI on economic growth

Even though empirical research is dominated by studies which found positive relations between FDI and economic growth, there is a branch, indeed, smaller, which argues that FDI has a negative effect on economic growth. For instance, according to Alfaro, Chanda, Kalemli-Ozcan and Sayek (2004) FDI has ambiguous effects on economic growth. An empirical analysis using cross-country data for the period 1981-1999 and controlling inflation, human capital, institutional quality, openness to trade and government spending suggests FDI has a negative effect on growth in the primary sector. Similarly, Johnston and Ramirez (2015) aimed to assess the impact of FDI on economic growth in Cote D'Ivoire during the 1975-2011 period. After cointegration analysis and controlling for net income from abroad and gross fixed capital formation, results showed an adverse effect of FDI on economic growth of Cote D'Ivoire for this period.

2.5.3 No significant effect of FDI on economic growth

No significant effect among two variables is found in Carkovic and Levine (2005) for 72 countries for the period from 1960-1995 they found that there is no significant relation between FDI and economic

growth. By first using pure cross sectional ordinary least squares and later by the more sophisticated econometric technique they controlled for a number of influential factors such as average years of schooling, inflation, government size, openness to trade, private credits and black market premium. Results showed that FDI does not exert a strong positive impact on economic growth.

In a significant study, Aitken and Harrison (1999) used a panel of more than 4,000 Venezuelan plants and created a series of programs to relink the plants over time (end-of year and beginning of the year) to measure spill over effect of FDI. The authors did not find any evidence of a beneficial spill over effect from foreign firms on local ones in Venezuela over the 1979-1989 period. They could not find any evidence supporting the existence of technology "spill-overs" from foreign companies to domestically owned firms. However, they have suggested that this kind of results may have been impacted by the fact that the level of foreign investment in Venezuela might be too small, or the economy not sufficiently developed or diversified. Similarly, Haddad and Harrison (1993) by using unique firm-level data set and time-series and cross-section methods found no positive impact of FDI on the rate of economic growth in Morocco for the period of 1985-1989.

2.5.4 Reverse causality between FDI and economic growth

While fourth, a significantly smaller strand of literature found a reverse relation between FDI and economic growth or bidirectional causality and proved that economic growth is significantly correlated with FDI flows to the country. Chowdhury and Mavrotas (2005) found that GDP causes FDI in Chile and not vice versa, whereas there is a bidirectional causality between GDP and FDI in Malaysia and Thailand. Authors came to this conclusion by applying instruments based on the Toda-Yamamoto test for causality, to time-series data for the period 1969-2000 in three developing countries, namely Chile, Malaysia and Thailand. The empirical findings clearly suggest that it is GDP growth that causes FDI in the case of Chile and not vice versa. For both, Malaysia and Thailand cases, there is a strong evidence of a bi-directional causality between economic growth and FDI. The robustness of the findings is confirmed by the use of a bootstrap test employed to check the validity of their results.

Reverse causality according to Chakraborty and Basu (2002) was also found in the case of India. The two-way relation between FDI and growth for India is explored using a structural integration model with vector error correction mechanism (VECM). The existence of two co-integrating vectors between GDP, FDI, the unit labour cost and the share of import duty in tax revenue is found, which captures the long run relationship between FDI and GDP. VECM model revealed some important features GDP in India is not Granger caused by FDI and that the causality runs more from GDP to FDI.

2.5.5 FDI from China

Since among all investors from emerging countries or global South China is the focus of this research, it is important what the literature tells about FDI from China to other developing countries. So in general literature provides evidence of benefits of Chinese FDI to developing countries, there are some examples of adverse impact.

For instance, Rui (2010) analysing Chinese FDI in Sudan concluded that the positive development consequences of South-South FDI are not only caused by the fact that Chinese technology and material capacity is more appropriate for developing countries (such as not too advanced machinery). The author also emphasized Chinese business strategies that are more adaptable to the environment in the developing host-country. His research points out that strategy of emerging market investors MNCs to fit the local institutions may be more efficient for improving institutions. Consequently, it is more beneficial for development in host-countries.

The impact of Chinese FDI to economic growth in Ghana's building and construction sector was also analysed by Boakye – Gyasi & Li (2015). By using data from questionnaires and applying robust regression model, they found that Chinese investment could be a major source of employment and economic growth. The creation of jobs for local communities and technology transfer through Chinese FDI has become complementary since Chinese investment can be a significant source of economic growth and economic development. This is in direct opposition to the findings of Alden and Davies (2006) who found that Chinese multinationals tend to employ workers from China and exclude African workforce from occupying important positions (for instance managerial positions) which are kept for Chinese workers. Therefore, according to the authors, the import of Chinese workers does not improve the employment situation in developing countries in Africa where Chinese firms invest (Alden and Davies, 2006).

Bandara (2012) paper uses an endogenous growth model and GMM estimates to investigate the influence of investment by China in 44 Sub-Saharan African economies. By using Panel data for 44 Sub-Saharan African countries covering the period 1970-2009 author found that Sub-Saharan African countries which received foreign direct investments from China have positive economic growth rates. Sub-Saharan African economies which received Chinese FDI experienced an improvement in economic growth from 3.4 per cent to 3.9 per cent during the same period. However, results even in the same region are not robust. According to the research of Elu and Price (2010) empirical evidence from over 1800 sub-Sahara African manufacturing firms show that in the period between 1991 and 2004, Chinese

FDI to sub-Sahara African markets decreases the productivity of companies. Additionally, It also had an adverse impact on economic growth and did not advance the living standards of these countries.

Others also emphasize the impact of Chinese FDI on economic growth via improving infrastructure. According to Orr and Kennedy (2008), a significant amount of Chinese foreign direct investment in Sub-Saharan Africa is associated with the creation of infrastructure. Chinese investors and the government of China increasingly invest in infrastructure projects (sanitation, energy, water) in Angola, Nigeria and Sudan. According to Orr and Kennedy (2008), Chinese investment thus has a positive effect on the economic growth of these countries via improved infrastructure. Nevertheless of different opinions in the literature on the impact of Chinese FDI on the growth of developing countries, this subject is still little researched. There is still too little evidence to support any of the claims. Therefore, it is essential to analyse the subject deeper.

2.6 Control variables

The literature on FDI in general even though mainly concentrated on the FDI impact on economic growth, acknowledges that there are possibly other factors to influence economic growth. Since this thesis analyses the relationship between only one factor FDI and economic growth, there is a need to control for other factors that may have an impact on the dependent variable. In this sub-section based on existing literature, most commonly identified control variables that potentially have an influence on the dependent variable will be presented.

The role of human capital on economic growth is now well recognized through extensive theoretical and empirical research; whereby the human capital development, measured through possession of education has been recognized as a crucial source of economic growth. There is a vast empirical literature that shows the contribution of human capital accumulation (often proxy by education variable) in the growth process. Accordingly, it is commonly accepted that human capital will raise output and contribute to economic growth (Mankiw, Romer and Weil, 1992; Barro, 2001). Since a lot of authors recognize the importance of human capital and usually include it among their control variables (for example, Borensztein, De Gregorio, & Lee (1998), Li and Liu (2005), Johnson (2006)) this thesis will also control for human capital.

The second important control variable, often mentioned in the empirical literature on economic growth and FDI is the development of sound and efficient financial systems. It is often argued that the development of financial institutions has a positive impact on economic growth. Recently, a large body of research, especially empirical work, suggests that the high development level of financial

intermediaries exerts a positive effect on economic growth. Authors, who analyse FDI and economic growth relation, such as Hermes and Lensink (2003), emphasize the importance of financial development as a control variable.

Another important factor which is very often included in FDI-economic growth literature as a control variable is inflation (used as a control variable in Bengoa & Sanchez-Robles (2003), Alfaro (2003), Carkovic &Levine (2005) research). The high level of inflation is said to have an adverse effect on economic growth. Whereas macroeconomic stability is defined with low inflation and is assumed to be positively related to growth. High inflation may exert negative externalities when it hampers the economy's efficiency. For example, inflation can cause uncertainty about the future profitability of investment projects which leads to conservative investment decisions and reduces the country's competitiveness by making its export more expensive (Gokal and Hanif, 2004). On the other hand, sometimes a low inflation of around between 2 and 10 percent is correlated with high economic growth. Therefore, the costs of inflation only become significant at relatively high rates of inflation.

Trade openness is also a quite common control variable in research on FDI and economic growth and has been used by Hossein (2015) and Alfaro (2003) as an example, among other authors who also acknowledge the importance of this variable. According to many economists, a higher degree of openness leads to a better economic performance and economic growth. Open countries can better rip off the benefits of globalization. Additional, international trade openness is a channel through which foreign firms can export or import easier. Trade liberalization increases the openness of an economy to international trade and therefore represents an important engine of economic growth.

The level of initial GDP per capita (in practice, the natural logarithm of GDP per capita) is another quite common control variable according to the conditional convergence hypothesis. It is usually used as an indicator of the development level of the country. There is generally a negative relationship with growth, meaning the lower the level of development, the higher the growth rate can be expected. The initial position of the economy is thus a significant determinant of growth, as recognised by the neoclassical theory. One of the key implications of the neoclassical growth model is that all else being equal, poorer (less developed) countries should grow faster than richer countries. It also implies that poorer countries should begin to catch-up (or converge) with richer countries over time. Many growth studies have shown that once differences in other relevant structural and policy variables are taken into account, developing countries do, in fact, tend to grow faster than rich countries (Barro, 1991).

Terms of trade is another pivotal variable in FDI and economic growth literature and is included in the list of significant variables together with human capital (see Barro (2011). Terms of trade is an index representing the ratio of the price of a country's exports to the price of its imports of commodities. An

increase represents an improvement in the country's terms of trade. An improvement in a country's terms of trade can also increase real national income and stimulate economic growth.

All these control variables are quite commonly used in the literature on FDI and economic growth and identified as pivotal for economic growth. Each of them was discussed separately with providing examples of when these variables were previously used.

2.7 Conclusion and theoretical framework

This chapter answered the first sub-question of the thesis and presented current theories and evidence on the topic. In this literature review, the main attention was given to FDI and its impact on economic growth. Two main theoretical views were presented in this chapter, mainly ones who argue that FDI has a positive effect on economic growth of the country and the ones who talk about the downside of FDI to the host country. From a perspective of pro-FDI, FDI creates positive spill overs and through externalities can directly or indirectly increase the economic growth of host country. More precisely, economic growth can bring new capital, help to increase employment, contribute to R&D, spur innovation or increase productivity or competitiveness of the host country. On the other hand, opponents claim that FDI can be the cause of balance of payment problems, may lead to profit repatriation, over-exploitation of natural resources which in turn may instead of helping developing countries, make them pollution havens. Additionally, FDI can sometimes have a negative effect on local firms to the extent that local companies are no longer able to compete with foreign investors and are forced to leave the market. The empirical research did not provide any confirmation for one or another theory but only confirmed that indeed FDI and economic growth is a complex relation. In some cases, FDI may be the source of economic growth, whereas in some cases it may not be significantly related to economic growth

FDI is obviously important for developed countries and it can even have more important implications for developing countries. Additionally, from literature review some pivotal points were identified, mainly that FDI growth enhancing effect may be dependent on country of origin of FDI. More precisely, recent literature on the subject assumes that FDI flows from developing countries may be better suited for other developing countries which are the recipient of those flows. Since Chinese investment flows are increasing with years and Chinese investment in other developing countries now takes an important part it is interesting to test empirically theoretical assumptions presented in this chapter. Additionally, even though the theoretical literature provides many ways of how FDI from developing countries may be better suited for other developing countries, empirical research is still very scarce.

So based on general literature on FDI and economic growth and based on theoretical assumptions that FDI from emerging economies should bring positive growth enhancing effects for developing countries is drawn. This leads to hypothesis of this thesis:

> *H_1: FDI from China to other developing countries has positive impact on economic growth of developing countries.*

So this hypothesis is based on two main pillars. First, it relies on the notion that FDI may be a major factor contributing to the positive economic growth in developing countries. Secondly, this hypothesis is supported by the theoretical assumption that FDI originating from other developing countries should be better suited for the economic growth of developing countries due to a variety of reasons which were mentioned in this chapter. Thus FDI from China (since China is one of the emerging economies) should generate a positive effect on economic growth.

2.8 Model

Since different variables and factors which may influence economic growth were presented, it is necessary to put them in one model. The conceptual model summarizes the relation between independent variables to the dependent variable. All independent variables are based on previous literature on FDI and economic growth (see part 2.6).

