

Foreign Direct Investment and its Effects on Income Inequality

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Foreign Direct Investment and its Effects on Income Inequality

An empirical approach using instrumental variable estimation

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Preface

This thesis is part of the five-year program for the degree of Master of Economic Theory and Econometrics at the University of Oslo. Unfortunately, it marks the end of a remarkable, memorable, educational and challenging time here, but I am excited about what the future has to offer.

The reason for choosing this particular topic for the thesis is because of my interest in development economics as well as the economics of international trade. I started to study economics in order to obtain a better understanding of the world, because I believe that many mechanisms can be explained by looking to economic theory. I hope that when I leave the University, I will be able to use the knowledge that I have acquired here, in order to do something that is beneficial both for society and my surroundings.

I would like to use this section, as an opportunity to thank some of the people that have supported me and guided me throughout the writing process. First up is my supervisor, Andreas Moxnes - thank you for your guidance, advice and helpful feedback. I would also like to thank Nikolai Vike, Eyo I.Herstad and my brother Filip Rye for suggestions and constructive comments along the way. Finally, I want to thank my family and friends for the moral support and love throughout the process. This would not have been possible without you.

Potential errors and mistakes are my own.

Oslo, November 2016

Suzanna-Zora Rye

Abstract

During the last twenty years, developing economies have attempted to attract as much foreign direct investments (FDI) as possible into their countries. Stories about glorious scenarios of improved economic growth, as well as a reduction of poverty and inequality within a country, has made FDI something remarkably sought after; something highly welcomed in economies that experience a halt in their development progress, and need a push in the right direction towards growth and prosperity. Despite vast research on the effects of FDI, economists haven't managed to attain a satisfactory conclusion on how it alters income inequality and poverty within the host country, nevertheless. Most analyses are concentrated around the growth enhancing repercussions and the increase in productivity. But if FDI should be used as a poverty-fighting tool, it is important to have a clear understanding of how it works, what the long-lasting effects are and under what type of framework we can obtain the most positive results for both the host country, as well as for foreign companies seeking to invest.

Table of contents

1	Introduction	1
2	The research topic and motivation.....	3
2.1	Method.....	3
2.2	The structure of the thesis	4
3	Background information and description of concepts	5
3.1	What is foreign direct investment? A definition of concept.....	5
3.2	The trend of FDI, income inequality and poverty – an overview.....	7
4	Theoretical Background.....	14
4.1	Economic Mechanisms	14
4.2	Review of previous literature.....	20
5	Data.....	25
5.1	The dataset	25
5.2	The variables.....	28
6	The model	30
6.1	Results and analysis	34
6.1.1	Income inequality: the Gini index	34
6.1.2	Poverty.....	37
6.2	Robustness	40
6.3	My results compared to others results	42
7	Discussion	43
7.1	Future research.....	45
8	Concluding remarks	46
	Bibliography	47
	Attachment A: List of Countries in my dataset	52

1 Introduction

Throughout the last twenty years, the topic of foreign direct investment and its effects has been a subject undergoing intense study and debate, both by economists, as well as by politicians and world leaders. In today's globalized world, where countries, people, economies and businesses are affiliated in a large extent, it is necessary to understand the mechanisms and consequences of such a complicated, but yet an important process. Foreign direct investment is a significant element in the global economic integration process, and it has therefor also drawn the attention of many international companies in addition to local communities and ordinary people (International Monetary Fund, 2003). The effects of FDI are miscellaneous, and this is precisely why we need to expand the research on the topic, in order to advance our knowledge and make the right decisions when it comes to exploiting the benefits, and lessening the disadvantages.

Ever since the 1960's, FDI has been a field in economics, receiving more and more attention the more we approached the millennium. To begin with, it was described as a source of underdevelopment in third world countries, using dependency theory as an explanation (Hemmer et al., 2005). Rich states transferring and extracting resources from poorer and more nascent economies, making wealthy countries wealthier, and poor countries poorer. During the 90s, foreign direct investments grew rapidly, following the development of the global economy, before facing a small decline in the period of the 21st century (World Bank, 2016)¹. The majority of the investments that were carried out were usually between OECD countries to begin with. But as time went by, the share of FDI towards developing countries increased at a steady pace (UNCTAD, 2016).

Today, FDI is a global phenomenon that is mostly viewed as a positive instrument in economics when talking about growth theory. This is in contrast to a more negative view, when related to the topics of poverty and inequality as a consequence of differences in wages or domestic firms facing too strong competition, only to mention a few. There are opinions both in favour, as well as against foreign direct investment, being undeniable that it is one of the closest companions to the thriving globalisation that has taken place, during the last decades.

¹ See figure 1, section 3.2

Having said that, the questions still remain – which effect dominates the process, and is it only applicable to developing countries or is it also transferable to a more general setting which applies to developed countries, or even the world as a whole? By implementing the empirical strategy and conducting the economic analysis, an attempt of answering these questions has been made. Nonetheless, it is important to keep in mind that FDI is not only an economic question, but also a politically charged one, affecting emotions, politics and ethics. Something not so easily captured by an econometric model. More about this is in the discussion section of the thesis (section number seven).

2 The research topic and motivation

The main goal in writing this thesis is to find the effect of FDI on poverty and income inequality, by using an instrumental variable approach, in addition to presenting an overview and a discussion on the theories used to support the different perspectives on foreign direct investment. The reason for using an instrumental variable (IV) is because of the above-mentioned endogeneity problem with FDI, meaning that inequality and poverty, also may affect foreign direct investment. By knowing from econometric theory, that one of the most important assumptions in ordinary least square (OLS) estimation is the requirement of no correlation between the residuals and the dependent variables in the model, reverse causality may lead to biased and inconsistent parameters. I have based my analysis on the paper by Im and McLaren (2015) considering their model, but changing some of the aspects of their econometrical methodology, in order to see if these changes enhance their final results or not. The instrumental variable for this purpose is the sum of the number of natural disasters in neighbouring countries of the host country of FDI (hence, the recipient country of FDI). I have also chosen to include not only developing countries in my analysis but the entire world². There are many channels through which FDI can affect poverty and inequality in countries, and it is therefore a subject of close review. Arguments and research in support of, as well as against foreign direct investment exists, which is why we need a better understanding of its effects. If it is to advocate for FDI as a poverty-fighting tool in a global economy, it is of even greater importance to know what one is dealing with, as this may be a most relevant topic in future political and economical decisions.

2.1 Method

As mentioned above, I have chosen an econometric research method in order to assess the effect of foreign direct investment on income inequality and poverty. With the help of an instrumental variable, I want to address the endogeneity problem that most of the literature on this topic is facing. The decision of investing in a foreign country and the level of investments, depend on future expected profits³. This requires comprehensive analysis and

² See Attachment A: List of Countries in my Dataset at the end of the thesis

³ Following basic microeconomics and neo-classical theory of the firm.

good judgment prior to the investment decision. If for example the potential region is exposed to many destructive natural disasters throughout time, then this may affect the respective attractiveness of investment by international companies. The number of natural disasters in neighbouring countries is therefore a good indicator of how vulnerable a region is to natural catastrophes, which again is closely related to its level of foreign direct investment.

My main focus when writing this thesis is therefore on studying the coefficient of the FDI-ratio both in OLS and IV estimations.

For this purpose I am using STATA 14.2.

2.2 The structure of the thesis

The thesis starts with a definition of foreign direct investment and the different types of it. After that, I move on to describing the trend of foreign direct investments over the world during the last years, as well as the development of income inequality and poverty. This part is accompanied by some figures that show the measures mentioned above, using data from my own dataset. Further, I present trade theory that can be used to explain the economic mechanisms through which FDI works, shedding light on its consequences, and touching upon the problem of why it is so important for different agents in the economy. After that, I continue with a review of some of the previous literature on the topic. Part five consists of my data and variable description, and in the part that follows I present my model as well as my empirical strategy. This section also contains my estimation results and my analysis. In the last part of the thesis, part seven; I have chosen to add a short discussion about foreign direct investments, as well as thoughts on future research. I end the thesis with some concluding remarks.

3 Background information and description of concepts

In this part, I will introduce you to some of the terminology used when talking about foreign direct investment, a definition of it, as well as an overview of the different types of it.

3.1 What is foreign direct investment? A definition of concept

FDI is defined as a cross-border investment by a resident entity in one economy, with the objective of obtaining a lasting interest in an enterprise resident in another economy. The lasting interest implies the existence of a long-term relationship between the direct investor and the enterprise, and a significant degree of influence by the direct investor on the management of the enterprise. Ownership of at least 10% of the voting power, representing the influence by the investor, is the basic criterion used. (OECD, 2013)

Already here it is important to note the difference between FDI, when compared to *ordinary* portfolio investments. Foreign direct investment is in fact, a financial flow conducted internationally, where the intention is to take part in the management as well as holding partial control of the company in the foreign country. This is a contrast to stocks, bonds, option contracts and mutual funds (Hymer, 1976).

FDI includes everything from reinvestments in businesses, technology and knowledge transfers, mergers and acquisitions as well as construction of new establishments (IMF, 2003). The investment itself can occur in different ways, like for instance, an example is buying a domestic company in the country of interest, with the aim of making it a subsidiary of your own firm. There are several ways to approach such an investment, and this is precisely why there are various types of FDI. Because of this, we will take a look at the three major categories of which it is divided into: horizontal FDI's, vertical FDI's and conglomerate FDI's.

The term *vertical FDI* is used when a corporation invests in some business abroad, which will either play the role of a supplier or a distributor. Hence, the operations within the investors company are either assembled or founded in the country of investment⁴. This can be illustrated by using an example. Assume that the investor has a company in his home country. In the production of the goods he is selling, he uses inputs in the form of raw materials and/or intermediate goods from the country where he seeks to undertake the investment. The domestic company of the investor would most likely benefit from the foreign business venture in many different aspects, like cost reduction for instance, creating a clear interest abroad⁵.

Vertical FDI's can further be divided into forward and backward foreign direct investments⁶:

- Forward FDI is when investments are made, in order to bring the company closer to the market it will operate in⁷. An example of this is when the American company of Whirlpool, decides to build a distributor branch in Italy, in order to be closer to the European market.
- Backward FDI is when the domestic company moves towards a foreign company that extracts raw materials used in the production of the final company product. It doesn't necessarily have to be raw materials though, because the same yields for intermediate goods as well. An example of this is when investments are made in an aluminium company abroad, where the extracted element is used in the production of the final good, like cars for example.

When an investor is establishing the same company, or exactly the same type of business abroad, as his/hers domestic company at home, it is a case of horizontal direct investment. A good example illustrating this is when Apple decides to open up stores in Europe.

Notice that the difference between horizontal and vertical FDI, lies in the fact that the subsidiaries created internationally, are in a different production phase compared to the domestic company when we have a case of vertical FDI (Protsenko, 2003).

⁴ "Foreign Direct Investment – FDI". Investopedia.com Retrieved 26th of July

⁵ "Foreign Direct Investment – FDI". Investopedia.com Retrieved 26th of July

⁶ Financial Times lexicon. lexicon.ft.com Retrieved 28th of July

⁷ Part of this reasoning can be related to the theory on the *gravity approach to FDI*

The last type of FDI is referred to as the conglomerate type. In this case, a business or a private person undertakes an investment in a sector that is totally unrelated to his/hers existing activities in its home country. This implies that the investor has little or no knowledge on how to run a company in the industry in question. Often, this results in a solution of joint ventures with a company operating in the host country of investment. This makes it easier, because local businesses are already in the possession of a lot of knowledge and experience in the specific industry. It is of importance to note that this is the most rare type of foreign direct investment, and the most challenging one to implement. Not only does the investor enter a totally new industry, but it's in an absolutely new country as well. There is therefor a great possibility of this turning into a problematic investment, due to the challenges of solving both issues at once (Financial Times, 2016).

3.2 The trend of FDI, income inequality and poverty – an overview

Foreign direct investment

Today, most economists think of FDI and trade as being complementary, but this hasn't always been the case. There have been considerable changes in trade policies, global regulations and investment strategies ever since the beginning of the millennium, which have played a major role when it comes to the expansion of FDI and its significant role today. Considerable factors as part of the process, were among others: greater overall liberalization of trade, deregulation and privatisation of several industries, better investment opportunities as a consequence of fewer restrictions as well as looser tariff controls and many more (Rama, 2002).

Greater “freedom” and the flexibility of choice has given smaller companies the opportunity to interact with big firms who are more skilled in trade, helping them get involved in global business activities. In this way, local companies have gotten access to international markets with the help of international firms' global networks (te Velde, 2004). Although over 60% of FDI is still accounted for by investments in machineries, buildings, inventories and equipment by conglomerate and multinational businesses, it is undeniable that the patterns have changed remarkably during the last years (OECD, 2002).

With the importance and development of technology, the continuously diminishing communication costs and worldwide access to Internet spreading at a constant speed, these mechanisms have all together contributed to the many changes in types of investment. This may come as no surprise.

Turning to some data, a more accurate overview can be obtained, of the development of FDI throughout the recent years. Figure 1 shows the trend of foreign direct investment in the world from 1970 to 2015, measured in thousand of billions US dollars.

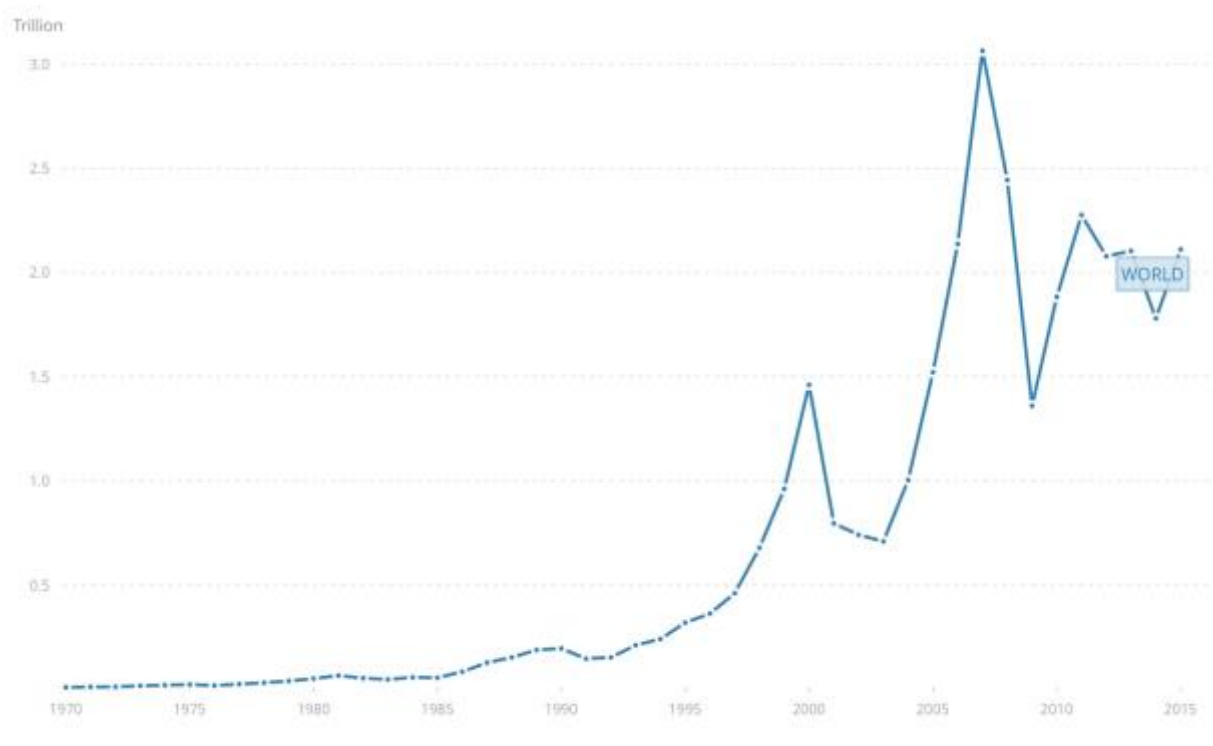


Figure 1: Foreign direct investment, net inflows (BoP, current US\$)
Source: World Bank

Foreign investment flows around the world exceeded a staggering level of \$1000 billion USD in the 21st century, compared to only \$14 billion in the 1970s as reported by UNCTAD⁸. The global level of FDI in 2011 had an increase of 12%, contrasting its level in 2010, which accounted for as much as a 24% increase in FDI. In 2011, investors from OECD countries

⁸ United Nations Conference on Trade and Development. (2016). *Global Investment Trends Monitor, 2016* (nr.22), 1-8

Figure 1 is obtained from the World Bank. Other figures on FDI are also available there, such level of FDI the entire world, measured in percent of GDP.

had carried out 83% of the total outflows, with the United States, United Kingdom and Japan as the biggest investor countries. On the other hand, solely European investors undertook 36% from global outflows the same year.

Moving on towards more recent years, global foreign direct investment flows increased with 36% in 2015, to a number of \$1.7 trillion USD. This is the highest level reached ever since the financial crisis in 2007-2009. The reason for the considerable growth was due to the boost of FDIs directed towards developing economies. They reached their all time high of FDI with \$741 billion USD that year, with Asia as the biggest recipient. The level of FDI in India managed to double its size, as a consequence of an improved investment environment, which was provided by the government. Despite this, *developed* countries still accounted for more than half (about 55%) of the world FDI inflows in 2015. The Caribbean, Latin America and Africa, experienced a decline of FDI flows, following the fall in the prices of their raw materials, considering it being their biggest export group (Global Investments Trends Monitor, UNCTAD 2016).

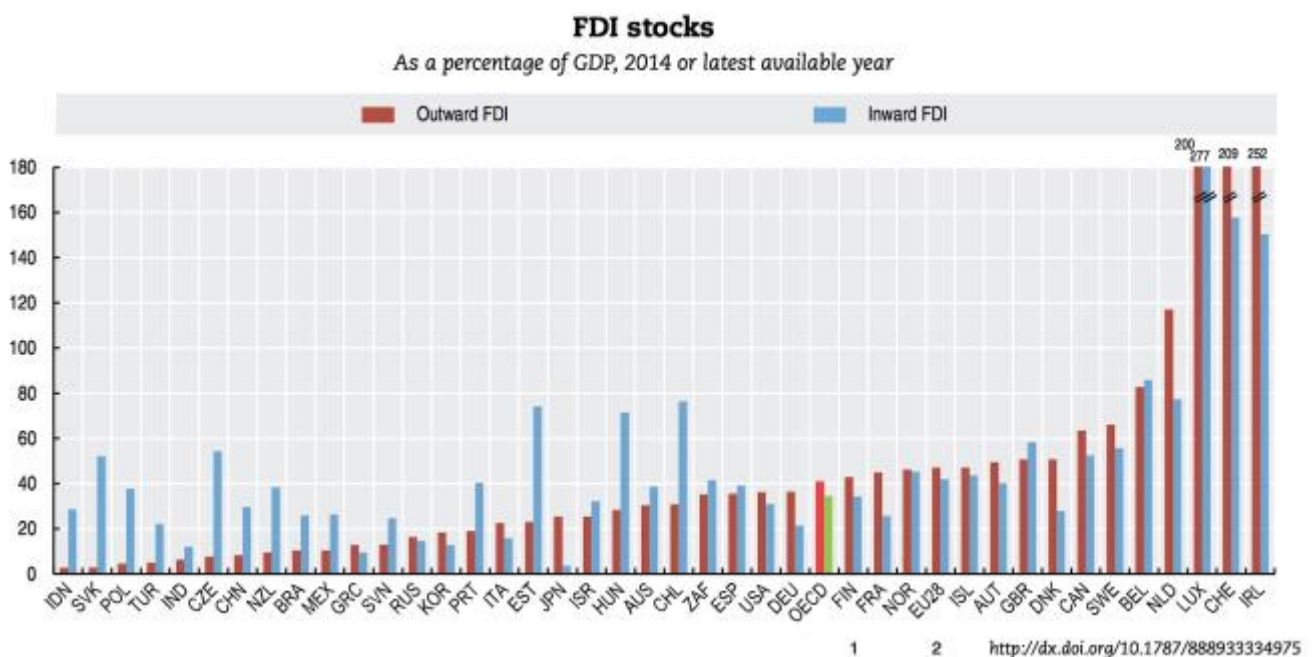


Figure 2: Inward and outward FDI
Source: OECD

Figure 2 shows the latest data on the level of inward and outward FDI, as a percentage of GDP for selected countries⁹.

⁹ OECD. (2016), OECD Factbook 2015-2016: Economic, Environmental and Social Statistics, OECD Publishing, Paris

Income inequality and poverty

Income inequality is a well-known concept all over the globe, which varies across countries, with gender, level of education as well as with social status. Important drivers are for instance, technological change, financial globalisation, changes in labour market institutions and redistributive policies (IMF, 2015). An unequal distribution across people, in terms of income, is often related to the notion of fairness. If a small share of the population is in control of a significant amount of the national income, then it is considered as an unequal and unfair division in society. It could lead to potential problems if the rich become richer, and the poor become poorer. For example, if inequality affects the living standards and the division of power in developing countries, or helps foster corruption, or even acts as a hindrance to equal rights and opportunities, then it might trigger riots, crimes and other growth and development deterring actions/movements/states/conditions (Acemoglu & Robinson, 2001, 2012).

There is a lot of literature on the topic of inequality as a driver of growth and development. It is argued that inequality creates competition, fosters hard work and innovation, which eventually leads to growth and prosperity (Cingano, 2014).

The most common and most known measure of income inequality is the Gini coefficient. It is based on the Lorenz curve, which compares cumulative proportions of a population, against cumulative proportions of the income they receive. The level of income itself is measured by household (or individual) disposable income in a particular time, most often during a year. It comprises capital income, earnings and self-employment. The values of the Gini range between 0 and 1, where zero implies perfect equality, and one expresses maximum inequality in a country. It is very important to note that the data used to create figures 3, 4 and 5, use data on the Gini Index, which is listed in percent. This means that 100 % indicates perfect inequality. The reason for this is because the index “measures the area between the Lorenz curve and a hypothetical line of absolute equality, expressed as a percentage of the maximum area under the line” (World Bank Povcal Database, 2016).

Note that there is a lot of literature on the definition of inequality as well as alternative inequality measures, but we neither have the time nor the space to elaborate on this any further (Haughton & Khandaker, 2009).

Throughout the last decades, there has been a global reduction in poverty. The first Millennium goal of the United Nations was to reduce the poverty rate from 1990 to half its level by the end of 2015. This goal was reached already in 2010 – five years earlier than expected (World Bank, 2016). But even if there is progress in the reduction of world poverty, it is still on a very high level. It is also important to note that despite of a positive development, in favour of poverty reduction, changes and improvements are very uneven. The percentage of people that live in poverty has decreased, but the total number of poor people in the world, has unfortunately increased (Chen & Ravallion, 2000).