So based on theoretical assumptions, the main independent variable of this thesis – FDI from China – is said to have a positive effect on economic growth in developing countries. In other words, the more China invests in one country, the more positive economic growth is expected in that country. However, since other important factors may impact economic growth, it is important to include and assess the impact of these control variables. Trade openness and change in terms of trade are expected to have a positive influence on economic growth as discussed in part 2.6. The initial level of development, on the other hand, is said to be negatively related to economic growth; poorer countries are expected to grow steadier than rich countries. Similarly, inflation is associated with negative economic growth, so the higher inflation rate is said to have a negative impact on economic growth. Financial development is related to higher economic growth; countries with the higher development level of financial systems and institutions are more likely to have a higher economic growth rate. Human capital- is another variable which exerts a positive effect on economic growth, meaning that country with more developed human capital, for instance, a bigger proportion of educated people are expected to have positive economic growth. The last control variable of this research is FDI from OECD countries is used to distinguish the effect of other FDI from impact Chinese FDI has on the economic growth of developing

countries. So similarly as FDI from China, OECD FDI is expected to have a positive influence on economic growth of host country.Below conceptual model is summarized in Figure 2.1.

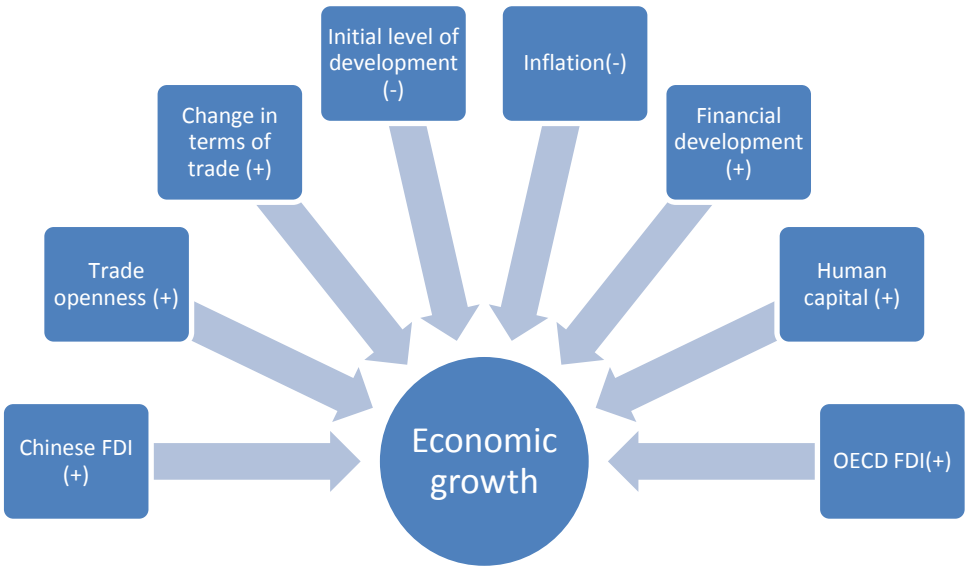

Figure 2.1 Model

3. CHAPTER. RESEARCH METHOD

This chapter will focus on research design of the thesis and will aim to explain operationalization of independent, dependent and control variables and explain how the impact on the dependent variable can be assessed. Therefore, this chapter will start with discussion and justification of the design chosen for the analysis. After that, the chapter will continue with the introduction and operationalization of the dependent and independent variables. Following part of the chapter includes the collection and presentation of the data and explanation of research population, whereas at the very end of the chapter reliability and validity will be reviewed.

3.1 Research design

The research design of this thesis is orientated to explain variance in the dependent variable (Y) among a large-N sample of cases by taking into account independent variable (X) and controlling for some other variables. The large-N design corresponds to a large number of cases, in this thesis, these are low income and middle income countries. It is known that there are two major types of observational studies: cross-sectional and time-series observational studies (Kellstedt and Whitten, 2007, p. 88). The former design focuses on the variation between spatial units (countries in this case) for a single time unit (one year). The latter focuses on explaining the variation within one spatial unit over multiple time units (period of time) and makes it, therefore, possible to measure changes in the level of variability and to establish the direction of causation. However, a time-series design requires many observations at many points in time, and since there is little reliable data of Chinese FDI, this is not feasible for this research.

In this research, cross-section analysis for large-N design is going to be applied and as earlier FDI and growth studies reveal, it is quite preferred and popular type of method (Alfaro, 2003, Balasubramanyan et al (1996), Borensztein, De Gregorio, & Lee 1998, Carkovic and Levine, 2002). This type of large-N design strengthens ability in generalizing results and is better suited to explain causal effects. However, the cross sectional analysis is not suitable for explaining any single case in details (Gschwend & Schimmelfennig, 2007: 11). Nevertheless, since the aim of the thesis is to analyse effects of FDI in many developing countries, and it does not concentrate on any single case, the cross sectional design is preferred over a case study. In this particular case, since FDI is not likely to cause economic growth in the same year time lag-effect will be used. Lag-effect corresponds to the time it takes for FDI to have an effect on economic growth. It is however not possible in this study to figure out what the exact lag-

effect is because this thesis is not employing time-series research design. Therefore, the time lag of two years will be used.

3.1.1 Multivariate regression

Multivariate regression analysis is going to be employed as a tool to analyse the empirical part of this thesis and SPSS software will be used to conduct this regression. In general, the regression analysis is a powerful statistical technique that is used in social sciences to analyse the relationship between two or more variables (Uyanık & Güler,2013). The variable that is being explored is called the dependent variable (Y) (sometimes also called outcome variable) and the variables that influence dependent variables are known as the independent variables (Xs) (sometimes also called as variables, which represent inputs and causes). In this case, not a simple regression, but multivariate regression analysis will be used which means it has one variable of interest plus several control variables to analyse the relationship between FDI and economic growth.

To conduct a regression analysis, several assumptions have to be satisfied. First, the sample size (N) should be sufficiently large. Second, the relationship between the dependent and independent variables should be as linear as possible. Third, the measurements of all the variables should be accurate and quantitative (interval or ratio variables). Fourth, independent variables cannot be linearly related to other independent variables (no collinearity). Fifth, the distribution of variables should be normal (Gilbert, 2009). These main assumptions of multivariate regression analysis are going to be presented and explained for particular model in chapter four where discussion of the results will be presented and analysed.

In general, the multivariate regression technique is very suitable and often used in social science research, especially when the separation of the particular relationship from other effects is very difficult, as it is the case with economic growth in this thesis. Therefore, the equation of this thesis looks like following:

$$Economic\ growth_{it} = \alpha + \beta 1 * CHFDI_{it-2} + \beta 2 * HC_{it-2} + \beta 3 * I_{it-2} + \beta 4 * FD_{it-2} + \beta 5 * OECD\ FDI_{it-2} + \beta 6 * TOT_{it-2} + \beta 7 * TO_{it-2} + \beta 8 * LOGgdp_{it-2} + \varepsilon_i$$

Y is the outcome variable economic growth, α denotes the constant or intercept, β is the slope (beta coefficient) that measures the effects of independent variables on the dependent variable. I is the number of the countries and t denotes a time. Epsilon is a term that represents the errors associated with the model. All independent variables denote as follows:

- CHFDI is main independent variable and represents Chinese FDI;
- HC denotes human capital;
- I is inflation;
- FD indicates financial development;
- OECDFDI is independent variable for FDI from OECD;
- TOT denotes change in terms of trade;
- TO is trade openness variable;
- LOGgdp denotes the initial level of development.

3.2 Operationalization

This sub-section of Chapter three will explain operationalization of dependent and independent variables, which all have been selected based on the literature on FDI and economic growth and recognized as important to include in FDI and economic growth equation. For a relatively small sample of this research, seven independent variables may be too much, which means that robustness and the quality of the model may be negatively affected. In order to sustain the quality of the model and whole research, bivariate correlations will be first checked between dependent variables and each independent variable. Variables, therefore, will be added one by one depending on bivariate coefficients.

3.2.1 Dependent variable

The dependent variable (outcome variable) of this research is economic growth. In the relevant literature, economic growth is usually taken as the rate of real GDP per capita growth. Therefore, this measure will be also used in this research paper. The annual percentage growth rate of GDP per capita based on constant local currency is a variable to measure economic growth. Plus in front of the rate would indicate positive economic growth, whereas minus will mean that country had a negative growth rate. For this variable, the average of the years 2009, 2010 and 2011 is used, and data are taken from World Bank Development Indicators database.

3.2.2 Independent variable

The main independent variable of this research which influences differences in the dependent variable is FDI from China. For developing economies, there are two most comprehensive databases on FDI inflows and outflows are IMF-BoP Manual and UNCTAD. Additionally, UNCTAD by far has the most complete FDI database, and unlike the IMF BOP data, it compiles data on bilateral FDI flows - both

inflows and outflows. UNCTAD's Bilateral FDI Statistics provides up-to-date systematic FDI data for 206 countries, covering inflows (table 1), outflows (table 2), inward stock (table 3) and outward stock (table 4). For this research, table 2 representing outflows is going to be used. The main sources of UNCTAD's FDI flows are national authorities (for instance, central banks or statistical office). This data are further complemented by data obtained from other international organizations, for example, the IMF, the World Bank (World Development Indicators), the Organisation for Economic Cooperation and Development (OECD) and UNCTAD´s estimates. In the database, two dots (..) indicate that data or that particular country are not available. Whereas, a dash (-) indicates that the item is equal to zero or its value small and close to zero. So countries with two dots have not been used for this thesis, whereas countries which have a dash sign, in the final table it has been changed to 0. According to UNCTAD, negative values of FDI are explained as cases of reverse investment or disinvestment.

Since in general, FDI data tend to fluctuate from year to year, an average of three years (2007, 2008 and 2009) will be calculated relative to GDP of the host country over the same three years. The relative value of FDI to GDP is a common way and often used in relevant literature. Three year average is taken due to in general scarcity of data on bilateral FDI flows from China. Even though UNCTAD provides data from 2001; for 2001 and 2002 there is almost no data on developing countries. For following years data is very scarce, therefore, to keep the sample as big as possible, values of 2007-2009 are the most optimal variant. The impact of FDI from China in years of 2009, 2010 and 2011 (average of three years) will be assessed. The time lag of two years is used because as previously mentioned the relationship between FDI and economic growth might suffer from reverse causality, and the effects of FDI may not be captured in the same year. Additionally, the two year time lag also has been partly determined by data scarcity. Moreover, even though longer period lags are often used in literature, time lags between one to three years is also quite common. Consequently, the particular time frame will have certain implications of the results of the research which will be discussed broader in limitation section (5.3) in chapter five.

3.2.3 Control variables

This design requires careful selection of control variables. Control variables refer to variables or contributing factors that are fixed or eliminated to identify precisely the relationship between an independent variable and a dependent variable. In this particular case since many other variables can influence economic growth, it is important to include other economic and political control variables. However, since there are many different control variables identified in the relevant literature only main and the most important ones were selected and their selection was justified by examples in the relevant chapter (see 2.6 sub-section).

For control variable human capital a proxy measure of average years of schooling will be used. Average years of schooling is often used as a proxy for human capital (for example, see Alfaro et al. (2004)). This data represents the average number of years of schooling received by people aged 25 and older and converted from education attainment levels using official durations for each level. Data for this variable is used from United Nations Development Programme, Human Development Report. The longer average schooling there is in the country, the more likely that it will have more advanced human capital, which in turn would mean that country is more likely to have higher economic growth. Therefore, human capital is expected to have a positive coefficient. Same as for all other variables, the two year time lag will be used, meaning that the average years of schooling in 2009 will be taken. Since average years of schooling do not fluctuate significantly from one year to another, there is no need to calculate its value over a couple of years.

The annual inflation rate is the second control variable and it is measured by the consumer price index and computed by the annual percentage change in the cost of living of the average consumer. Higher inflation is often seen as a sign of macroeconomic instability. Such uncertainty hinders private investments and saving decisions, leading to an inefficient allocation of resources and is therefore associated with a negative economic growth. Inflation, as measured by the consumer price index reflects the annual percentage change in the cost to the average consumer of acquiring a basket of goods and services that may be fixed or changed at specified intervals, such as yearly. Data on inflation is collected from World Bank Development Indicators and is measured also for 2009, to correspond for two years' time lag.

The third control variable is financial development. It is argued that the well developed financial system is a factor positively influencing economic growth. Domestic credit to the private sector (% of GDP) is used as a proxy to measure the level of financial development. It is quite a commonly used proxy for financial development (for instance, Hermes and Lensink, 2003). Domestic credit to the private sector (% of GDP) refers to financial resources (such as loans, purchases of non-equity securities) provided by financial corporations to the private sector. This variable is also taken from World Bank Development Indicators for the year 2009. The higher this measure is, the larger financial resources or financing available to the private sector in a country and so the greater opportunity and space for the private sector to develop and grow. The better the private sector gets and the bigger role it has on the national economy, the better is the health and development of the economy of this country.

The fourth control variable is FDI from OECD countries. This variable was not discussed in chapter 2 because it is a particular variable used for this research. FDI from the OECD is used as a proxy to control impact of other (not Chinese). It is important to include it in research because China is not the only

country to invest in developing countries and the OECD as a block together with China is the biggest FDI source to developing countries. However, since there are no data on FDI flows from OECD countries as a block, the calculation will be made by adding data from UNCTAD bilateral FDI for four OECD members separately to create the number which would represent whole OECD members to particular developing country. These four OECD members are Japan, US, France and Germany. Same as FDI from China, FDI from OECD will be also used in averaged values over the same years (2007, 2008 and 2009) as FDI from China and related to GDP. These four countries are selected for a variety of reasons. First and most important, the rest of OECD members did not have a significant FDI contribution to developing countries and most have very fragmented data on FDI flows, therefore, were excluded from the sample. Secondly, these four countries are the biggest sources of FDI flows to developing countries from whole OECD. Thirdly, by selecting four countries from different continents, geographical bias could be avoided.

The fifth control variable change in terms of trade is calculated by taking indicator from World Bank Development indicators database (it is called "net barter terms of trade index (2000=100)"). It is a relation between export and import prices; an improvement in this ratio means more income for the country. Change in terms of trade is calculated by taking the value of 2011 deducing value 2009 from it and dividing all by a value of 2009. This would give a percentage change (increase/decrease) over the two years after 2009.

The sixth control variable is trade openness (trade % of GDP). This variable is also taken from the World Development indicator database for the year 2009. It is also a quite common control variable used in literature on FDI and economic growth (for instance, see Hosein, 2015). It is argued that the more country is open to trade the more it is likely to grow. Or in other words, the more country trades, the wealthier it is. Therefore, a positive sign of the coefficient is expected for this control variable.

The last control variable which will be used for this thesis and is usually included in other studies on FDI and economic growth, as highlighted in section 2.6 is the initial level of development. The standard way to calculate this is to take the natural logarithm of GDP per capita with a time lag of two years, meaning that in this thesis value for 2009 will be used for this variable. There is usually a negative relationship with growth: the lower the level, the higher the growth rate as already discussed previously.

3.3 Population and sample

The most common country classification is by the World Bank, which classifies countries into five groups according to their income. UNCTAD data on bilateral FDI flows have three groups of countries,

developed, developing and transition countries. For this research, developing and transition countries will be a sample group in order to have a larger sample to research. Additionally, out of 11 transition countries about which data is available one (Russia) will not be included in this study because according to the World Bank classification it is high income country. The rest of the countries which are indicated as transition economies fall under low middle income economy category, according to the World Bank classification thus will be treated as developing countries.

Out of all 144 developing countries, as classified by the World Bank 105 developing countries and 15 transition economies are included in UCTAD bilateral data on FDI from China. Only the countries, for which not all the values of the dependent variable and independent variables are known, are excluded. In this study, there is enough data available to work with 70 from all parts of the world. In the sample, all the regions with developing countries are covered. It is important that all regions are covered adequately because regional biases can be avoided and more generalizable results are obtained. Appendix A presents a full sample of countries for this research.

3.4 Reliability and validity

For the measurements to be as accurate as possible, the reliability and measurement validity need to be ensured. The measurements are reliable when the "measuring procedure yields the same results on repeated trials" (Johnson & Reynolds, 2008). The results should be consistent across time and cases. Reliability means that similar results should be produced in different circumstances, assuming nothing else has changed. Reliability also can be defined as consistency of measurement or stability of measurement over a variety of conditions in which the same results should be obtained (Pennings, Keman, & Kleinnijenhuis, 2006). To increase the reliability of this research and to avoid errors or mechanical mistakes during data collection all results are collected and checked twice with the original source for each independent and dependent variables.

Validity can correspond to the internal and external validity. Internal validity means that the independent variable causes the dependent variable, and this cause effect relation is not affected by another factor (Johnson, Joslyn, & Reynolds, 2001). Since this thesis uses a cross-sectional research design, it is quite difficult to ensure internal validity, because due to measuring only one moment in time, it is difficult to determine whether the independent variable caused the dependent variable or the other way around. However, to at least make sure that the relation is between FDI and economic growth is not caused by a third variable, other control variables are added to the study. Nevertheless, there are few threats to internal validity. It can happen that a relevant variable is excluded, which is

called 'omitted variable bias', or that instead, an irrelevant variable is being included which can increase standard errors leading to inefficiency. Therefore, all control variables should be selected based on previous research on the topic, which would allow picking only those variables that are believed to be influential for this relation (Kellstedt & Whitten, 2007).

External validity stands for the extent to which the results can be generalized to the rest of the world (Johnson, Reynolds, & Mycoff, 2008). External validity is pretty high if sample represents the population. Therefore, in this particular case results are easier to generalize than from case study analysis. The large sample 70 countries make it plausible to generalize to the population of all developing countries. Within a sample of this size, it is easier to identify general trends and assume that a similar pattern is expected in another few developing countries which are not included in this study. Furthermore, all countries in this sample are from different regions. It allows drawing more generalisable results.

4. CHAPTER. ANALYSIS

So, since research design is explained, the operationalization of variables and sample of this research presented, concepts of reliability and validity were discussed in the previous chapter, it is now important to conduct statistical procedures to understand if the hypothesis can be accepted or rejected. The first section presents a descriptive analysis, to organize and summarize the data. The next section contains the exploratory analysis, the bivariate correlation coefficients, and tests for the assumptions of multiple regression analysis and the results of the multiple regression models.

4.1 Descriptive statistics

First of all, it is important to explore the sample data of this research. For instance, what are the minimum and maximum scores, what are the means and how well do these means represent the data (which is indicated by the standard deviation). A summary of the descriptive statistics of the ratio variables is displayed in Table 4.1

Descriptive Statistics						
	Year	N	Minimum	Maximum	Mean	Std. Deviation
CHFDI (Chinese FDI relative to GDP)	Average of 2007/2008/2009	70	-0.018	3.164	0.245	0.578
EG (Economic growth) Annual %	Average of 2009/2010/2011	70	-1.23	8.59	3.207	2.292
HC (Human capital) Average years of schooling	2009	70	1.4	12.1	6.837	2.613
FD (Financial development) Domestic credit to private sector (% of GDP)	2009	70	16.38	167.94	42.866	38.267
LOGgdp (Level of development)	2009	70	311.25	31453.22	3896.651	4485.773
ToT (Change in terms of trade) Net barter terms of trade index (2000 = 100)	(2011-2009)/2009	70	-0.37	0.53	0.111	0.183
I (Inflation) Inflation, change in consumer prices (annual %)	2009	70	-8.28	31.75	5.635	5.502
OECFDI (OECD FDI relative to GDP)	Average of 2007/2008/2009	70	-0.358	14.447	1.046	2.418
TRO (Trade openness) Trade (% of GDP)	2009	70	22.11	188.98	77.617	32.564

Table 4.1 Descriptive statistics

To start the analysis, it is first important to look at the descriptions of the collected data at first. The summary of descriptive statistics of the data can be observed in Table 4.1. This table provides only descriptive statistics about the data set used for this research. More precisely, the table includes the number of observations, minimum and maximum values of the variables, the mathematical mean of the observation and the standard deviation. Standard deviation refers to the squared root of the variance and measures the spread of the observations. In other words, the larger the standard deviation is, the more spread the observations are (Johnson, Reynolds, & Mycoff, 2008). All the variables are based on 70 cases since the cases with missing observations have already been excluded in the data collection period.

The descriptive statistics, the first dependent variable of this research will be explained. The values of economic growth averaged for three years (2009; 2010 and 2011) among 70 research countries varies from -1.23 to 8.59, so when relatively compared to other variables of this research, economic growth does not have a big variation of values. It is confirmed by standard deviation which is equal to 2.29245 and which is smaller than mean which is equal to 3.2070. The main independent variable of this research- FDI from China varies from values of -0.018 to 3.164. Rather small variation in the values of independent variable shows that there is a not too big difference between developing countries which received FDI from China when relating it to their GDP. In other words, this means that the observation of the independent variable is quite equally distributed and it is also confirmed by rather small standard deviation which is equal to 0.578290. Nevertheless, the standard deviation is relatively high once compared with the mean which is equal to 0.24490.

Figure 4.1 displays the percentage value of Chinese FDI related to countries GDP over three years. It is evident from this figure that in most countries (in 53 countries) Chinese FDI composes around between 0% and 0.25 % of their GDP. In 12 countries Chinese FDI comprises from 0.25 % to 3.25% of their GDP, among which in two countries, it amounts from 2.75% to 3.25% of their GDP. These two countries respectively, are Lao People's Democratic Republic, where Chinese FDI composes 2.865% of its GDP and Guyana, where Chinese FDI accounts for 3.164% of its GDP. The third country with the biggest percentage value of Chinese FDI related to its GDP is Kyrgyzstan in which Chinese FDI constitutes 1.166% of its GDP.

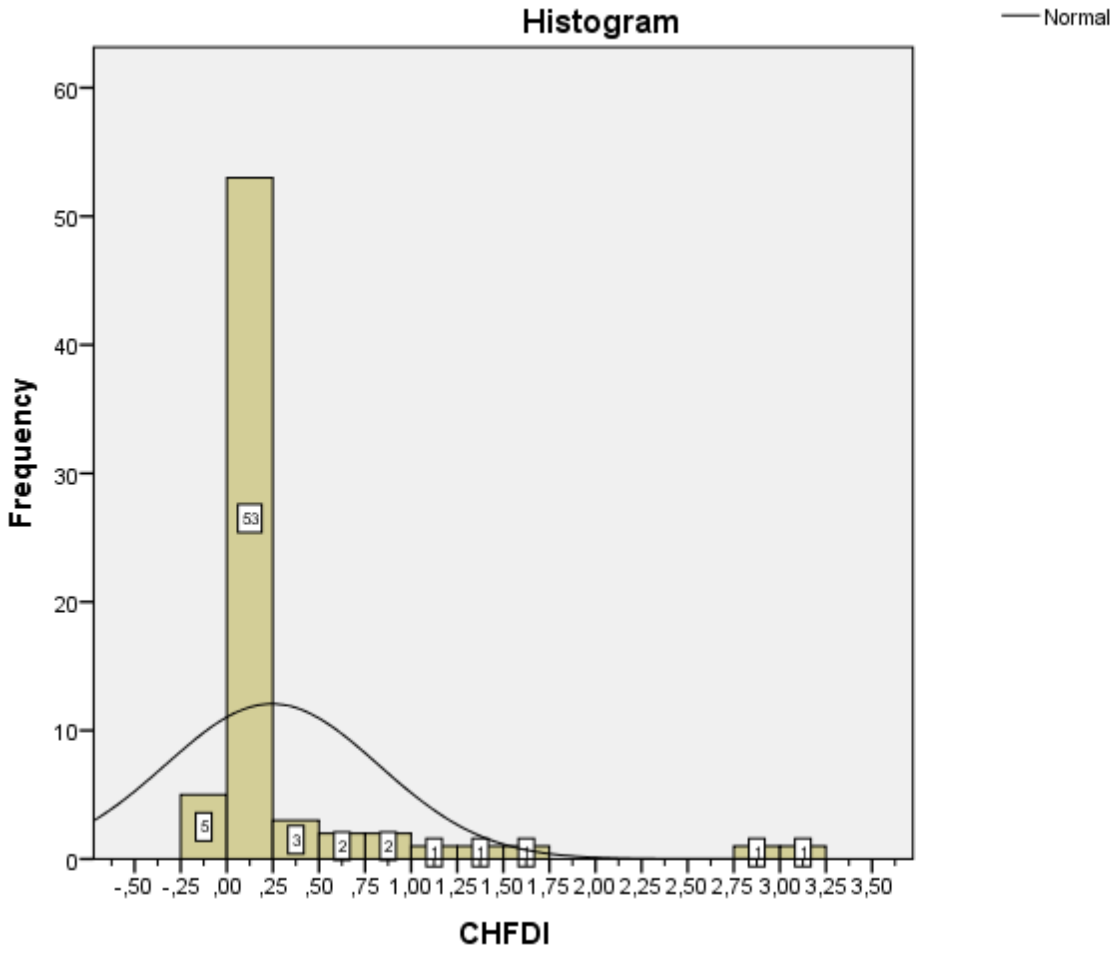

Figure 4.1 Frequency histogram CHFDI

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4.2 Assumptions for regression analysis

Before proceeding with explanation and analysis of regression, it is important to ensure that all assumptions for regression analysis are met. In case these assumptions are not met, the results of the regression analysis cannot be generalized to the wider population. The first two assumptions will only be discussed shortly because they have already been presented in previous chapters.