In the period between 2012-2013 East Asian and South Asian countries alone, accounted for most of the progress on poverty reduction – encompassing a total of 108 million people. This was partly due to a strong economic growth these countries had experienced, lifting many people out of absolute poverty. Another example is the region of Sub-Saharan Africa, where half of those defined as extreme poor are living. In 2013, there was a small reduction in the number of poor by only four million. This is almost as good as no change at all, considering that over 380 million people in that region are living on less than \$1.90 USD a day.

The level of income inequality in the OECD countries peaked during the year of 2012, reaching its all time high for the past century. At that point, the average income of the ten richest percent of the population, was nine times higher than the average for the ten poorest percent among the member countries. This is a seven times increase compared to the level of just 25 years ago (OECD, 2016).

Another key thing to remember is in regard to the international poverty lines from the World Bank, since it is also of importance in the analytical part of the paper (section five and six). In 2015, the World Bank updated the poverty lines, in order to have better data reflecting the costs of basic needs around the world, because of substantial price changes across countries. The new “one-dollar a day” has now increased from \$1.25 USD to \$1.90 USD a day (World Bank, 2015).

Below you can see some figures from selected countries, showing the development of the FDI ratio, the Gini index and the headcount ratio (all three displayed in percent, as marked on the y-axis). The data used to generate these, is from the dataset that I constructed in order to conduct my empirical analysis later on in this paper.

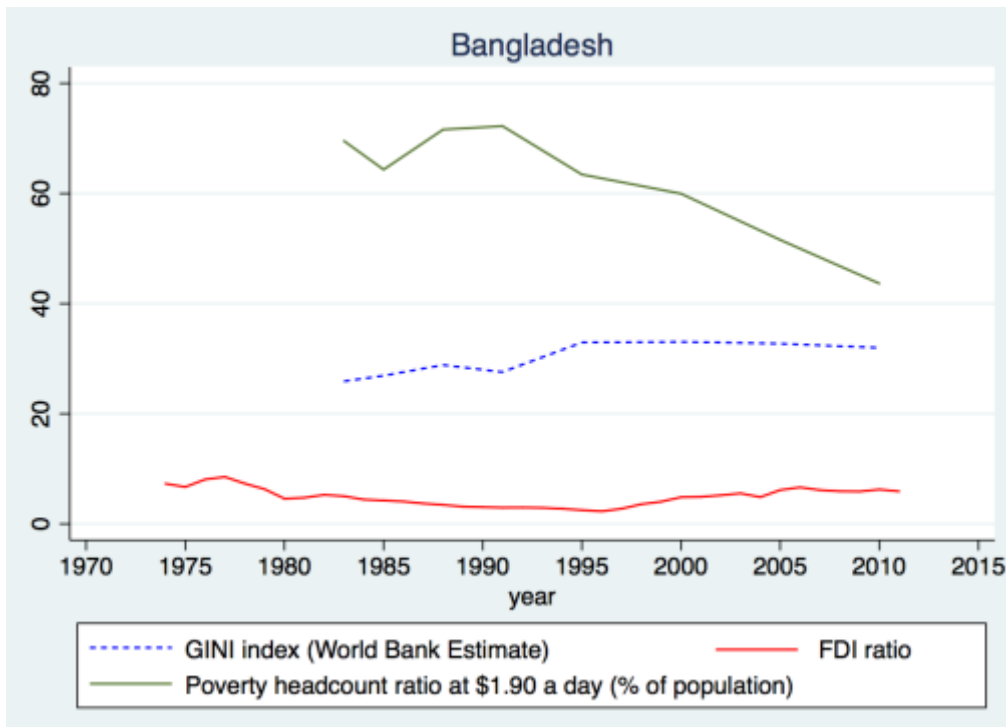


Figure 3: Inequality, FDI and Poverty in Bangladesh

Figure 3 displays the development of the indicators for Bangladesh. The data shows a quite steady trend for the FDI-ratio, with a possible upward sloping trend for the years of 2005-2010. This coincides with a downward sloping trend of the poverty headcount ratio.

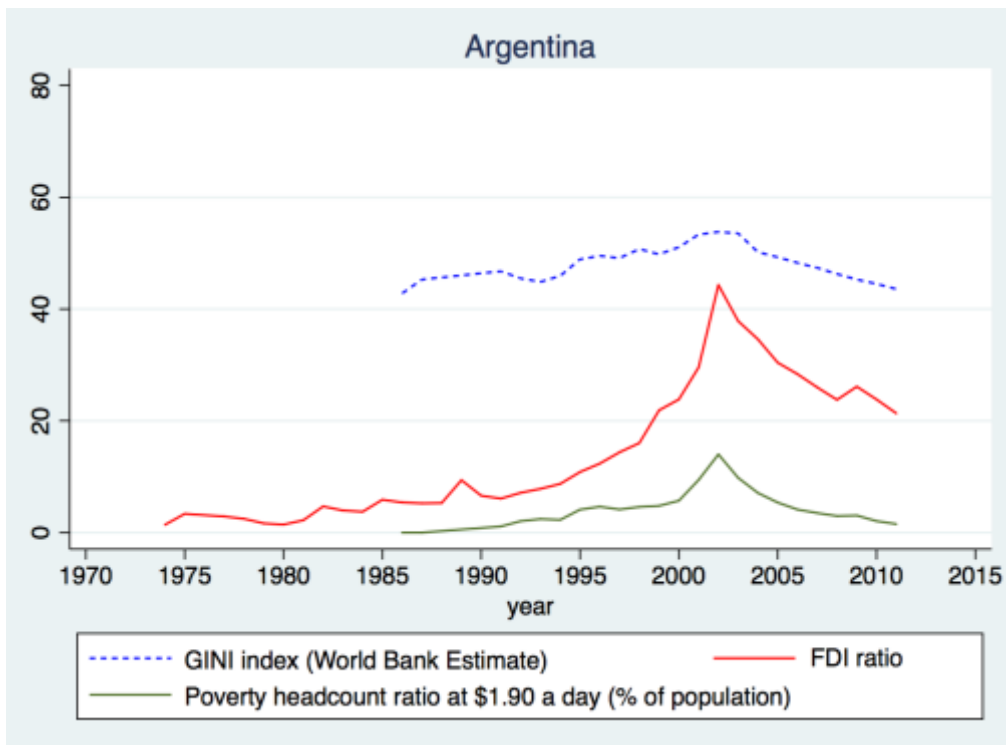


Figure 4: Inequality, FDI and Poverty in Argentina

Figure 4 shows development of inequality, FDI and poverty in Argentina. Note that the sudden increase in the poverty headcount ratio between the year of 2000 and 2005 is coinciding with an increase in foreign direct investments. This may be due to the economic collapse in the beginning of 2001 causing a considerable decline in the economy, characterized by increased unemployment and debt defaulting.

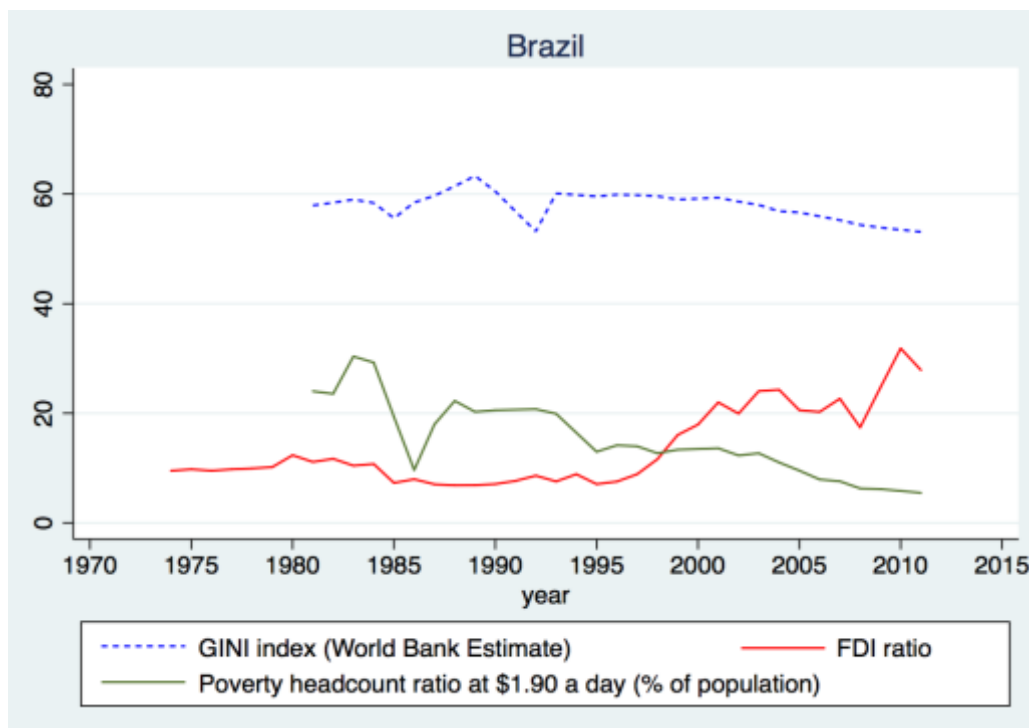


Figure 5: Inequality, FDI and Poverty in Brazil

In the last figure, the same indicators are displayed with data for Brazil. The Gini index and the poverty headcount ratio seem to follow each other with small deviations. It seems as if a decrease in poverty and inequality between the years of 2005-2010, corresponds to and increase in FDI in the country.

4 Theoretical Background

4.1 Economic Mechanisms

In this part of the thesis, I will elaborate on some “traditional” trade theories that have been used when attempting to explain the mechanisms behind FDI and development. New theories emerged after the 1950s, when it became clear that traditional neo-classical theory could not explain the complex effects of foreign direct investment. All of the theories, both old and new, have contributed to a vast range of research directions in the field, where the different mechanisms of the different theories have been emphasized. They give us an idea of why we should care about FDI, considering both the positive and the negative effects, in order to obtain a better understanding of the issue.

As foreign direct investment was part of international trade theory in the early years (and still is), well-known terminology and concepts will be used throughout the presentation. The benefits of FDI, both for the receiving country, as well as for the investing country, will be discussed using existing research to support the arguments. This can be clearly seen in the section that follows, which addresses previous literature on the topic.

When benefits from trade are as sure as a gun, it does not come as a surprise that firms want to invest abroad. There is a vast number of literature that has undertaken the task of explaining why it is the case that big international companies choose to invest in foreign countries. When a firm constructs a branch abroad, it does so in hope of acquiring a higher rate of return compared to other domestic companies that have the same type of investment. The source of this gain stems normally from the investors advantage in technology, or some other type of advantage (Görg & Greenaway, 2003). Notably, these advantages may be related to several things, like for instance specific production methods or particular leadership characteristics or administration and execution of tasks and activities inside the company. Following the internalisation theory that was further developed by Hymer in 1976, he also claimed another factor of importance, in addition to those just mentioned - namely the elimination of competition Hymer 1976 (as cited in Denisia 2010)¹⁰. Coupled with these

¹⁰ Note that this is based on the theory of Buckley and Casson , which again are influenced by Coase

points of view, he came to the conclusion that internalisation across borders leads to the creation and establishment of international companies abroad.

Having said that, no matter what the source of the advantage is, the only way for local firms to gain from the presence of a foreign firm in their home country, is by a type of an indirect technology transfer. The host country receiving FDI, won't automatically obtain the tools and strategies of the international companies on a silver platter. This will rather happen through spillovers in the form of competition, labour mobility, demonstration and imitation, forward and backward linkages and exports. The benefits generated from these advantages will eventually spill over to local firms. Only through these mechanisms, will the host country of foreign direct investment, boost its productivity (Barrios & Strobl, 2002). Furthermore, these productivity spillovers may also lead to positive wage spillovers in domestic companies. It is very common that international firms pay higher wages. If they compete with the local firms for the same labour force, then they will indirectly force domestic companies to offer higher wages as well, in order to attract workers and avoid succumbing to the competition (Lipsey & Sjöholm, 2001). This is an example of how FDI provides income into a country as well as employment.