First two assumptions concern measurement level and theoretical relation. The first assumption is that all variables are quantitative (either at the interval or ratio level of measurement). As explained in chapter three, all variables used for this analysis are at the ratio level. Therefore the assumption of quantitative variables is met. The second assumption which requires a theoretical causal relation between the dependent variables and independent variables has also been already discussed in previous chapters, mainly chapter two. Therefore, there is a theoretical causal relationship between main dependent variable, economic growth and all the independent variables and this assumption is

also met. Other assumptions -normal distribution of variables, linearity, normal distribution of residuals, homoscedasticity and no multicollinearity will be discussed in following parts.

4.2.1 Normal distribution

This sub-section provides the histograms of the frequency distribution for independent and dependent variables. A normal distribution of variables is one of the preconditions for regression analysis. It is important to provide histograms because they show the frequency distributions for all the variables separately and compare them with the normal distribution curve. Additionally, the statistical test for normality to ensure that the data for each variable is normally distributed will also be carried out. In this thesis, the Shapiro-Wilk test for normality will be used as it said to be most suitable for smaller samples (up to 200 observations).

	Shapiro-Wilk		
CHFDI	Statistic	df	Sig.
	0.466	70	0.000

Table 4.2 Test of normality (CHFDI)

So from the Figure 4.1, it is already visible that values for Chinese FDI are not normally distributed as they did not follow a bell shape which indicates normal distribution. Additionally, Shapiro-Wilk test in Table 4.2 also shows that FDI is not normally disturbed, as significance or the p-value of the Shapiro-Wilk test is equal to 0.000. That proves the absence of normal distribution.

To have a normal distribution, it is important to transform variables. In order to get as a normal distribution as possible, log function will be used. However, since there is a negative value in the sample it is important to add constant *a* to have positive values. Constant *a* is chosen to be as small as possible so that min (CHFDI+*a*) is equal to a small positive number. Since the lowest value of the sample is -0.018 a constant equal to 0.019 is added to all variables in the sample.

	Shapiro-Wilk		
TCHFDI	Statistic	Df	Sig.
	0.934	70	0.01

Table 4.3 Normality test (TCHFDI)

So after having all values transformed into a positive number, the log of this positive number is calculated. After transformation, CHFDI shows a normal distribution as results of the Shapiro-Wilk shows as p-value is now equal to 0.01 as seen in Table 4.3.Additionally, the result is supported graphically (figure 4.2) as, after the transformation, the data for CHFDI has gained more bell-like shape which means that it became more normally distributed.

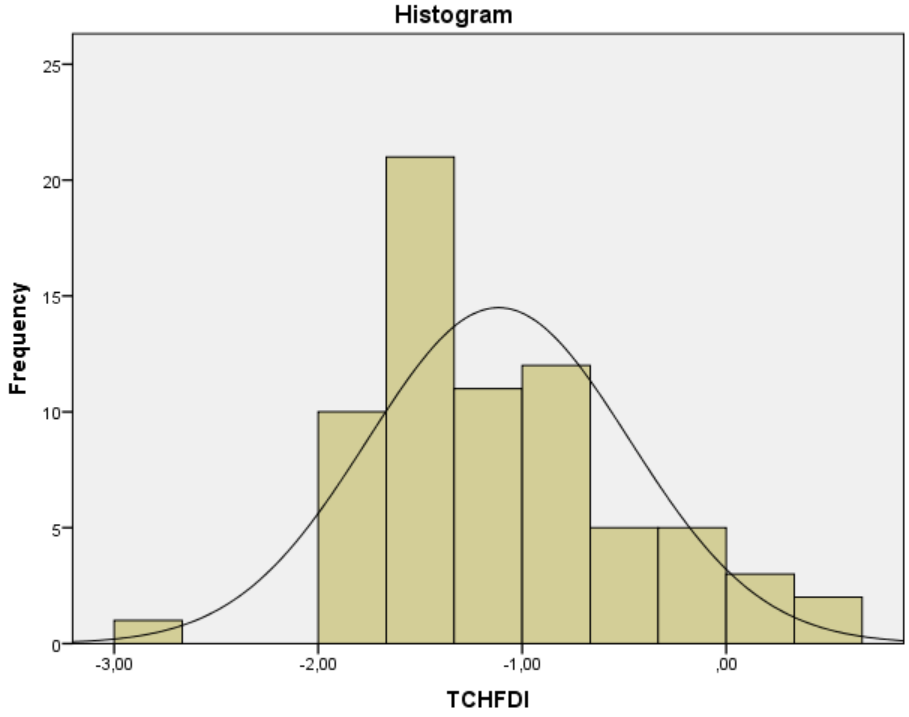

Figure 4.2 Normality graph (TCHFDI)

Concerning the normality of main dependent variable of this research- economic growth it is possible to claim that distribution of economic growth variable is normal and does not need any transformation. Significance value is equal to 0.272 as seen in Table 4.4 which is greater than 0.01 threshold.

	Shapiro-Wilk		
EG	Statistic	Df	Sig.
	0.979	70	0.272

Table 4.4 Normality test for EG

It is graphically also visible in figure 4.3 as a histogram displays bell shape. Therefore, the economic growth variable does not need any transformation and is original values are normally distributed.

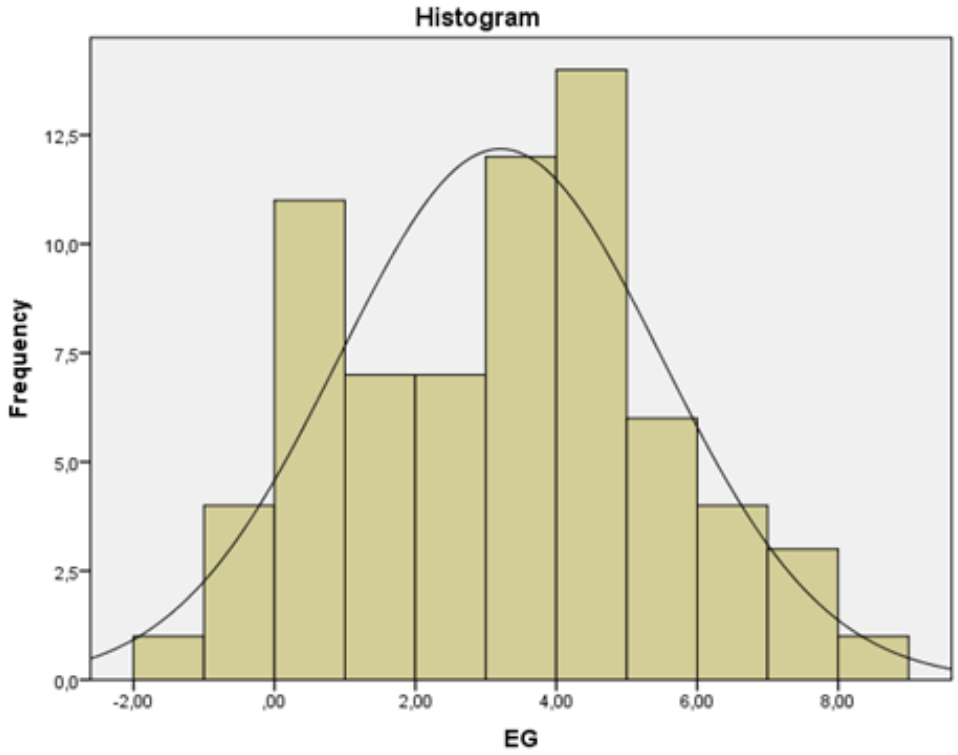

Figure 4.3 Normality graph (EG)

Some of the other independent variables also require transformation; these are Inflation, financial development and FDI from OECD. Whereas a change in terms of trade, trade openness, human capital and development level (which is already transformed and measured as a log of GDP per capita growth) show a normal distribution graphically and with satisfactory results of the Shapiro-Wilk test of normality and they do no need any transformation. Additionally, inflation and FDI from OECD after transformation have more bell shaped graphs; and Shapiro- Wilk test improves. All transformations for not normally

distributed variables and graphical representation and tests of normality for all other independent variables could be seen in Appendix B.

4.2.2 Multicollinearity

The assumption of no multicollinearity means that there are no independent variables that measure (approximately) the same. The absence of multicollinearity can be tested through two methods. The first method is to calculate the bivariate correlation coefficients for every two of the independent variables. There should be no perfect correlation between any two independent variables. Perfect correlation is assumed when the correlation amongst these variables is higher than or equal to 0.9 (De Vocht, 2007, p. 199). The levels of significance of the correlations in this aspect are not important.

	HC	LOGgdp	ToT	TRO	TCHFDI	TFD	TOECDFDI	TI	EG
HC	1	0.443**	-0.066	0.208	-0.218	0.248*	0.346**	-0.004	0.050
LOGgp	0.443**	1	0.079	0.116	-0.277*	0.064	0.256*	-0.115	-0.019
ToT	-0.066	0.079	1	-0.053	0.054	-0.353*	0.068	-0.053	-0.034
TRO	0.208	0.116	-0.053	1	0.164	0.196	0.421**	-0.257*	-0.040
TCHFDI	-0.218	-0.277*	0.054	0.164	1	-0.229	-0.142	-0.040	0.118
TFD	0.248*	0.064	0.353*	0.196	-0.229	1	0.410**	0.080	-0.015
TOECDFDI	0.346**	0.256*	0.068	0.421**	-0.142	0.410*	1	-0.093	0.039
TI	-0.004	-0.115	-0.053	-0.257*	-0.040	0.080	-0.093	1	0.121
EG	0.050	-0.019	-0.034	-0.040	0.118	-0.015	0.039	0.121	1

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Table 4.5 Correlations

To test for multicollinearity, the correlation matrix in Table 4.5 is used. The highest bivariate correlation exists between human capital (HC) and level of development (LOGgdp) which is equal to 0.443 and is significant at the level 0.01. However, it is still lower than 0.9 which, therefore there is no multicollinearity between these variables. Nevertheless, to double check for multicollinearity collinearity statistics is conducted and results presented in the table below.

	Collinearity Statistics	
	Tolerance	VIF
HC	0.696	1.436
LOGgdp	0.716	1.397
ToT	0.809	1.236
TRO	0.700	1.429
TCHFDI	0.812	1.231
TFD	0.646	1.548
TI	0.894	1.119
TOECDFDI	0.615	1.626

Table 4.6 Collinearity statistics

So Table 4.6 mainly contains information about variance inflation factor (VIF) which is inversely related to the tolerance value. Large VIF values (a usual threshold is 10.0, which corresponds to a tolerance of 0.10) indicate a high degree of collinearity or multicollinearity among the independent variables. According to the Table 4.6, none of the variables suffer from multicollinearity as the values of variance inflation factor - VIF is all smaller than 3 with acceptable tolerance level. Concequently, it is possible to confirm that there is no multicollinearity between variables. Therefore, this assumption for regression analysis is also met. Additionally, Appendix D will include collinearity statistics for main model and all other models which show that none of the models suffer from multicollinearity problems.

4.2.3 Bivariate correlation coefficients

So after the descriptive analysis of the data, it is now possible to conduct more explanatory analysis. Before doing multivariate regression analysis, results from the bivariate regression analysis are going to be briefly discussed. In this study, it is important to determine the relation between the dependent variable economic growth and the main independent variable FDI from China. Pearson's correlation coefficient, which presents the intensity and direction of a relationship, is used for calculating the bivariate correlation between variables. As seen in Table 4.5 the correlation coefficient between economic growth and FDI from China is equal to 0.118. First of all, this indicates that the direction of the relation two variables is positive, which means countries in which China invested more had positive growth rates. However, this is not to say that Chinese FDI causes economic growth; quite different, it just shows that higher economic growth rates were visible in countries with bigger FDI flows from China. The value of correlation coefficient itself indicates the strength of the relationship. In this case, 0.118 represents a rather weak relation, however, as seen in Table 4.5 it is the second variable after inflation regarding the strength of the link.

In reference to other independent variables, inflation has the biggest coefficient among all variables which is equal to 0.121. It means that countries with high inflation rates were growing faster. It is opposite of what was expected, according to the literature. However, it is explainable, as, for instance, inflation between 2% and 10% is often associated with economic growth. The human capital coefficient is the third independent variable according to its value and is equal to 0.050. The positive sign of the coefficient is what has been expected, according to the literature, because the more developed human capital base is said to lead to economic growth. Trade openness has the following highest coefficient (in absolute terms) equal to -0.040. The negative sign of the coefficient was not expected. However, trade liberalization can sometimes lead to negative growth, especially in the developing countries negative impact of trade openness can be expected when countries have specialized in low quality export product basket. FDI from OECD variable has the fifth strongest coefficient equal to 0.039. A positive sign of the coefficient was expected, according to the literature. Interestingly, this coefficient is smaller than FDI from China coefficient, which indicated the greater importance of Chinese FDI to the economic growth of sample countries. On the other hand, change in terms of trade and financial development variables both have negative coefficients which were not expected. Their values are small, -0.034 and -0.015 respectively. For financial development variable, this could have occurred because the proxy variable was used. Therefore, it possibly did not reflect financial development entirely. The last independent variable level development has a negative coefficient, which was predicted based on relevant literature.

4.3 Multivariate regression analysis

To answer the second sub-question and to test the hypothesis of this thesis multivariate regression analysis is used. Normality of all variables and multicollinearity has been already checked in the previous section, therefore in this section, the right model will be chosen; after that other assumptions of multivariate regression will be tested.

Before proceeding with remaining three assumptions of regression analysis, namely linearity, homoscedasticity and normal distribution of residuals it is first essential to choose the main model and only after that check those assumptions for that particular model. As already mentioned before in chapter three main model will be selected by gradually adding independent variables. This method is applied because for a relatively small sample it is impossible to include all independent variables. When the best model is found and all remaining assumptions of multivariate regression presented, the results of the test will be mainly analysed.

Tables 4.7 will present a summary of all models. The first model will start with dependent variables and main independent variable of this research (Chinese FDI) and inflation. For subsequent models, one by one other independent variable will be added based on bilateral coefficient values from table 4.5. Therefore, Model 2 will have Chinese FDI, inflation and human capital. For Model 3 development level will be added. Model 4 will include Chinese FDI, inflation, human capital, development level and financial development. Whereas for Model 5 OECD FDI variable will be added. Model 6 will have all variables included in model 5 and change in terms of trade, whereas Model 7 will consist of all control variables of this research (Model 7 will include all variables of Model 6 and trade openness).

Dependent variable: EG

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
TCHFDI (Chinese FDI)	0.921**	1.078*	1.142*	1.091*	1.075	1.065	1.140
TI(Inflation)	0.235***	0.234***	0.237***	0.240***	0.238***	0.241***	0.233***
HC(Human capital)		0.276**	0.238**	0.235**	0.251	0.250	0.262
LOGgdp (Development level)			5.147E-5	4.943E-5	5.213E-5	5.043E-5	5.250E-5
TFD (Financial development)				-0.005	-0.006	-0.008	-0.007
ToT (Change in terms of trade)					-0.626	-0.830	-0.885
TOECDFDI (OECD FDI)						0.084	0.117
TRO(Trade openness)							-0.007
N	70	70	70	70	70	70	70
Adjusted R square	0.150	0.190	0.182	0.172	0.161	0.151	0.140
F	7.076	6.393	4.834	3.875	3.199	2.749	2.409
Sig.	0.002	0.001	0.002	0.004	0.008	0.015	0.025
Std. Error of the Estimate	2.92725	2.85723	2.87149	2.88798	2.90864	2.92561	2.94330

***. Correlation is significant at the 0.01 level
**. Correlation is significant at the 0.05 level
*. Correlation is significant at the 0.10 level

Table 4.7 Composition of models

According to the Table 4.7, the adjusted R-squared is a modified version of R-squared that has been adjusted for the number of predictors in the model. The adjusted R-squared increases only if the new term improves the model more than would be expected by chance. F value is the ratio of the regression mean square and residual mean square (Greene, 2016). The test checks the null hypothesis that the model does not have any predictive capability. In other words, the whole population regression coefficients are equal to zero. The null hypothesis is rejected if F value is large with acceptable significance level.

So from the table 4.7, it is evident that F is significant in all models. However, R squared differs from one model to another. Therefore, it is clear that model 2 with three independent variables, namely Chinese FDI, inflation and human capital has highest explanatory power with the highest adjusted r square equal to 0.190. The adjusted r square started to decrease as more and more variables were added to the model. Since in general sample size of this study is relatively small, a model with three variables is an appropriate option. Now, once the main model of this thesis is selected, it is possible to continue with remaining assumptions for multivariate regression.

4.3.1 Linearity

First of all, the assumption of linearity has to be met to run the multiple regression analysis. Linearity is tested by looking at the scatter-plot and observing the arrangement of residuals. There must be a linear relationship between the dependent variable and all the independent variables. The linearity can also be tested by looking at the scatterplot of residuals in Figure 4.4. Additionally, Appendix C will include all linearity scatterplots for the dependent variable and each independent variable of main model (model 2). Residuals are the differences between the predicted values by the model and the real scores of the data. These differences refer to the extent to which the model is incorrect: the smaller the residuals, the more correct the model. Therefore, to have a right model, it is expected that the desired values of the residuals are equal to zero for every Y vale. In other words: the residuals should display a linear relationship. According to De Vocht (2007), this can be checked by constructing a scatterplot of the residuals. When the residuals in the scatterplot do not follow a certain pattern (like a parabola) and are rather situated randomly, the regression model is linear. The residuals should all be located in a balanced way around the reference line and not concentrated in around any particular spot. Figure 4.4 shows that there is a reasonable amount of linearity because residuals do not display any particular pattern (for instance, parabola). Therefore the assumption of linearity is met.

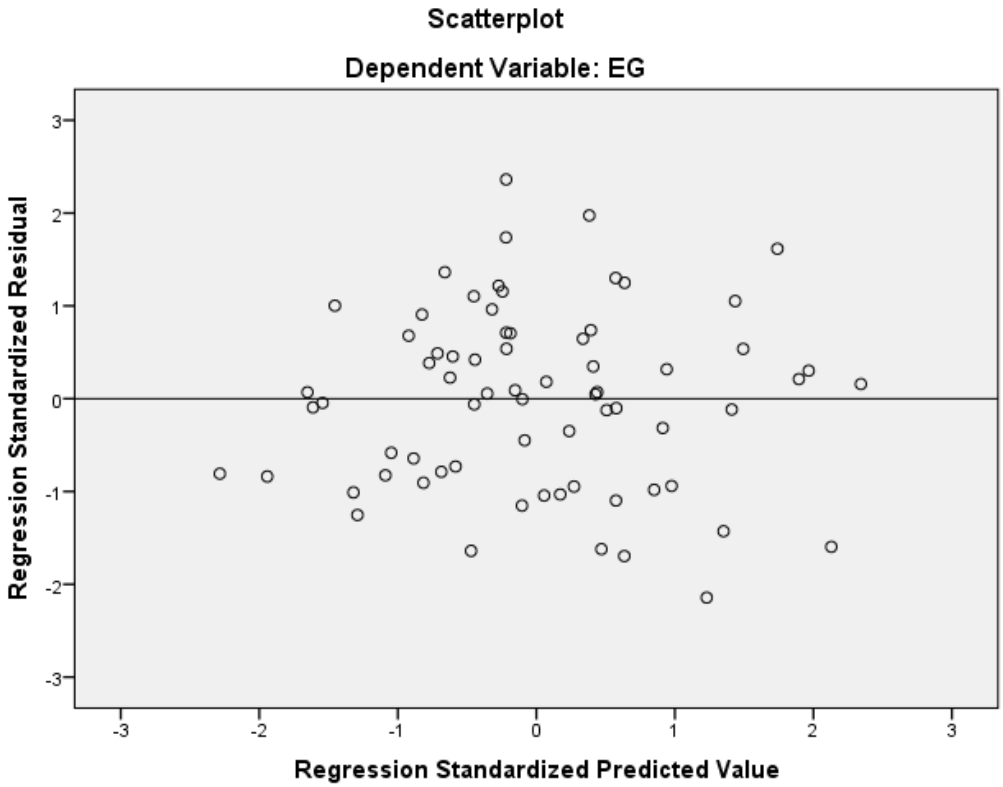

Figure 4.4 Linearity Scatterplot

4.3.2 Normality of residuals

Another assumption of the regression analysis that has to be met says that the residuals of the dependent variable have to be normally distributed. When the histogram based on standardized residuals (residuals divided by their estimated standard deviation) displays a normal curve, and when in the normal probability plot based on standardized residuals, the residuals are situated around the diagonal line, there is a normal distribution. The advantage of working with residuals is that a residual plot is not limited to one independent variable, but includes all independent variables. So from the figure 4.5, it is visible that residuals have normal distributions, there is no positive or negative skewness (the scores are symmetrically distributed), and there is no high kurtosis (the distribution is not too flat or too peaked).

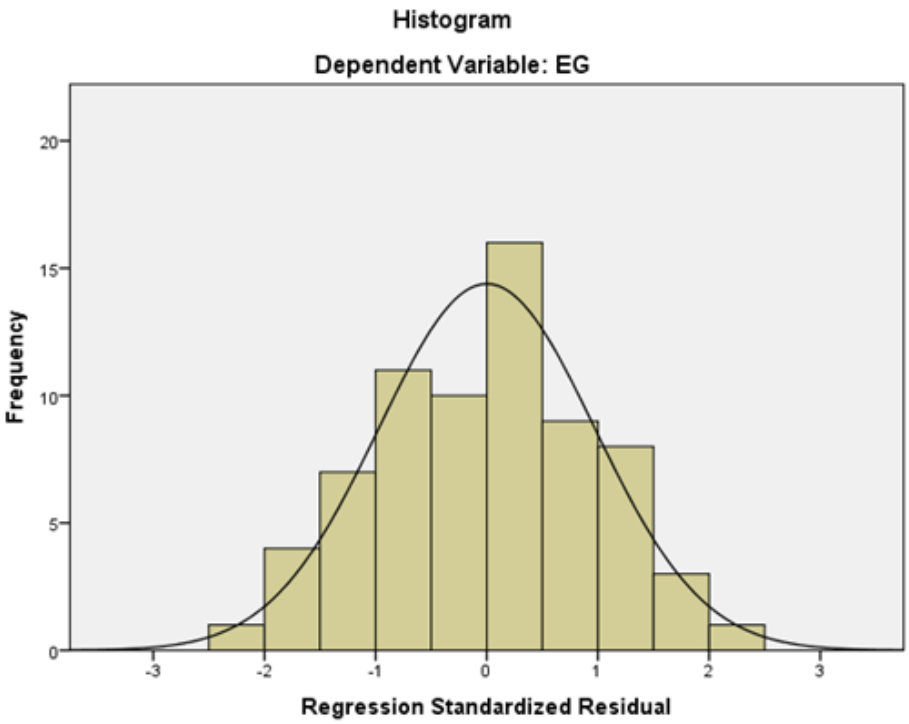

Figure 4.5 Normality graph (residuals)

To double check normality, it is important to run Shapiro-Wilk tests. The significance of the Shapiro-Wilk (Table 4.8) shows that the distribution is normal. Thus it is evident that the assumption of normality of residuals is met.

	Shapiro-Wilk		
Studentized Residual	Statistic	Df	Sig.
	0.988	70	0.718

Table 4.8 Normality test (residuals)

4.3.3 Homoscedasticity

Another assumption of regression analysis argues that there should be homoscedasticity. It means that the variance of the residual terms should be constant for all independent variables. To check if this assumption is met scatterplot of residuals in Figure 4.4 should be checked. When interpreting this for homoscedasticity, it is important to look if all values are situated around the horizontal zero-line in as a balanced way as possible. If values are located in an unbalanced way and the variances are very unequal, there is heteroscedasticity.