It should also be remembered that spillovers may work in both directions, bringing knowledge and new technologies to the investing country as well. The presence of a foreign firm in a country creates an arena where knowledge and technology can be exchanged. The trade of skills and methods enables the host country to take a leap forward towards a more rapid path of economic growth and development¹¹. This transfer of knowledge and technology also contributes to the improvement and expansion of human capital in the host country, by encouraging education and "learning by doing" in advanced and innovative surroundings.

FDI also boosts the productivity of the labour force within a country, by implementing techniques and machineries proven to function well in the production processes in the investors' domestic firms. In addition to being bigger and more robust, these firms are also more capital intensive and in control of newer technology and high-skilled workers (Dunning, 1993 & Caves, 1996, (as cited in te Velde, 2004). By entering a foreign market,

¹¹ Görg, H. Greenaway, D. (2003): "Much Ado About Nothing? Do Domestic Firms Really Benefit from Foreign Direct Investment?"

they increase their capability of a higher production capacity for the firm. With this in mind, in addition to following classical growth-theory, it supports the notion of economic growth and development, being the backbone of inequality and poverty reduction.

If there is a big international company operating in many different markets, it will most likely be subject to barriers of trade in some countries or regions. Tariffs, licences, restrictions on import volumes (quotas) and taxes, may be counteracting for an investor, if the costs outweigh the benefits by investing abroad (Hymer, 1976). Then again, these costs can be partially avoided or diminished if investors build companies in the very same regions where they face the trade barriers (Norman and Orvedal, 2010).

If we think about how the phenomenon of FDI was explained in the early years of its appearance, economists tried to look to neo-classical theory at that time, in order to analyse its mechanisms. One of the ways of doing this was by using the Ricardian theory of comparative advantage, the Heckscher-Ohlin model and a model by Mundell (1957), attempting to explain foreign direct investments in a neo-classical environment. It is of importance to mention these models, all though they only explain the consequences for a country when opening up to trade. Because it is in light of these theories, that new ones have been developed, establishing today's theory literature on FDI.

Starting off with the latter model, Mundell attempted to explain the effects of foreign direct investments through trade. The model was of the $2 \times 2 \times 2 \times 2$ form, representing countries, factors, goods and production functions. Its main mechanisms were described through factor price equalisation and product price equalisation. This model wasn't sufficient for explaining FDI through international trade mechanisms though, because the way FDI was presented in this model did not encompass the true aspects of FDI.

Ricardo's well-known neo-classical theory of comparative advantage is helpful in explaining that trade is beneficial for countries. Nevertheless, it is not good in explaining the mechanisms of foreign direct investment. The model set-up has the framework of a two countries-two goods environment, where factors are perfectly mobile across industries, but not across borders. It goes without saying that this is not a good description of FDI, considering that it represents precisely the opposite, by not allowing for international

movements. Explaining that trade is beneficial is not enough in this context, although the theory itself is one of the most important ones within the field of international trade.

When it comes to the Heckscher-Ohlin model, it has been attempted to use it in order to describe the mechanisms between trade and inequality, later on trying to generalize these results to the notion of FDI. However, after a lot of empirical evidence with results supporting different effects in comparison to the predictions of the model, this theory was rejected as being a good explanation of the effect between FDI and inequality (Harrison, McLaren & McMilan, 2010).

Another key thing to remember is that by undertaking investments abroad, there is a high possibility of reducing production costs. An important factor that may be decisive for a foreign firm, when seeking to invest in a poorer country, is the cost of labour. For most investors, cost minimisation by offshoring parts of the production, is a very appealing action, especially if the part being outsourced is labour-intensive (implying that a lot of money will be saved (Herzer & Nunnenkamp, 2011)). As a result of the establishment of foreign companies in the country of investment, new jobs are created. A rise in employment, and hence a reduction in unemployment, raises income and consumption, further improving economic growth. If a foreign company decides to move production abroad in hope of reducing their costs, this will not only affect the wage costs, but also the costs of other factor inputs (Vernon, 1966 and 1979). If it turns out for example, that the host country is also a current market for the investors' products, then the change of location would bring the production closer to the market reducing transportation costs significantly. Provided that investors usually still offer higher wages than local companies, they do reduce their wage costs compared to what they would have been if production wasn't offshored (Görg, Strobl & Walsh 2003). Having that said, there is yet a possibility of increasing wage inequality as a consequence of higher wages offered by the foreign firms (te Velde, 2004).

Despite this, there is a vast literature looking at the relationship between wages and productivity among countries. As mentioned earlier, significant evidence exists that foreign direct investment increases productivity. If an increase in productivity leads to an increase in wages, then this will by contrast contribute to the reduction of inequality between countries (Hemmer, Krüger & Seith, 2005) and (Rama, 2003).

Income inequality can for example be affected through this effect of FDI on wages. Rama (2003) has come forward with some mixed results on the matter. Some of his previous work presents evidence that the short-run impact of FDI on wages is positive. In the long run though, this effect fades away in the subsequent years. Although this is a positive effect to begin with, keep in mind it may backfire and lead to an increase in the differences in wages, based on the type of education and work of the labour force. This would then be a contributor to increased income inequality, and not the opposite (Rama, 2001 (as cited in Hemmer et.al., 2005)).

If the type of FDI “flowing” into a country requires more skilled workers, then it will also increase the demand for it within the country, which in turn will lead to more (and better) human capital over time. But, this will also reduce the level of the unskilled labour force needed (Hemmer, Krüger & Seith, 2005) In theory, foreign direct investment might therefore raise income inequality by enhancing the wage differences.

As already mentioned, there are also other negative effects for host economies following from foreign direct investment. Konings (2001) argues that local firms may face a too large competition from the international companies, causing a reduction in productivity. The advantages discussed some paragraphs ago, provide the foreign firms with lower marginal costs, reducing the price of their products/services and appearing more attractive to the local market. In this way, local firms look less appealing and are hence forced to reduce their production, as a result of facing lower demand. Existing local businesses may also loose their connections to firms they are affiliated with, if the new firms take over and create better trade and cooperation agreements among them. Another important aspect is that dependence on international firms for when it comes to newer technology and various skills may cause a hindrance of development in the host countries, by not encouraging own innovation and research (te Velde 2004).

There are other additional channels through which FDI may have a negative influence. If the investment undertaken is in a country with different culture and norms (compared to the investing one), problems may arise. The foreign company entering the market brings its own values, practices and techniques as well as beliefs. The points of view of both countries may not be coinciding on these matters, and if the investing firm wants to implement some of its values in the host country, then this may potentially lead to problems in the community. Here

we are talking about issues like corporate social responsibility, working environment criteria and other matters that may be a subject of disagreement with local politics or procedures. There is also evidence of international firms making corruption worse, when present in a foreign country that already struggles with this problem, so there is a lot to consider (te Velde, 2004).

The last theory I want to present is the so-called *Eclectic* theory of FDI, which was presented by John Dunning in 1977. This is also known as the OLI-model, which is summarized in the table below. This framework tries to explain why international companies move abroad, and how they act in foreign countries, by describing three channels of possible advantages they may obtain/acquire. Note that an important aspect of this theory is that these matters are seen from the individual perspective of the firm and their private incentives.

O	Ownership: advantages specific to the multinational firms, which are difficult to copy. Examples: patents, ownership rights, knowledge
L	Location: advantages related to the positioning of the firms. Examples: lower transportation costs, avoiding trade barriers, lower input prices
I	Internalisation: by building, expanding and developing the company where the investment is placed, a form of control is established, which is crucial for maintaining its leading position on the market Examples: market control

Table 1: Representation of the OLI-model

From this it is easily seen that different theories and models can be used to analyse some of the effects of trade and foreign direct investment.

4.2 Review of previous literature

There has been an increasing number of literature on foreign direct investment during the last 20 years, and it is still a subject of broad and current interest. Most of the research however, has had a tendency to focus on the productivity gains of FDI, and not so much on the direct distributional effects of income inequality (de Mello, 1999), (Borensztein et al. 1995), (te Velde, 2003), (Alfaro (2003)). There are also many different research directions, covering different countries and various methodologies.

In this paragraph, I will therefore give you a short overview of some of the previous literature, and its main findings.

Starting off with a paper by Görg and Greenaway (2003), they discuss the possible effects of foreign direct investment on positive and negative spillovers for firms in various host countries. By examining through which channels spillovers affect host economies of FDI, and why they occur, they discuss the potential outcomes in a theoretic and empirical framework. Their study finds both positive and negative effects, considering different types of spillovers and theories supporting both outcomes. They argue that spillovers do not affect every firm in the same way, and that there are certain factors that determine whether the outcome of foreign direct investments in an economy is beneficial or not.

Continuing with the literature on spillovers, Fosfuri, Motta and Rønde (1998), look at the effects of technological spillovers that may arise from FDI, because of workers ability to move between foreign and local firms situated in the same country. They construct a model, in order to explain the mechanisms, and conclude that workers that have acquired important knowledge from foreign firm in their home country may use it later if working for a local company. This “movement” may be avoided if the foreign companies pay a high enough wage, keeping the worker and evading the problem of diffusion to local competitors.

There are several studies on the wage effects of workers that follow from increased FDI. In his paper “Globalization and Workers in Developing Countries”, Rama (2003) is giving us a review of the literature on this topic. Some of the conclusions reached in the paper, suggest

that FDI has a positive effect on wages, and that there is a strong relationship with productivity.

In a paper by Dirk Willem te Velde from 2003, he uses wage and employment data (in addition to data on FDI), in order to find the effect of foreign direct investments on income inequality in Latin America. His comprehensive analysis involves country-level studies, looking at how wage inequality is tied to income, employment, labour and FDI. By examining what the effects are for unskilled versus skilled labour, he manages to illustrate how there can be positive and negative consequences simultaneously in one country, in regard to the labour group you consider. He finds that FDI doesn't contribute to reducing inequality, and that there is even evidence of increased wage inequality for some of the countries in his sample. In addition to this, he also finds that the increase in wages as a consequence of FDI has benefitted only medium and high-skilled workers. The higher wages of the skilled workers, contribute to the widening of the inequality gap, compared to the unaffected wages of the unskilled labour group or even the possibility of unemployment.

Hemmer et.al (2005) also investigate the effect of FDI on income inequality, but base their research on one of the first and most well-know studies exploring this issue/topic. By adding newer data and enhancing the empirical methodology, they re-estimate the study of Tsai (1995) and do not find any overall significant effects of foreign direct investments on income inequality. In that way, they didn't manage to affirm Tsai's results, stating that greater inflows of FDI in a country, lead to greater income inequality.

Things do look a bit different, when looking to the research of Herzer and Nunnenkamp (2011). In their paper, they investigate the effect of FDI on income inequality for a number of ten advanced economies from Europe, through a period of 20 years. They use panel cointegration estimation in their analysis, obtaining results that present the effects of FDI on inequality in terms of short and long run effects – the latter being negative on average.