This scatterplot compares the standardized residuals with the predicted residuals, which shows whether the variance of the residuals is constant (homogeneous). Figure 4.4 indicates that the residuals do not display a clear trumpet form (values from right/left to the left/right do not keep going further from the zero line), and residuals are spread randomly enough. It shows that the model is homoscedastic, and homoscedasticity assumption is met as well.

4.4 Explanatory analysis

4.4.1 Multivariate regression analysis

Since all information for the model summary is presented in Table 4.7, there is no need to add another table. As already discussed previously, the model summary gives more information about the quality of the model with eight independent variables and different combinations of those. It provides the information about the extent to how good this model explains the changes in the dependent variable.

In general, R square represents the total amount of variance of the dependent variable that can be explained by the independent variables. It is an overall number, and it does not distinguish how each variable influences the dependent variable. However, to estimate the value of R square for the total population, the adjusted R square is measured. It is necessary because "if another independent variable is added it is very unlikely that the correlation between that independent variable and the dependent variable will be exactly zero" (Miles & Shevlin, 2001). Adjusted R square for the main model is equal to 0.19. It means that for the whole population 19.0% of the variance of economic growth is explained by three independent variables, namely Chinese FDI, inflation and human capital. Based on the same table it can be seen that adjusted R square decreases once the model has four independent variables. Whereas, the lowest explanatory power is with all eight independent variables as model 7 only explains 14.0% variance of the dependent variable. Similarly, standard error of the estimate is also lowest in model two, whereas it starts increasing as more and more independent variables are added to the model.

Based on the same table 4.7 it can be seen that in a model 2 F value is quite high (6.393) with an acceptable significance level (0.001). Since significance value is smaller than the threshold of 0.05, it is possible to conclude that the model as a complete entity is significant in explaining the 19.0% of the changes of economic growth. Therefore, the null hypothesis that model is in explaining the variance of values of dependent variables is rejected. When comparing the main model to other models, it can be

seen that model 6 and model 7 are statistically insignificant explaining 15.1% and 14.0% respectively. All other models are significant in explaining different level of variance in economic growth.

Additional all coefficients of the main model (model 2) are positive, which is not in accordance to what has been predicted. Namely, inflation was predicted to have a negative coefficient, according to table 4.7 it has a small positive coefficient equal to 0.234. However, as already mentioned in previous parts, this can sometimes happen under certain circumstances. Both inflation and human capital have similar coefficients, whereas Chinese FDI has more than three times bigger coefficient. Furthermore, the significance of the variables is marked with asterisks. The test of p-value shows the significance of the coefficient, and it is assumed to be significantly different from 0 if the p-value is larger than 0.05. In this particular case among three independent variables, one is significant at level 0.01, namely inflation. Indeed, inflation is the only independent variable which is significant in all models. On the other hand, a human capital variable has the coefficient of the same sign as it was expected (positive) and is significant at level 0.05. In general, it can be seen that human capital is statistically significant in model 2, model 3 and model 4. As soon as six independent variables are added to the model, human capital loses its significance.

The main independent variable of this research - Chinese FDI has a positive coefficient equal to 1.078 which is significant at the 0.10 level and remains statistically significant until model 5. It is in accordance with theoretical expectations presented in previous chapters. Indeed the coefficient for Chinese FDI is the biggest among all other independent variables. Therefore, based on the results it can be seen that the hypothesis that higher amount of Chinese FDI flows leads to higher economic growth in developing countries is not rejected. It means that in this sample, countries experience higher economic growth when there was more Chinese investment in the country.

Regarding other models and different combinations of independent variables, it can be seen that none of other independent variables are statistically significant except independent variables already discussed from the main model. However, quite interestingly, some variables showed the coefficient signs, which were not expected. For instance, financial development variable has negative coefficients, even though positive coefficients was expected. In the case of financial development, as measured as a domestic credit to the private sector, the negative relation can be explained by an inefficient credit allocation or poor financial regulation. For instance, credit may be provided for projects that do not provide future economic benefits and do not stimulate investment. These findings are consistent with Ayadi et al. (2013) work who also found that the volume of the banking system itself is not relevant to achieve growth; what matters is the efficiency and quality of financial sector. Since the sample consists

only developing countries, these findings indeed may reflect the inefficient financial regulation and poor performance of the banking system.

Quite similarly unexpected results were found concerning a change in terms of trade and trade openness. Both variables have negative coefficients as for instance seen in model 7. Even though this was not expected, it is explainable under certain circumstances. General view that trade liberalisation leads to economic growth is contested in both theory and empirical literature. Many authors argue about possibly negative impact on trade liberalization in developing countries in cases where trade liberalizing policies are implemented without caution. For instance, Leamer (1998) argues that trade liberalization can be a primary source of the economic downturn since lower tariffs, can make imports more attractive than domestic production. Consequently, this may result in adverse effects on the local economy and domestic investment which in turn may be the reason for negative economic growth rates.

Another interesting finding from other models is the impact of FDI from OECD countries. As seen from model 6 and 7, FDI from OECD has a positive coefficient same as was expected. Nevertheless, when comparing this coefficient with FDI from China coefficient from the same models 6 and 7 or main model of this research (model 2), it becomes apparent that Chinese FDI coefficient is much bigger (for instance, in model 6 it is ten times larger). It implies that relatively Chinese FDI is more important than the OECD FDI for explaining economic growth in developing countries. And even though FDI from OECD variable is statistically insignificant, this implies that importance of origin of FDI should not be underestimated.

5. CHAPTER. CONCLUSIONS

This thesis aimed to contribute to the existing knowledge about the relationship between FDI and economic growth. Precisely, it analysed the impact of FDI from China on recipient country's economic growth. So far, the literature mainly concentrated on explaining FDI from developed countries to developing countries and significantly less attention was given to the role of FDI from emerging economies. Therefore, this thesis aimed to test the relationship between FDI and economic growth from a Chinese perspective. This leads to the main research question of this thesis which is:

What is the effect of Chinese FDI on the growth of developing countries?

To answer the main question, two sub-questions were defined and were answered in previous chapters. Therefore, in this chapter, answers to the sub questions will be summarized. It will be followed by providing an answer to the central research question by interpreting the results of multivariate regression analysis which were presented in chapter 4. Additionally, this chapter will also present the limitations to the research and will suggest policy implications. This chapter will be concluded by analysing research implications and recommending venues for future research.

5.1 Answers to the sub-questions

The first sub-question was defined as:

I. *What does the existing literature tell about FDI and economic growth of developing countries in general, and about Chinese FDI in particular?*

This sub-question was analysed and answered in Chapter 2 by reviewing the literature and existing theories. Most of the existing research on FDI and economic growth concentrated on explaining the impact of FDI flows from the developed world to the developing countries. Most of the theoretical literature emphasized the direct benefits of FDI and different channels of spill-overs. A much smaller part of literature discusses the negative impact FDI can have on economic growth, by mainly emphasizing how foreign investors can hinder the economic growth of developing countries. The empirical research on this relation reflects central theoretical assumptions; part of the empirical literature found that FDI impacts economic growth positively, whereas another big part of empirical literature shows that FDI either has no effect or adverse effect on economic growth. Some presented the results of reverse causality. Concerning FDI from China specifically, significant theoretical assumptions are made about the benefits of FDI flows from one emerging country to another. Mainly,

theory suggests that different (in this case, more positive) impact of FDI from China and other developing countries may be expected due to similarities in technology level, business practices and because investors from emerging economies are better at dealing with institutional and economic challenges in the host country. Therefore, based on the fact that the growth enhancing effect of FDI from emerging countries may be expected, the hypothesis that Chinese FDI leads to economic growth in developing countries was presented.

The second sub-question was defined as:

II. *What are empirical findings of this research on the impact of Chinese FDI on economic growth of developing countries*

The second sub - question was answered in the previous chapter. Multivariate regression analysis was conducted in order to respond to this sub-question. After presenting different combinations of models and checking for several assumptions, the best model was chosen. The results showed that the selected model explains 19.0% variation of the dependent variables-economic growth. Furthermore, the coefficient of Chinese FDI variable was positive as it was expected, and these variables turn out to be statistically significant at the 10 % level which is relatively sufficient in small sample as this. Among two other variables, human capital has expected positive coefficient, whereas inflation had a negative sign which was not expected, according to theory, yet is explainable and can be expected under certain circumstances.

5.1.1 Chinese FDI and economic growth

Based on the coefficients of multivariate regression analysis, which have been presented in the previous chapter, it can be seen that the main hypothesis that the larger amount of FDI from China to developing countries (more FDI from China) leads to higher rates of economic growth in developing countries is not rejected. The results of the models show that the relationship between dependent variables economic growth (EG) and Chinese FDI (TCHFDI) has a positive sign; this is what has been expected.

Additionally, Chinese FDI is statistically significant at the 10 % level (p-value is 0.08). In other words, the probability that these results were delivered from the regression model happened by chance is present yet not very likely. Therefore, according to this model it can be stated that the more China invests in developing countries, higher economic growth rates are recorded in those countries. It leads to the fact that the hypothesis of this research is not rejected. Mainly, it suggests that in the observed sample of

countries in that specific time period one of the factors- FDI from China was one of the causes of their economic growth.

Based on the theoretical assumption which predicts that FDI from emerging countries should bring growth enhancing results (presented in Chapter 2) it was expected that the relation between FDI from China and economic growth in developing countries should be positive and statistically significant. This assumption was based on the general theory of FDI impact on economic growth and specifically on theoretical argumentation on the subject that FDI from emerging countries is more suitable for other developing countries and is more likely to cause positive economic growth. Since there is little empirical literature to support or reject this theoretical assumption in general and in the Chinese case specifically, the results of this thesis have added value since it shows that for a particular sample of countries Chinese FDI is significant factors influencing economic growth. Even though the significance is at the 10% level, it can be considered influential for this rather smaller sample of countries. Additionally, FDI from China turns out to have a bigger effect that FDI from OECD, which in a way supports theoretical assumptions of the importance of country of origin presented in chapter two. Therefore, the result is not only in accordance with findings of Orr and Kennedy (2008) or Bandara (2012) who also found a positive impact of FDI from China on economic growth of developing countries. Specifically, these findings support the arguments presents in section 2.4 claiming the importance FDI country of origins and the role of emerging economies as a source of FDI.

5.1.2 Human capital and economic growth

Since two other variables showed an even higher significance level (human capital and inflation both significant at the 5 % level), it is important briefly to interpret the results for these remaining variables too. The positive coefficient of human capital variable shows that countries with more developed human capital are more likely to have positive economic growth rates. In other words, longer average year of schooling leads to higher economic growth. A positive sign of the coefficient is indeed in accordance with the theory, because according to the findings of the majority of authors (for instance, see Barro, (2001)) human capital is one of the most significant factors to influence economic growth. Additionally, the significance of the t-test shows the p-value of 0.041. It is lower than threshold 0,05 which means that the results are statistically significant, and there is little likelihood that results happened by chance. Therefore, it is possible to conclude in this particular case that higher level of human capital will lead to higher rates of economic growth.

5.1.3 Inflation and economic growth

Another significant variable in this model is inflation. Inflation in this model also has a positive coefficient. These results are not in accordance with theoretical expectations from chapter two because based on academic literature negative coefficient was expected for inflation variable. In other words, it was assumed that inflation should negatively impact economic growth; the higher inflation rate would lead to lower economic growth rates. However, the positive coefficient for inflation is not something completely unexplainable. Indeed, inflation usually between 2% and 10 % is accompanied by high economic growth. Consequently, the results of this thesis (even though unexpected) are explainable in the literature as the optimal level of inflation. Therefore, the positive coefficient for inflation can occur because of this, especially if taking into account data from the descriptive statistics part in chapter 4 as it shows in mean section (average) for inflation a value of 5.635. Indeed, among all 70 countries, the majority or around 70% (47 countries) had inflation rates between 2% and 10%.

5.2 Answer to the main research question

So now since results from multivariate regression were presented and interpreted, the answer to the main research question can be provided. The central research question was already presented in the first chapter and is:

What is the impact of Chinese FDI to the economic growth of developing countries?

The main hypothesis of this research states that more Chinese FDI in developing countries leads to the economic growth of those countries. To make sure that a relationship between Chinese FDI and economic growth is indeed a relation between these two variables, multiple regression analysis was carried out which is controlled for other significant control variables. The selection of control variables was based on previous literature on the causes of economic growth, which states that economic growth is affected by developed human capital base, inflation, terms of trade changes, and development level, trade openness and financial development. Additionally, FDI from OECD is included as control variables to distinguish effects of Chinese FDI on economic growth of the research population. However, based on results of combinations of different variables, a model with three independent variables was chosen.

The positive coefficient sign of Chinese FDI variable (which is in accordance with theoretical assumptions presented in Chapter 2) indicates that indeed countries in which Chinese invested more were also growing economically. Moreover, positive relation found between FDI from China and economic growth in developing countries provides empirical evidence to the theoretical assumptions about the

importance of FDI origin (section 2.4). Additionally, Chinese FDI variable showed a significance level at 10%. It means that the probability that these results happened by chance is still present. However, it is rather not possible to say that Chinese FDI is absolutely insignificant; 10% significance level is relatively high for the rather small sample. Therefore, the answer for central research question based on the results of this thesis is that relation between Chinese FDI and economic growth is positive and statistically significant. Additionally, the results of multivariate regression show that economic growth can also be caused by human capital and inflation, which are both statistically significant. A positive sign of coefficient for human capital is in accordance with the theory, whereas inflation coefficient is not in accordance with theoretical expectation but it is explainable under certain circumstance.

5.3 Limitations of this research

In reference to the limitations of this research, there are a couple of issues which should be taken into the account when discussing the results of this study. Firstly, there are certain limitations concerning the generalization of research findings or to what extent the results could be generalized. This study is based on cross-sectional design. Therefore, it analyses data on FDI for certain years (2008, 2009 and 2010) and measures its impact in years 2009, 2010 and 2011. Consequently, it fails to take into account the development of the relation between economic growth and FDI from China. In other words, the fact that FDI from China showed a positive impact on economic growth in these years does not imply anything about what could have been the findings if the relation between variables was measured in other years. Additionally, to discover the development of the relationship between FDI from China and economic growth and to obtain more information on causality between two variables, other more sophisticated statistical design should have been applied and longer period should be analysed. However, keeping in mind that there is a scarcity of reliable data on FDI, which would distinguish the origin of FDI, the cross sectional design was the most appropriate option.

The second limitation of this thesis is that even though the positive relation was found between FDI from China and economic growth in developing countries, the findings did not explain through which channels this have occurred. In other words, the results of the findings do not provide any specific details about the relation. Speaking more precisely, only from the results of this thesis it is impossible to state whether the country of origin or for instance smaller technology gap or any other particular feature (or a combination of couple factors) of Chinese investment have the biggest impact in causing positive economic growth. Nevertheless, this is not the primary focus of this research. Additionally, having in mind the scarcity of empirical research on FDI from emerging countries, and from China specifically, the results of this study already have a lot of added value.

5.4 Policy implications

This study showed that even though Chinese FDI and economic growth is positively related, this relation is statistically significant. It has many important policy implications. First of all, since increase standards of livings in developing countries and improving the economic situation in developing economies has been one on the agenda in both developed and the developing countries for many years, the results of this thesis provide evidence on one of the ways how this can be achieved. The enlargement and diversification of the sources of FDI may reduce in general the fluctuations of FDI, which also can have an adverse impact on economic growth in developing countries. On the other hand, economic development of developing countries could reduce inequality between the global South and the global West as increasing inequality worldwide has been one of the main problems and challenges of our times. Additionally, the improved economic situation consequently could raise the standards of living, which entails many things such as better health care and better education. Therefore, evidence of what causes economic growth in developing countries is valuable to improve the situation in poorer countries. Additionally, in reference to the specific origin of FDI, the importance of investors from emerging economies is evident in the findings of this research as research showed a statistically significant relation between FDI from China and economic growth and less significant link between FDI from OECD and economic growth.

Regarding the control variables of this research, another important policy implication should be emphasized. As seen from the results, human capital was one of the independent variables which showed a positive and significant impact on economic growth of developing countries. Therefore, it cannot be underestimated. Additionally, when analysing standard deviations, both inflation and human capital have a relatively bigger impact on the growth of developing countries. It means that indeed countries with the most developed human capital are more likely to experience positive economic growth rates. Or for instance, a certain level of inflation (optimal level) can also stimulate economic growth more than FDI from China. It implies that policy-makers, especially relevant institutions, organizations and government bodies cannot underestimate for instance the importance of education in the developing world. Designing policies aimed to improve the education system of all levels, ensure quality and the amount of education each citizen receives in a country may be one of the ways (yet important ways) of how to sustain economic development and economic growth in emerging economies. Additionally, efficient instrument and relevant policies aimed to determine the optimal level of inflation can only strengthen the positive impact of FDI from China specifically.

5.5 Research implications and recommendations for further research

When taking into account main limitation of this study, the future venues of the research can be identified. Consequently, to obtain more scientific evidence about the relation between two variables, the subjects should be studied applying a different method than the one used in this thesis. For instance, the different design would add more robustness to the findings of this research. Indeed, different period or a different sample of countries will also add more evidence on the subject and would allow obtaining even more generalizable results.

Additionally, the topic of this thesis could be expanded adding analysis on the features of FDI from emerging countries. It would allow identifying what is so special in investment from emerging economies and possibly will add empirical evidence on the differences between investment originating from developing and developed countries. Speaking more precisely, even though it is interesting to study what kind of impact FDI from a particular country may have on economic growth of recipient countries, more detailed information on, for example, channels of FDI spill-over will be useful to expand the findings of this research. For instance, whether Chinese FDI influences economic growth of developing countries through technological spill-over or for example, it is human capital that is developing more in a country receiving Chinese investment. Moreover, since in general the interest in this particular subject was partly driven by the increasing role of BRIC as a block, research on FDI from other BRIC countries could be conducted. It would allow drawing more general conclusions on the role of South-South ties. In order to analyse the dynamics within BRIC countries, the comparative study on FDI from different BRIC countries could be implemented in the future.

Finally, even though FDI and economic growth literature is broad and is expanding every year, there is relatively less attention given to the role of emerging countries as a source of FDI rather than the recipient. In other words, literature on FDI is still very Western focused. Therefore, any attempts to expand the existing pool of literature on FDI by concentrating on emerging countries are of added value. Consequently, this not only would expand the literature on the relation between FDI and economic growth but also would provide relevant information for policy makers. Finally, more research on FDI from emerging countries would reflect better the dynamics of the current world, where the role of non-western powers are increasing.

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APPENDICES

APPENDIX A. FULL COUNTRY SAMPLE

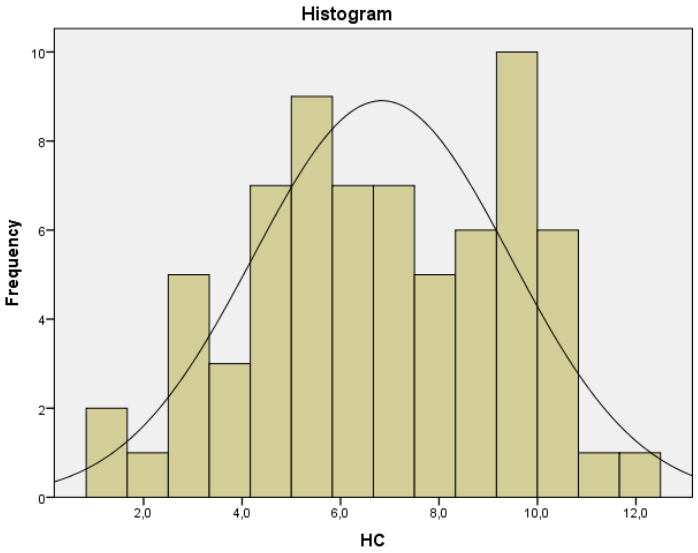
Afghanistan
Algeria
Azerbaijan
Bangladesh
Bolivia
Botswana
Brazil
Brunei Darussalam
Bulgaria
Cambodia
Cameroon
Colombia
Congo, Democratic Rep. of
Congo, Rep
Côte d' Ivoire
Ecuador
Egypt
Fiji
Gabon
Georgia
Ghana
Guinea
Guyana
Honduras
India
Indonesia
Iraq
Jamaica
Jordan
Kazakhstan
Kenya
Kyrgyzstan
Lao People's Dem. Rep.
Liberia
Madagascar
Malaysia
Malawi
Mali
Mauritania

Mauritius
Mexico
Morocco
Mozambique
Namibia
Nepal
Niger
Nigeria
Pakistan
Panama
Paraguay
Peru
Philippines
Romania
Samoa
Seychelles
Senegal
Serbia
South Africa
Sri Lanka
Sudan
Tajikistan
Tanzania
Thailand
Togo
Tunisia
Turkey
Ukraine
Vanuatu
Vietnam
Zambia

APPENDIX B. NORMALITY TESTS FOR CONTROL VARIABLES

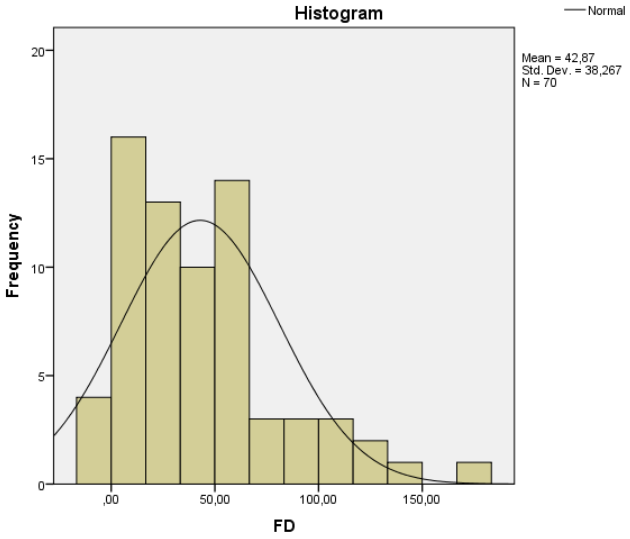
Human capital (HC)

	Shapiro-Wilk		
HC	Statistic	Df	Sig.
	,976	70	,192



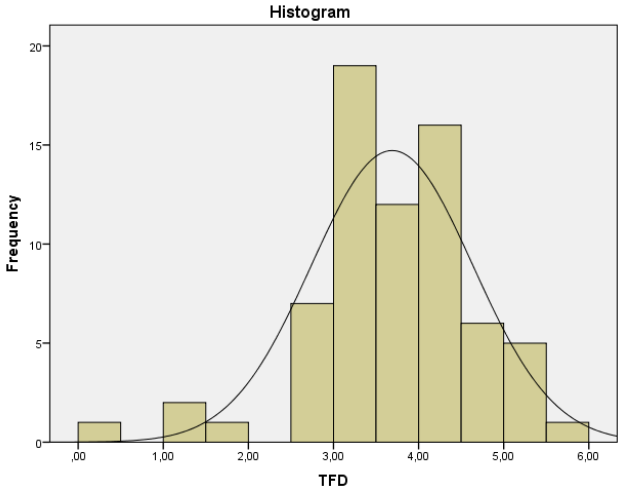
Financial development (FD) before transformation

	Shapiro-Wilk		
FD	Statistic	df	Sig.
	,923	70	,000



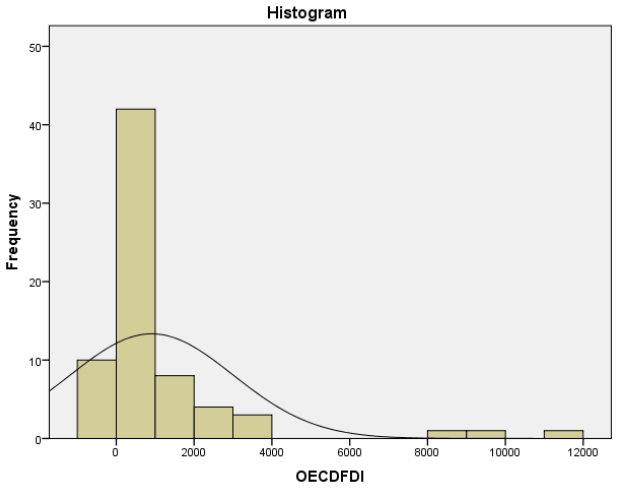
Financial development (FD) After adding constant of (+16.5) and raise power to 1/3