Franco and Gerussi (2013) use panel data to estimate the effect of FDI on income inequality in a fixed effects model, for a sample of 17 transition countries in the period of 1990 to 2006. They perform/make use of OLS and generalized method of moments (GMM) estimation, in order to look at the effect of FDI and trade on income inequality, including/based on a

measure on openness to trade. Their results show that FDI does not have any significant effect on income inequality

Beer and Boswell (2002) examine the change in income inequality, as a consequence of foreign direct investment in a country, for a total sample of 65 developing countries using panel data. They mainly focus on two points in time, comparing results for 1980 to 1995. Their findings include for instance increased income inequality in most of the countries, in addition to increased dependence on foreign firms. This dependence seems to be most beneficial for the fifth quintile of the population, but not so much for the remaining 80 percent. They argue that FDI has a negative effect in developing countries; hence that foreign direct investment may be a deceiving poverty reduction tool, for countries that are committed to inequality reduction. To conclude, they found that FDI has an overall negative effect in developing countries.

Assadzadeh and Pourqoly (2013), use panel data to study the effects of foreign direct investments *and institutional quality* on poverty reduction in Middle East and North African countries. Their total sample consists of 21 countries over a time period of nine years (from 2000 to 2009). In their analysis, they estimate the effect on the human development index of foreign direct investments, domestic credit and institutional quality for each country every year. The choice of the human development index (HDI), as an indicator of poverty reduction, stems from the fact that they do not have yearly data on every country in the sample when using other poverty indices. The results presented from their analysis state that foreign direct investment has a positive effect when it comes to reducing poverty. They also argue that good institutions, a steady political system and stable societies with no social unrest, are important for exploiting the benefits of FDI, and in order to encourage re-investment in a country.

In Feenstra and Hanson (1997), they present a model that can be used to explain some of the mechanisms behind FDI and its effects on income inequality through wages. Looking to the case of skilled workers in Mexico, they describe a setting where one good is being produced, with inputs such as capital, skilled labour and unskilled labour, and where there are two companies- One is located at “home”, while the other is based in a foreign country. This follows the intuition that a company, which seeks to invest abroad, wants to divide its production process, in the sense that they move part of the production to a foreign country

because of the benefits of lower costs. In the model set up, both the local firm, as well as the foreign firm, use all of the inputs mentioned above as part of the production¹². The difference is that the companies have different levels of endowments of the two types of labour. In addition to this, workers in both firms carry out a variety of tasks, which differ in their level of skill-intensity. Because of the difference in endowments, there exists a threshold which will make a separation of production more cost effective (minimizing), by offshoring the part of the production to a foreign country that is below the threshold and hence cheaper to perform abroad. This is based on the level of skill-intensity required to perform the task.

The background for this reasoning, they argue, is that the country endowed with mostly skilled workers, will experience relatively cheaper skilled labour, than the country being mostly endowed with unskilled labour. To give an illustration, in order to make the explanation easier, we can think of the skill rich country as the “home” country, where they assume that the main office of the firm is located, therefore making the less skill-intensive country the foreign country. Provided that this is true, a cut-off task will exist, which will be used in order to determine when tasks that need less skill intensive labour are too costly to keep in the skill-intensive country. Hence, the less skill-intensive tasks will be offshored abroad in order for costs to be minimized. They continue with explaining that given a change of situation, leading to easier allocation of tasks abroad, will lead to a shift in the cut-off level. This means that tasks previously placed in the home country, are now moved to the foreign country. The tasks that are moved from the skill-intensive country, were the least skill-intensive there. Moving them to the foreign country, they appear as the most skill-intensive compared to the rest. This shift leads to a change in demand for skilled-labour. Feenstra and Hanson argue that this makes skill-intensive labour more sought after in both countries, leading to the conclusion that income inequality will increase in both countries (Feenstra & Hanson, 1997).

Hyejoon Ima and John McLaren (2015), examine the effect of foreign direct investment on income inequality and poverty in developing countries. In their attempt to find this effect, they have chosen to make use of four instrumental variables that are varying over time. Their main findings are that an increase in foreign direct investments will lead to a reduction in inequality and poverty in the host country, when using instrumental variables. These results

¹² Think of a North-South trade approach

are significant at different significance levels, and robust to several robustness checks. When using OLS estimation, they find no effect on income inequality whatsoever, and only a small positive effect on poverty.

In the end, I want to mention that there is some evidence on the notion of FDI affecting income inequality and poverty differently, depending on whether one is looking at developing countries, or developed countries as being the host countries of investment. In a paper by Gopinath and Chen (2003) they explain that the effects do vary between the two groups, based on their time-series analysis covering 26 countries (as cited in Herzer and Nunnenkamp, 2011).

5 Data

In this section of the thesis, I will present you the dataset I have been working with, the variables I have chosen to use for the analysis as well as the construction of my model.

5.1 The dataset

Before starting my analysis, I had to gather data on the different variables and indicators that I needed for my analysis. I collected data from several different sources, which I later combined into one dataset with my own variables of choice for the study.

Since I am precisely studying the effect of FDI on income inequality and poverty, I am in need of good measures indicating these levels, with data available for as many countries and years as possible. The inequality and poverty measures that I have chosen to use are the Gini coefficient, the poverty gap index and the poverty headcount ratio. Data on this is taken from the World Bank Povcal database, which has yearly data on 174 countries (listing their ISO 3166-1 alpha-3 codes) from the period of 1974 to 2014¹³. By using the World Bank as a source, I can be sure of that every country I need is included in the data.

The reason for using these measures in particular, is because they are frequently used and well known. There is good data coverage on them, and they capture the most important and significant aspects of poverty and inequality. By including the headcount ratio as well as the poverty gap index, we get a better understanding of how poverty in a country is affected. This is because both variables measure poverty in a *different* way. Instead of only measuring the number of people that are poor in a country (by using the headcount ratio), we also want to know how poor the poor really are. We want to know the intensity of poverty, and because of that we need to include the poverty gap index. If we only looked at the headcount ratio, we wouldn't know if the poor are actually becoming poorer or not (compared to the given poverty line).

¹³ The World Bank. 2016. World Bank Povcal. "Poverty and Equity Database"

For my analysis I am using a panel data set, which covers 134 of the world countries, over a time period from 1974 to 2011 with yearly observations. It is restricted to this period (and this number), because this is the largest functional dataset possible with the current sources, given the variables of interest. I have used information from five different datasets, in order to find the variables needed for the analysis. They have been merged to one dataset in Stata, before I could start my estimation. Note that the countries that do not share any borders with other countries in the sample (like for example island countries) are excluded from the analysis. Otherwise, my instrumental variable, which is based on the number natural disasters in neighbouring countries, would be of no use throughout the IV estimation process.

Since I am using the ratio of foreign direct investment (relative to GDP) as an explanatory variable in my analysis, I needed data on FDI and GDP in US dollars, in order to create my FDI-ratio variable. There is data on several measures of FDI available, because foreign direct investments are measured in different ways. Examples are: net outflows, net inflows, assets and liabilities. I have chosen the latter for my analysis, since it is the variable with the most available data (best coverage) for the pairs of country/year observations. In addition to this, FDI liabilities (measured in stocks), are a better measure compared to flows when looking at the long-run effects. This is because flows are more volatile, and are subject to fluctuation since they are measured over a period of time, and not on a particular point in time. The database used for this purpose is the External Wealth of Nations Mark II constructed by Lane & Miles-Ferretti (2007). It contains data from 1970-2011, for a number of 188 countries (including all of my countries of interest), and is measured in million of current US dollars calculated in terms of exchange rates¹⁴.

For many of my control variables, I have used data obtained from the World Development Indicators from the World Bank¹⁵.

Since I am using an instrumental variable in my analysis, I also need data in order to construct it. As mentioned earlier, the IV used is the number of natural disasters in neighbouring countries. From previous discussions, earlier in the thesis, we mentioned that a

¹⁴ Philip R.Lane and Gian Maria Milesi-Ferretti (2007), "The external wealth of nations mark II: Revised and extended estimates of foreign assets and liabilities, 1970-2004", *Journal of International Economics* 73, November, 223-250

¹⁵ The World Bank. 2016. World Development Indicators.

lot of work and research lies behind the decision of a multinational company to invest abroad. By following the intuition in Im and McLaren (2015), we argue that the instrument used is constructed by looking at shocks in the form of natural disasters to neighbouring countries of the host country receiving FDI. To give an illustration, think about a country A, which has neighbouring countries B, C, D and E. Being located in the same region, there is a possibility that all of the five countries share many characteristics and are quite similar. This will make them competitors striving for FDI. If for instance, there are many natural disasters in countries B, C, D and E, potential FDI in these countries may instead be moved to country A. If an investor wants to invest in a certain region, he is less likely to choose a country that is often exposed to natural disasters, when he can choose between other, similar countries in the same region. This is how the number of natural disasters in neighbouring countries is correlated with foreign direct investment in country A. It also makes sense that the events in the neighbouring countries, do not have any influence on the income distribution or the poverty gap index in the host country, hence country A.

In order to implement this, I need information on which countries are neighbouring countries for a given country, as well as information on how many natural disasters there have been in a country. I also need to know which countries border to each other. I had the possibility of obtaining this information from two different datasets. By using data from EM-DAT¹⁶, the International Disaster Database, I obtained information on the number of natural disasters in every country, listed with their corresponding ISO 3166 codes. The category on natural disasters has 5 subcategories, which encompass 15 disaster types and more than 40 sub-types. The natural disasters registered in the data are the ones who have affected more than 1000 people.

When it comes to information on which countries are neighbouring countries, I have used a dyadic dataset from CEPII's geography database. There, neighbouring countries are listed with the help of an indicator variable (1 if sharing borders, and 0 otherwise).

¹⁶ D.guha-Sapir, R.Below, Ph.Hoyois – EM-DAT: International Disaster Database – www.emdat.be - Université Catholique de Louvain – Brussels – Belgium.

5.2 The variables

This sections presents a list of the variables used in the thesis, accompanied by their description and corresponding source. Summary statistics are also added on the next page.

Table 1.1: Description of Variables and Data Sources

Variable	Description	Source
<i>gini_{it}</i>	A measure of the income distribution in a country, listed from 0 to 100 in my data. 0 indicates perfect equality, and 100 indicates maximum inequality.	World Bank Povcal
<i>headcount_{it}</i>	The proportion of a population in a given country (measured in %), which lives below the poverty line of \$1.90 a day	World Bank Povcal
<i>povertygap_{it}</i>	The mean shortfall of income/consumption from the poverty line of \$1.90 a day, expressed as a percentage of the poverty line. Those not being poor are counted with having zero poverty gaps ¹⁷	World Bank Povcal
<i>fdiratio_{it}</i>	The liabilities (stock) of FDI in a country, divided by total GDP in USD, times 100	Lane & Milesi-Ferretti (2007)
<i>exportshares_{it}</i>	The exports of goods and services as a percent of GDP	World Development Indicators
<i>logGDP_pcap_{it}</i>	GDP per capita in current USD	World Development Indicators
<i>gdpgrowth_{it}</i>	Annual GDP growth measured in percent	World Development Indicators
<i>capitalshare_{it}</i>	Gross capital formation measured in percent of GDP	World Development Indicators
<i>logTOTPOP_{it}</i>	The total population in log	World Development

¹⁷ World Bank definition 2016

		Indicators
<i>importshares_{it}</i>	The imports of goods and services as a percent of GDP	World Development Indicators
<i>inflation_{it}</i>	Inflation, GDP deflator (annual %)	World Development Indicators
<i>nn_disasters_{it}</i>	The sum of the number of natural disasters in neighbouring countries	EM-DAT & CEPII

The summary statistics are presented in the table below. The numbers of observations vary across variables, which may give us reason to believe that some of the predictions may not be as strong as desired. The first three variables listed in the table have fewer observations over time, compared to the rest.