	Shapiro-Wilk		
TFD	Statistic	df	Sig.
	,947	70	,005



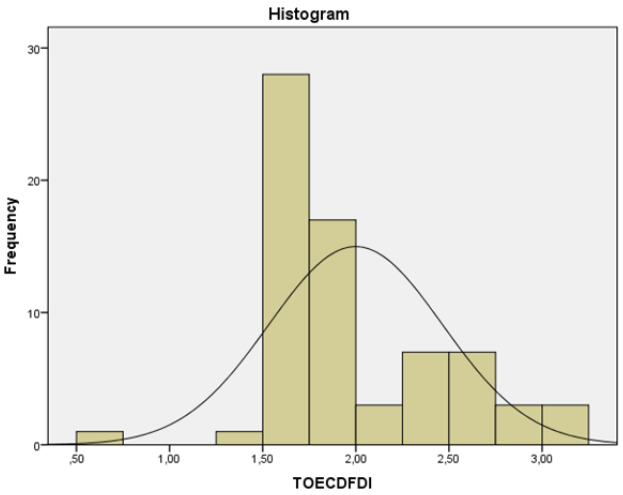
FDI OECD Before transformation

	Shapiro-Wilk		
OECDFDI	Statistic	Df	Sig.
	,489	70	,000



FDI OECD after adding 0.5 and using Log

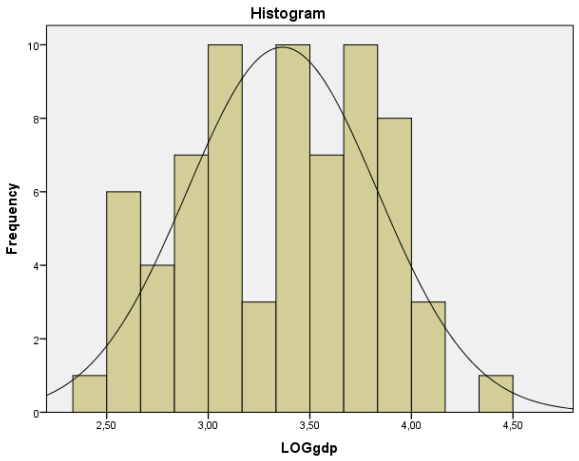
	Shapiro-Wilk		
TOECDFDI	Statistic	Df	Sig.
	,881	70	,01



Level of development (LOGgdp)

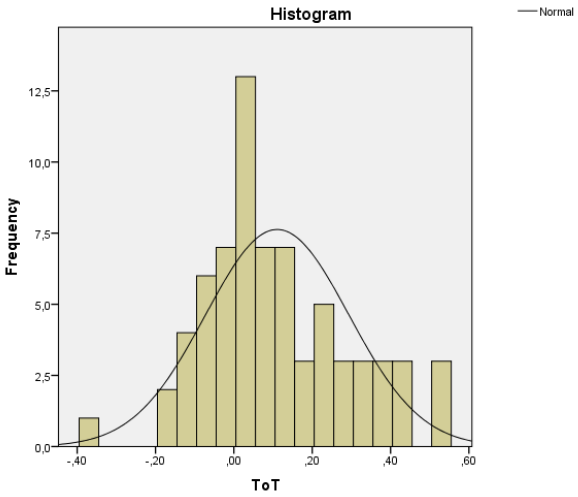
Tests of Normality

	Shapiro-Wilk		
LOGgdp	Statistic	df	Sig.
	,967	70	,061



Trade openness (TRO)

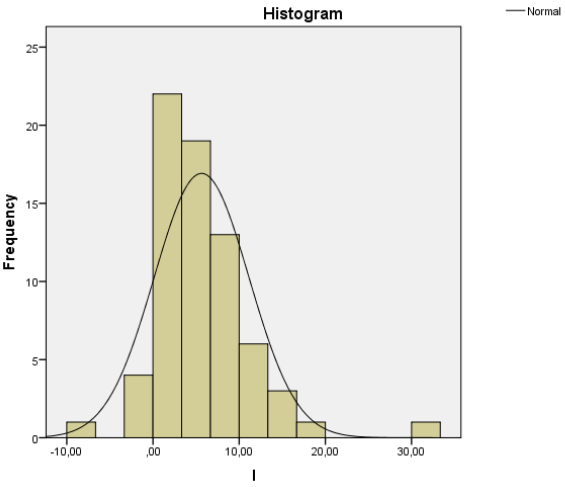
	Shapiro-Wilk		
	Statistic	df	Sig.
ToT	,955	70	,013



Infation (I) Before transformation

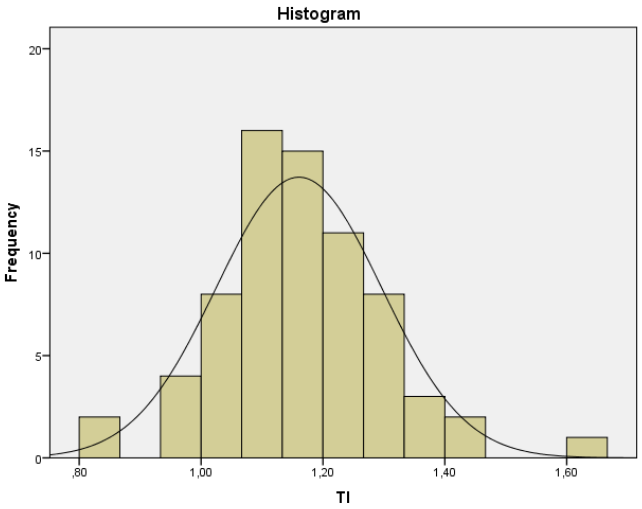
Tests of Normality

	Shapiro-Wilk		
I	Statistic	df	Sig.
	,882	70	,000



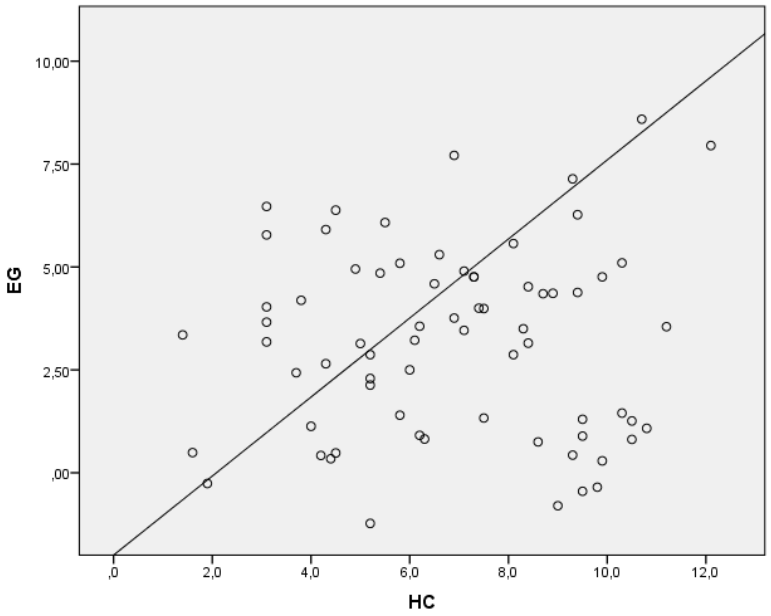
Inflation after adding (+9.5) and using Log function

	Shapiro-Wilk		
	Statistic	df	Sig.
TI	,983	70	,451

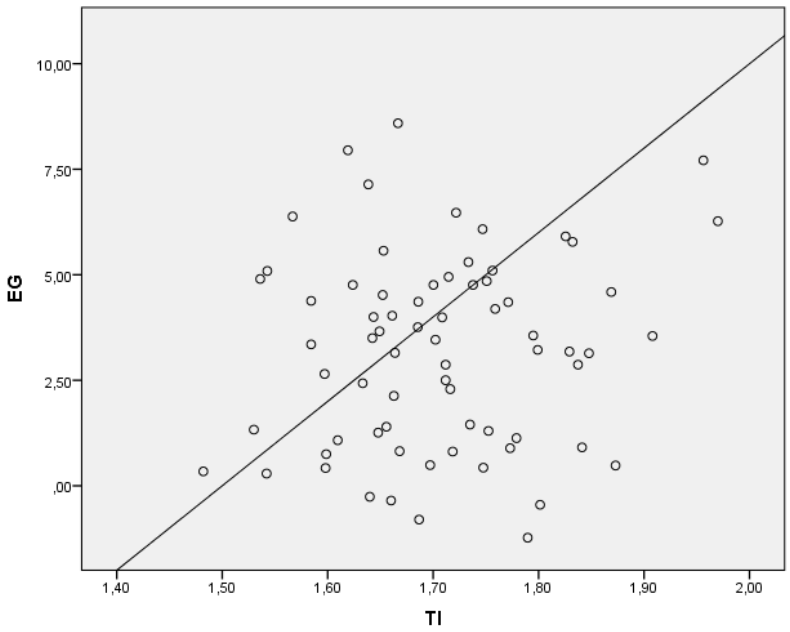


APPENDIX C. SCATTERPLOTS FOR ALL VARIABLES

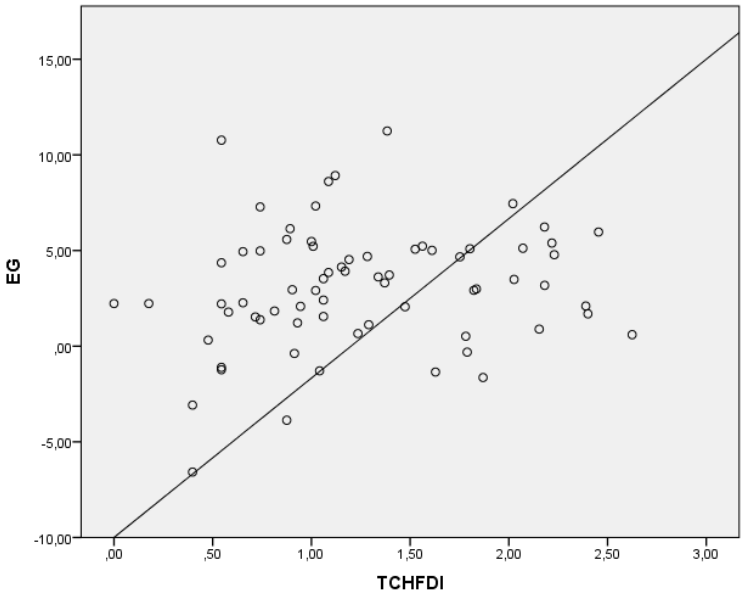
Scatterplot bilateral correlation Economic growth and human capital



Scatterplot bilateral correlation economic growth and inflation



Scatterplot bilateral correlation economic growth and Chinese FDI



APPENDIX D. MULTICOLLINEARITY TEST FOR ALL MODELS

Multicollinearity test for model 1

Model		Collinearity Statistics	
		Tolerance	VIF
1	TCHFDI	0.980	1.020
	TI	0.980	1.020

Multicollinearity test for model 2 (main model)

Model		Collinearity Statistics	
		Tolerance	VIF
2	TCHFDI	0.965	1.037
	TI	0.980	1.020
	HC	0.984	1.016

Multicollinearity test for model 3

Model		Collinearity Statistics	
		Tolerance	VIF
3	TCHFDI	0.935	1.070
	TI	0.972	1.028
	HC	0.801	1.249
	LOGgdp	0.776	1.289

Multicollinearity test for model 4

Model		Collinearity Statistics	
		Tolerance	VIF
4	TCHFDI	0.911	1.097
	TI	0.967	1.034
	HC	0.771	1.298
	LOGgdp	0.774	1.291
	TFD	0.921	1.085

Multicollinearity test for model 5

Model		Collinearity Statistics	
		Tolerance	VIF
5	TCHFDI	0.905	1.105
	TI	0.957	1.044
	HC	0.769	1.301
	LOGgdp	0.767	1.304
	TFD	0.837	1.195
	ToT	0.879	1.138

Multicollinearity test for model 6

Model		Collinearity Statistics	
		Tolerance	VIF
6	TCHFDI	0.905	1.106
	TI	0.951	1.051
	HC	0.768	1.301
	LOGgdp	0.766	1.306
	TFD	0.696	1.436
	ToT	0.848	1.180
	TOECFDI	0.814	1.229

Multicollinearity test for model 7

Model		Collinearity Statistics	
		Tolerance	VIF
7	TCHFDI	0.812	1.231
	TI	0.894	1.119
	HC	0.696	1.436
	LOGgdp	0.716	1.397
	TFD	0.646	1.548
	ToT	0.809	1.236
	TOECDFDI	0.615	1.626
	TRO	0.700	1.429