Table 2: Summary Statistics

Variable	Obs.	Mean	Std. Dev.	Min	Max
gini	988	40.91	10.45	16.23	99.91
headcount	850	17.42	21.62	0	99.90
povertygap	850	6.98	10.29	0	99.90
fdiratio	3,870	39.73	200.02	-9.19	4474
exportshares	3,845	33.55	21.69	0.01	189.04
logGDP_pcap	2,666	8.69	1.20	5.51	11.48
gdpgrowth	3,918	3.81	6.92	-64.05	149.97
capitalshare	3,816	23.25	11.34	-5.74	219.07
logTOTPOP	4,357	16.10	1.55	11.79	21.02
importshares	3,845	40.17	26.79	0	424.82
nn_disasters	4,357	8.87	9.97	1	86.00
inflation	3,916	51.13	463.71	-31.57	15444.38

6 The model

I have used an instrumental variable fixed effects panel model in my analysis. Countries are marked with subscript i , and years are marked with the subscript t . This implies that the coefficient we are estimating can be different for every country/year pair. I have chosen a fixed effects model, because I am interested in analysing the effect of the FDI ratio over time. By using this type of model, it is possible to eliminate the time invariant characteristics (that we control for), in order to obtain the net effect of FDI on income inequality and poverty. Given that these effects are constant over time, we don't have to worry about that the estimated coefficients of our model, will be biased because of omitted time invariant characteristics.

It is important to remember that, when using a fixed effects model, there is a possibility for the error terms to be correlated over time within a country. This possible correlation does not cause our parameter estimators to be biased, but it does affect its variance, and the way the standard errors are computed. This may potentially lead to wrong t-values, which can further affect the outcome of whether a variable is significant or not. I have therefore chosen to estimate all of my models with robust standard errors, because of the benefit of correcting for problems of normality, heteroskedasticity or problems due to observations with huge residuals. When specifying this in my estimations, I can make sure that my standard errors are taking into account the potential problems mentioned above, which will further help draw better inference, without changing the coefficients (Hill, Griffiths & Lim, 2012). Note that for the group of “non-developing countries” throughout the OLS estimations as well as the first stages of the 2SLS estimations, I have had to drop this specification, because of a limitation in my dataset due to too few observations available for this group of countries. Otherwise, it would not have been possible to obtain an F-statistic for this sample of countries. .

When using econometric theory, we know that changes in the dependent variables are explained by changes in the independent variables in addition to the error term – the latter capturing the effects that do not arise from the other independent variables in the model. Several assumptions need to hold, in order for the estimates of the model to be unbiased and efficient. The preferred assumptions providing a proper OLS estimation need therefore to

ensure the BLUE properties (best linear unbiased estimators). In other words, it means that the following assumptions need to hold¹⁸:

- The error terms are distributed normally, with zero population mean.
- Serial correlation does not exist. This means that the error terms are not correlated across observations.
- There is no heteroskedasticity. This implies a constant variance of the error terms.
- Absence of perfect multi – collinearity.

We mentioned earlier in the thesis that there is a possible problem of reversed causality, if we only restrict the analysis to basic OLS estimation. This means that there is a possibility of a violation of one of the assumptions in the OLS regression, $E(\varepsilon_{it}, \text{fdratio}_{it}) = 0$ to be precise (in that case, the OLS estimate of the coefficient of the FDI-ratio is biased and inconsistent). If we have reverse causality, this assumption is violated, and hence the term is different from zero.

Possible channels of this endogeneity problem may occur through different mechanisms. For instance, inequality and poverty can affect FDI through the attractiveness of investment in a given country. Imagine for example, a situation where a country is subject to increasing income inequality. It is very likely that this could be linked to a reduction in real wages of unskilled labourers (Herzer & Nunnenkamp, 2011). Lower wage-costs may be tempting for an international company seeking to invest, and in that way they may offshore some of their tasks that require unskilled labourers, in order to benefit from the lower wages in the given country, which are a consequence of greater inequality. Put another way, inequality may create incentives for firms to invest in a country, as there are possible benefits for them to acquire. By contrast, greater inequality may also be counteracting for investors, if they are concerned with potential problems arising as a consequence of inequality and poverty. As mentioned earlier, high inequality and poverty may give rise to conflicts and instability within a society. Such an environment is something not sought after by a firm that seeks to establish good and lasting business relationships.

¹⁸ Note that it is often difficult to obtain data that fulfils all of the classical assumptions. But it is still possible for estimates that are not BLUE, to be unbiased and consistent.

In order to correct for this, we want to use an instrumental variable, by “splitting” FDI into two parts - one that is correlated with the error term and one that is not correlated with the error term. If we can isolate the variation in the FDI-ratio that is correlated with the error term ε_{it} , then we can use this to obtain a consistent estimate of the causal effect of FDI on our dependent variables.

Since we are precisely interested in finding the causal effect of FDI on inequality and poverty, when using IV estimation, we have to rely on a proper exclusion restriction. In order for our instrumental variable of natural disaster to be a valid instrument, it has to meet two very important conditions. The first one is the *instrument relevance condition* (see equation 1.0), while the second one is the *instrument exogeneity condition* (see equation 1.1). These two conditions simply state that the instrument we are using in our estimation, has to be highly correlated with the endogenous regressor, the FDI ratio (our causal variable of interest), but that it should not be correlated with any other determinants of the dependent variable. The latter condition is also known as the exclusion restriction in IV regression. If this doesn't hold, and it turns out that natural disasters are correlated with the error terms in our second-stage equation (conditional on the other explanatory variables), then our IV estimator would be biased, just like the OLS estimator. Our assumption is that natural disasters only affect our outcome variables through our first-stage estimations, and nothing else.

Expressed in a shorter, more compact form:

$$cov(nn_disasters_{it}, fdiratio_{it}) \neq 0 \quad (1.0)$$

$$cov(nn_disasters_{it}, \varepsilon_{it}) = 0 \quad (1.1)$$

The general equation, used for OLS estimation:

$$y_{it} = \alpha + \beta_1 fdiratio_{it} + \mathbf{X}'_{it} \beta + \mu_i + \varphi_t + \varepsilon_{it} \quad (2.0)$$

...where y_{it} is the dependent variable which varies throughout the estimation, depending on which measure we are looking at, $fdiratio_{it}$ is the ratio of FDI relative to GDP in USD, and

\mathbf{X}'_{it} is the vector of control variables. These are: *exportshares_{it}*, *importshares_{it}*, *capitalshare_{it}*, *log GDP_pcap_{it}*, *gdpgrowth_{it}*, *logTOTPOP_{it}* and *inflation_{it}*

The reason for including the variables I have included in my analysis is because I believe that they have an effect on income inequality and poverty. Earlier in the thesis I elaborated on the effect of trade on inequality. With this reasoning in mind, I think it is necessary to include variables on imports and exports of a country, in order to capture the effect of trade.

These are included separately, because it is possible that they behave differently when it comes to the Gini coefficient. Regarding the capital share measured in percent of GDP, I also think it is an important variable to consider. It serves as an indicator of wealth in a country, which is most likely to affect our poverty measures. I also control for the log of GDP per capita, because it is obvious that it will affect inequality and poverty, being a conventional indicator of economic development. The same yields for the log of total population. Finally, I have added inflation as a control variable as well. This is because there is evidence of a positive relationship between inflation and inequality (Crow, 2006 and Albanesi, 2006).

The model in (2.0) estimates the effect of FDI on inequality and poverty using OLS.

Including the different dependent variables used in this analysis, we get the following equations:

$$gini_{it} = \alpha + \beta_1 fdiratio_{it} + \mathbf{X}'_{it}\beta + \mu_i + \varphi_t + \varepsilon_{it} \quad (2.1)$$

$$headcount_{it} = \alpha + \beta_1 fdiratio_{it} + \mathbf{X}'_{it}\beta + \mu_i + \varphi_t + \varepsilon_{it} \quad (2.2)$$

$$povertygap_{it} = \alpha + \beta_1 fdiratio_{it} + \mathbf{X}'_{it}\beta + \mu_i + \varphi_t + \varepsilon_{it} \quad (2.3)$$

I have also chosen to add country-fixed and time-fixed effects in my model. By taking this into account, I can control for unexpected variation and various events that may affect my outcome variable. The time dummies control for business activity fluctuations, and it is important to include them. Notably, the F-test I performed in order to check the relevance of these variables, rejects the null hypothesis that they are irrelevant.

Our equations when including our instrumental variable, and perform a 2SLS estimation, are the following:

2nd stage:

$$y_{it} = \alpha + \beta_1 fdiratio_{it} + \mathbf{X}'_{it}\beta + \mu_i + \varphi_t + \varepsilon_{it} \quad (3.0)$$

1st stage:

$$fdiratio_{it} = \pi_0 + \pi_1 nn_disasters_{it} + \mathbf{X}'_{it}\beta + \mu_i + \varphi_t + v_{it} \quad (3.1)$$

The second stage of the 2SLS regression, uses the first stage as an IV, and measures the effect of FDI on income inequality and poverty.

6.1 Results and analysis

6.1.1 Income inequality: the Gini index

I start the analysis with looking at the effect on the Gini coefficient as the dependent variable. In table 2 you can see the results of the OLS estimation, in addition to the first and second stage of the 2SLS estimation. The results are divided into groups of developing countries, non-developing countries and all countries available in the data set. Looking at the column of the OLS estimation, we can see that the coefficient of the FDI-ratio is positive and significant at the 10% level for the sample that includes all countries in the world. This effect is rather small though, suggesting that an increase in FDI will lead to an increase in inequality. For the developing countries, the coefficient is small and negative but insignificant. This would have suggested a reduction in inequality, if the coefficient on the FDI ratio was significant.

Looking at the other variables, only the coefficient of the growth rate of GDP is significant for this group, this at the 5% level. For the non-developing countries, the only significant coefficients are those of GDP growth and the log of the total population. For the sample of all countries, in addition to the FDI ratio being significant, the coefficient of GDP growth is also significant at the 5% level. These results suggest that an increase in GDP growth, will lead to a reduction in inequality. The F-statistics of all the three groups have low values, but the

corresponding p-values are below our level of significance, indicating that our model is reasonable, and that the coefficients in our model are different from zero. The level of the R^2 is low for the three groups, and articulates that only sixteen percent of the variation in the Gini coefficient is explained in the model (for the group of developing countries that is). Comparing this to the group of non-developing countries with an R^2 value of 0.356, which indicates an explanatory power of 35.6 %.

In columns four to nine, we have the first and second stage of the 2SLS estimation. Looking at the first stage in column four to six, we can see that the coefficient of our instrumental variable is positive for all three groups, but not significant. The F-statistic of the first stage regression for developing countries is 14.08 and 10.99 for the group containing all the countries in the sample. If we follow the “rule of thumb” presented in Staiger and Stock (1997) and Stock and Watson (2012), then the value of the F-statistic will indicate whether the relevance condition for an instrumental variable holds. If it is above 10, then it means that the instrument is relevant. Relevance does not imply significance though, and since the number of natural disasters are insignificant, I would consider saying that this is not a good instrument for FDI.

What we are actually doing, when estimating the first stage, is to test for the hypothesis that the coefficients on the instrumental variables are equal to zero in the first stage of a 2SLS estimation. If the F-statistic is lower than 10, this may be an implication of presence of a weak/or irrelevant instrument. If this is so, there is a possibility of a biased 2SLS estimator (Stock and Watson 2012) and (Staiger and Stock 1997). Note that even if an instrumental variable is used, it does not seem to enhance the estimations compared to the OLS. The coefficients are still insignificant, despite the F-test supporting a relevant instrument for two of the groups.

Table 2: Income Inequality: the Gini Index

Dependent: gini	OLS			IV					
	Dev.	Non-Dev.	All	<u>1st</u>			<u>2nd</u>		
				Dev.	Non-Dev.	All	Dev.	Non-Dev.	All
fdiratio	-0.006 (0.02)	0.002 (0.00)	0.002* (0.00)				0.291 (0.42)	0.014 (0.03)	0.725 (4.76)
exportshares	-0.034 (0.04)	-0.072 (0.06)	-0.048 (0.03)	-0.091 (0.09)	-0.131 (0.16)	-0.767 (4.69)	-0.091 (0.09)	-0.131 (0.20)	-0.767 (4.69)
logGDP_pcap	1.999 (2.99)	-2.069 (3.28)	-0.192 (2.53)	4.378 (5.53)	-3.004 (4.48)	15.915 (104.42)	4.378 (5.53)	-3.004 (4.48)	15.915 (104.42)
gdpgrowth	-0.148** (0.05)	-0.291** (0.10)	-0.152** (0.05)	-0.058 (0.14)	-0.271* (0.13)	0.045 (1.30)	-0.058 (0.14)	-0.271 (0.26)	0.045 (1.30)
capitalshare	-0.061 (0.07)	0.118 (0.06)	-0.005 (0.07)	-0.137 (0.17)	0.113 (0.08)	-0.317 (2.06)	-0.137 (0.17)	0.113 (0.13)	-0.317 (2.06)
logTOTPOP	-7.114 (5.20)	-14.292* (5.88)	-8.226 (4.21)	8.349 (22.65)	-17.855 (11.07)	4.659 (87.84)	8.349 (22.65)	-17.855 (12.74)	4.659 (87.84)
importshares	0.068 (0.04)	-0.007 (0.06)	0.055 (0.04)	0.025 (0.09)	-0.021 (0.08)	-0.119 (1.23)	0.025 (0.09)	-0.021 (0.10)	-0.119 (1.23)
inflation	0.001 (0.00)	0.003 (0.00)	0.002 (0.00)	0.001 (0.00)	0.006 (0.01)	0.005 (0.02)	0.001 (0.00)	0.006 (0.01)	0.005 (0.02)
nn_disasters				0.291 (0.42)	0.014 (0.03)	0.725 (4.76)			
_cons	139.919 (100.23)	269.828* (114.28)	172.534* (82.13)	-129.850 (401.27)	335.979 (209.33)	-170.298 (2232.23)	-129.850 (401.27)	335.979 (238.43)	-170.298 (2232.23)
Year fixed effects		YES			YES			YES	
Country fixed effects		YES			YES			YES	
R ²	0.160	0.356	0.130						
N	650	218	868	650	218	868	650	218	868
F-stat	4,55	2,74 ¹⁹	2,66	14,08	0,68 ²⁰	10,99			

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

Note! Numbers reported in parenthesis are standard errors and not t-statistics. This applies to all tables.

¹⁹ Not robust standard errors

²⁰ Not robust standard errors

6.1.2 Poverty

I continue my analysis with looking at the effect of FDI on poverty, by considering two different dependent variables – the headcount ratio and the poverty gap index. We start off with the headcount ratio in figure 4. Again, the first three columns are the results of the OLS estimation. For the group of developing countries, we see that the export shares and import shares are significant at the 10% level, with the first having a positive sign, while the latter a negative one. The log of GDP per capita and the log of the total population are both significant at the 1% level with a negative sign, but the effect is marginal. For the group of non-developing countries, the FDI-ratio has a negative coefficient, but it is still insignificant. The coefficient of my inflation variable is the only significant variable for this group at the 10% level. When including all of the countries in the sample we see that the FDI-ratio still isn't significant, and its coefficient even has a positive sign. This indicates that foreign direct investments increase poverty. Export shares are now significant at the 5% level for this group, and the coefficients of the log of GDP per capita and total population are significant at the 1% level.

Moving on to the results of the 2SLS estimation, we see that the coefficients of the FDI-ratio in all three groups are negative, and still insignificant when looking at the second stage. Their magnitude has increased compared to the OLS estimation. The size of these coefficients for the groups of developing countries and all the countries included in the sample are the ones that are most considerable. Their impact would have been quite powerful if they were to be significant, reducing poverty as consequence of FDI. Turning our attention to the results of the first stage of the two-stage-least squares estimation, we see that the F-statistic for the group of developing countries, as well as for all countries is rather high; 93.48 for the developing group, and 14.56 for the group including all countries. This indicates that we have a relevant instrument for our analysis, following the “rule of thumb” about an F-stat greater than 10. Again, using an IV does not give us significant coefficient on the ratio of FDI for any of the groups in the sample. The first stage being insignificant, can explain the insignificant results in the second stage.

Table 3: Poverty: The Headcount ratio

Dependent: headcount	OLS			IV					
	Dev.	Non Dev.	All	<u>1st</u>			<u>2nd</u>		
				Dev.	Non Dev.	All	Dev.	Non Dev.	All
fdiratio	0.066 (0.04)	-0.018 (0.06)	0.046 (0.03)				-0.817 (0.96)	-0.167 (0.26)	-6.216 (44.00)
exportshares	0.241* (0.10)	-0.114 (0.26)	0.255** (0.09)	0.413 (0.21)	-0.104 (0.28)	1.099 (5.14)	0.413 (0.21)	-0.104 (0.20)	1.099 (5.14)
logGDP_pcap	-19.581*** (4.72)	-3.046 (16.37)	-19.510*** (4.75)	-26.889* (11.24)	2.664 (22.06)	-44.555 (157.47)	-26.889* (11.24)	2.664 (19.45)	-44.555 (157.47)
gdpgrowth	-0.019 (0.06)	0.152 (0.43)	-0.027 (0.06)	-0.281 (0.26)	0.048 (0.53)	-2.262 (15.26)	-0.281 (0.26)	0.048 (0.58)	-2.262 (15.26)
capitalshare	0.059 (0.10)	-0.058 (0.27)	0.107 (0.09)	0.285 (0.36)	-0.167 (0.38)	0.889 (5.99)	0.285 (0.36)	-0.167 (0.30)	0.889 (5.99)
logTOTPOP	-36.242*** (6.99)	-19.843 (30.71)	-39.686*** (6.87)	-83.096 (48.77)	-27.894 (38.25)	-418.420 (2616.16)	-83.096 (48.77)	-27.894 (36.22)	-418.420 (2616.16)
importshares	-0.274* (0.12)	0.220 (0.27)	-0.273* (0.11)	-0.149 (0.30)	0.453 (0.60)	1.588 (13.11)	-0.149 (0.30)	0.453 (0.50)	1.588 (13.11)
inflation	-0.000 (0.00)	0.040* (0.02)	0.001 (0.00)	-0.000 (0.00)	0.037 (0.02)	0.004 (0.03)	-0.000 (0.00)	0.037 (0.02)	0.004 (0.03)
nn_disasters				-0.817 (0.96)	-0.167 (0.34)	-6.216 (44.00)			
_cons	786.142*** (136.22)	336.437 (569.63)	832.278*** (136.51)	1604.684 (858.25)	404.652 (657.63)	7090.988 (43031.44)	1604.684 (858.25)	404.652 (657.63)	7090.988 (43031.44)
Year fixed effects		YES			YES			YES	
Country fixed effects		YES			YES			YES	
R ²	0.539	0.637	0.495						
N	649	84	733	649	84	733	649	84	733
F-stat	6,83	1,82 ²¹	7,94	93,48	1,47 ²²	14,56			

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

We will now continue our analysis on poverty by looking at the poverty gap index as the dependent variable. Again, we start off with the OLS estimation results. Here, the coefficients on the FDI ratio are insignificant, again, and they are small in magnitude, and differing in signs. For the group of developing countries and the group containing all countries, only the coefficients of export shares, and the log of GDP per capita and population are the ones being significant. Continuing with the estimations results of the 2SLS, we still do not find significant coefficients on the FDI-ratio. The F-statistics from the first-stage are above ten for all groups except for the one consisting of developed countries, with a value of 1.47.

²¹ Not robust standard errors

²² Not robust standard errors

Dependent: povertygap	OLS			IV					
	Dev.	Non Dev.	All	1st			2nd		
				Dev.	Non Dev.	All	Dev.	Non Dev.	All
fdiratio	0.017 (0.02)	-0.008 (0.05)	0.010 (0.02)				-0.476 (0.51)	-0.096 (0.19)	-3.568 (25.07)
exportshares	0.084* (0.04)	0.017 (0.21)	0.114* (0.05)	0.180 (0.12)	0.023 (0.22)	0.597 (2.93)	0.180 (0.12)	0.023 (0.14)	0.597 (2.93)
logGDP_pcap	-7.696** (2.41)	0.029 (13.36)	-7.897** (2.39)	-11.777* (5.66)	3.396 (17.27)	-22.207 (89.22)	-11.777* (5.66)	3.396 (12.88)	-22.207 (89.22)
gdpgrowth	-0.067 (0.04)	-0.120 (0.35)	-0.077 (0.04)	-0.213 (0.15)	-0.182 (0.41)	-1.354 (8.70)	-0.213 (0.15)	-0.182 (0.42)	-1.354 (8.70)
capitalshare	0.018 (0.05)	0.137 (0.22)	0.082 (0.06)	0.144 (0.20)	0.072 (0.30)	0.529 (3.42)	0.144 (0.20)	0.072 (0.23)	0.529 (3.42)
logTOTPOP	-22.204*** (4.53)	-18.943 (25.08)	-25.102*** (4.54)	-48.369 (25.32)	-23.690 (29.93)	-241.490 (1490.33)	-48.369 (25.32)	-23.690 (23.83)	-241.490 (1490.33)
importshares	-0.067 (0.05)	0.069 (0.22)	-0.096 (0.05)	0.002 (0.15)	0.206 (0.47)	0.967 (7.47)	0.002 (0.15)	0.206 (0.37)	0.967 (7.47)
inflation	0.000 (0.00)	0.024 (0.02)	0.001 (0.00)	-0.000 (0.00)	0.021 (0.02)	0.003 (0.02)	-0.000 (0.00)	0.021 (0.01)	0.003 (0.02)
nn_disasters				-0.476 (0.51)	-0.096 (0.27)	-3.568 (25.07)			
_cons	437.424*** (86.13)	282.405 (465.13)	480.043*** (86.58)	894.527* (441.23)	322.630 (419.34)	4055.939 (24509.63)	894.527* (441.23)	322.630 (419.34)	4055.939 (24509.63)
Year fixed effects		YES			YES			YES	
Country fixed effects		YES			YES			YES	
R ²	0.450	0.611	0.398						
N	649	84	733	649	84	733	649	84	733
F-stat	5,58	1,63 ²³	5,17	13,26	1,47 ²⁴	14,56			

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

²³ Not robust standard errors

²⁴ Not robust standard errors

6.2 Robustness

In this section, I want to check whether the data used in the analysis contains outliers, and if these are a potential threat to external validity. If the data encompasses many outliers, then wrongful conclusions may be made, and the coefficients in the analysis will most likely be inconsistent. In order to check if my analysis is affected by this phenomenon, I do conduct a test, by removing observations above the 99th percentile of the FDI-ratio, and run all of the regressions over again²⁵. After that, I compare the results with the one obtained in section 6.1.

We can clearly see from the next page, that the results haven't changed that much. In the regression output where the Gini Index is the dependent variable, the coefficients on the FDI-ratio have only changed marginally, and the number of observations has been reduced. Some of them have even changed their sign, but they are still insignificant. It can be seen by looking at the F-statistics, that the explanatory power for the OLS estimations has increased somewhat. When it comes to the first stage of the IV estimation, we can see that the magnitude of the coefficients of the FDI-ratio have changed minimally. The F-statistic has increased for the group of non-developing countries, from 0.68 previously, to 3.84 now. For the group all the countries, we can see that the effect has propagated itself throughout the sample, leading to an increase of the F-statistic for this group as well. The coefficients on the FDI-ratio still remain inconsistent.

Note that there are no changes for the regressions where the headcount ratio and the poverty gap index are used as dependent variables. I have therefore not included tables for the "new" estimation results for these, but only for the Gini. This can be found on the next page.

²⁵ The 99th percentile of the fdiratio is equal to 352.873, by eliminating everything above that value, a total of 525 observations are deleted from the dataset

Income inequality: GINI

Dependent: gini	OLS			IV					
	Dev.	Non-Dev.	All	<u>1st</u>			<u>2nd</u>		
				Dev.	Non-Dev.	All	Dev.	Non.dev.	All
fdiratio	-0.006 (0.02)	0.006 (0.01)	-0.004 (0.02)				0.291 (0.42)	0.109 (0.30)	0.710 (3.54)
exportshares	-0.034 (0.04)	-0.103 (0.06)	-0.049 (0.03)	-0.091 (0.09)	-0.120 (0.09)	-0.163 (0.51)	-0.091 (0.09)	-0.120 (0.10)	-0.163 (0.51)
logGDP_pcap	1.999 (2.99)	-2.302 (3.35)	-0.199 (2.51)	4.378 (5.53)	-5.669 (8.98)	0.980 (9.07)	4.378 (5.53)	-5.669 (10.42)	0.980 (9.07)
gdpgrowth	-0.148** (0.05)	-0.291** (0.10)	-0.153** (0.05)	-0.058 (0.14)	-0.265 (0.14)	0.084 (1.14)	-0.058 (0.14)	-0.265 (0.30)	0.084 (1.14)
capitalshare	-0.061 (0.07)	0.119 (0.07)	-0.004 (0.07)	-0.137 (0.17)	0.158 (0.12)	-0.111 (0.60)	-0.137 (0.17)	0.158 (0.18)	-0.111 (0.60)
logTOTPOP	-7.114 (5.20)	-14.754* (6.00)	-8.606 (4.36)	8.349 (22.65)	-10.817 (11.77)	29.860 (188.13)	8.349 (22.65)	-10.817 (16.99)	29.860 (188.13)
importshares	0.068 (0.04)	-0.026 (0.07)	0.056 (0.04)	0.025 (0.09)	-0.152 (0.31)	-0.167 (1.12)	0.025 (0.09)	-0.152 (0.37)	-0.167 (1.12)
inflation	0.001 (0.00)	0.005 (0.00)	0.002 (0.00)	0.001 (0.00)	0.006 (0.01)	0.002 (0.00)	0.001 (0.00)	0.006 (0.01)	0.002 (0.00)
nn_disasters				0.291 (0.42)	0.109 (0.25)	0.710 (3.54)			
_cons	139.919 (100.23)	282.426* (116.47)	179.124* (84.45)	-129.850 (401.27)	255.112 (151.70)	-447.275 (3058.73)	-129.850 (401.27)	255.112 (239.20)	-447.275 (3058.73)
Year fixed effects		YES			YES			YES	
Country fixed effects		YES			YES			YES	
r2	0.160	0.371	0.131						
N	650	210	860	650	210	860	650	210	860
F stat	4,55	2,79	2,68	14,08	3,84	16,13			

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

6.3 My results compared to others results

There are many different results when it comes to the empirical research on foreign direct investment, inequality and poverty. As mentioned in section 4.2 (Previous literature), different results emerge, based on the different specifications of the models and the variables included in the analyses. It is therefore not surprising that results differ across studies.

Comparing my results to those presented in the paper by Im and McLaren (2015), I can see that my empirical approach has led to different results. By using four different instruments in their analysis, they find significant effects of reduction in inequality in developing countries, as a consequence of greater FDI in the receiving country. My results contrast theirs, in the way that I only use one instrumental variable, in addition to including all of the world countries in the analysis.

An important argument though, is that my coefficients have mostly obtained the same signs in the majority of my estimations for developing countries. This conforms to the past statements, suggesting that the effects of FDI differ across the sample you are looking at. For instance, one overall effect for developing countries and one for transition countries and etc.

There is literature supporting my findings though. As mentioned earlier, Franco and Gerussi (2013) do not find any significant effects of FDI. There are similarities in both of the procedures, like for instance, the choice of using panel data, a fixed effects regression model as well as the inclusion of the different variables in the analysis.

Te Velde from (2003) also does not seem to find any evidence of reduction in inequality as a consequence of increased FDI into a country. Although his approach is quite different compared to the one presented in this thesis.

It is to no surprise that foreign direct investments and inequality and poverty, are complex issues to understand. It's not easy to find an effect that applies to every situation, although currently it seems as if the literature on the positive effects of FDI, outnumbers the research based on a more negative view.

7 Discussion

In this thesis, I have tried to analyse the effect of FDI on income inequality and poverty, using an instrumental variable. As discussed in my previous section, my results differ from a lot of the existing literature, like for example the results presented in the Im and McLaren paper (2015), but they do also coincide with some of it as well. Why did this happen though?

First of all, I think it is necessary to discuss the instrumental variable used in the thesis. Is it possible that it is not good enough, resulting in insignificant estimates? Maybe the number of natural disasters in neighbouring countries is not a good variable, if we assume that it is supposed to affect the independent variables *only* through the effect on the FDI-ratio in the host country. The mechanisms of the IV are explained earlier in the thesis. If it is the case that the exclusion restriction does not hold quiet well, then it is possible that the instrumental variable does affect income inequality and poverty through other channels than foreign direct investment. It could be that natural disasters in neighbouring countries will affect inequality in the host country of FDI, if there is a high probability of a disaster occurring in the host country, given that it occurs in the neighbouring country as well. Then, if there is a “spread” of natural disasters in the same area, then it can also occur in the host country, leading to material destructions, deaths and other costs. Literature on natural disasters and economic growth, suggests that there is a negative effect (Karim and Noy, 2013). This it not impossible to imagine, if it is so that a specific region is prone to natural disasters, then it is not given that they will appear only in selected countries and within their borders.

It may also be the case that trade between neighbouring countries, will become more difficult as a direct consequence of the destructions, like for instance a hit to infra structure, or damage to inputs used in the production of a good that is produced in the host country. In this way, the economy will be affected of the economic halt in its neighbouring countries.

Then again, another element that might support the view of an endogeneity problem of the instrumental variable is migration. Frequent natural disasters in neighbouring countries, may spark migration between them. Increased migration into a country may have both positive and negative effects, but there is evidence in the literature that it does have an effect on inequality through the effect of a moving labour force of skilled and unskilled workers.

If this is the case, then it might be an adequate explanation for why the 2SLS estimation results do not show any significant effects of FDI on income inequality and poverty. Having said that, there is a possibility that a potential effect of the FDI-ratio is offset by the effect of natural disasters, when looking at the dependent variables (if we do consider that the instrument is endogeneous).

Considering the broad issue on the topic of FDI and inequality, many other things are worth discussing. I fear I do not have the time nor the space to include all the relevant issues on the topic. For instance, looking at the difference in results between developing countries and non-developing countries. Some of the previous literature claims that FDI affects these groups differently, in terms of how they handle FDI as well as through which mechanisms it works. It is not obvious that once a country manages to attract FDI, it will automatically know how to handle it. The gains from foreign direct investments vary with sectors, countries and its societies. In order to extract the benefits, and lessen the disadvantages, host countries need to have some guidelines in order (World Bank, 2015). Policies, rule of law and the level of development in a country are for example important factors that matter. Access to financial markets, institutions, human capital and a good and efficient investment environment are also necessary to exploit the benefits, and stimulate economic growth. In addition to this, developing countries can also get help with improving environmental and social conditions, like for instance by transmission of “greener” technologies and the use of policies contributing to society (OECD, 2002). These challenges may be more relevant for developing countries that haven’t developed a well-functioning market, or differ a lot in quality of institutions and rule of law.

Moving on to another topic worth discussing is the problem of too strong dependence on international companies, as perceived by country leaders. This is a political issue, which brings forward emotional, political or even ideological feelings among countries and its citizens. This is a recurring event associated with FDI, which functions as an obstacle, and even leads to resistance of FDI in some cases. Some believe that countries that are too dependent on international investors are in danger of losing ruling power, letting them being controlled too much by foreign investors. This can be illustrated with examples from all over the world, like India, USA and China. For a more detailed discussion on the topic, see (World Economic Forum, 2013). “Reliance on foreign firms technology and skills may inhibit

development of local capabilities. Increased linkages raise dependency of domestic firms on multinationals (te Velde, 2004).”

Other interesting issues to be discussed are the problems of “white elephants” investment project. Attracting FDI into a country should be done with the goal of reaping the benefits of such an investment. There is evidence of cases though, where the money is spent on not so beneficial projects, with little or no benefit to people or communities. Evidence on this exists both for China, India and Africa (Bond, 2006). If FDI should be considered as a poverty-alleviating tool in the future, then such scenarios of “white elephants” may be of worry.

7.1 Future research

Conducting the analysis as done in this thesis, has given me the opportunity to think a lot about how things could have been done differently. With a vast literature on the topic, offering a large variety of methods and theories to be used in the research, you can find many sources of inspiration. If I was to spend more time on this, or do things all over again, I think I would have chosen to change part of my empirical methodology. It would be interesting to see how the estimation results would have changed, if a measure on institutional quality or corruption was included as variable. This has partially been attempted in Assadzadeh and Pourqoly (2013).

Foreign direct investments are not really homogeneous across countries or sectors. Precisely because of this, it may seem unwise to analyse it as an aggregate measure. This makes it difficult to put together a good framework on policies, rules and guidelines concerning its managing (World Bank, 2013).

It can also be discussed whether alternative measures of inequality should be used, in order to access a more correct effect on inequality in the world.

8 Concluding remarks

Foreign direct investment is an important part of international trade theory, which has played an important part in the globalisation debate of the last years. With evidence supporting both positive and negative effects of it on income inequality and poverty, a definite conclusion has not been reached. Despite a lot of research, it has not been possible to come to an agreement on this notion.

In this paper, I have studied the effect of foreign direct investment on income inequality and poverty using panel data, applying an instrumental variable approach. The results of my analysis state that there are no significant effects to be found from FDI on the measures of inequality and poverty. This applies when looking at developing countries and developed countries separately, as well as together, representing the entire world. If it is so that these findings are true, then encouraging FDI into countries should not be considered as a good poverty-fighting tool.

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Attachment A: List of Countries in my dataset

Afghanistan	Cameroon	Greece	Moldova, Republic of
Angola	Republic of Congo	Guatemala	Mexico
Albania	Colombia	Guyana	Macedonia, F.Y.R.O.
Argentina	Costa Rica	Honduras	Mali
Armenia	Czechia	Croatia	Mongolia
Austria	Germany	Haiti	Mozambique
Azerbaijan	Djibouti	Hungary	Mauritania
Burundi	Denmark	Indonesia	Malawi
Belgium	Dominican Republic	India	Malaysia
Benin	Algeria	Ireland	Namibia
Burkina Faso	Ecuador	Iran, Islamic Republic of	Niger
Bangladesh	Egypt	Iraq	Nigeria
Bulgaria	Eritrea	Israel	Nicaragua
Bosnia and Herzegovina	Spain	Italy	Netherlands
Belarus	Estonia	Jordan	Norway
Belize	Ethiopia	Kazakhstan	Nepal
Bolivia	Finland	Kenya	Pakistan
Brazil	France	Kyrgyzstan	Panama
Bhutan	Gabon	Cambodia	Peru
Botswana	United Kingdom	Lao People's Dem. Rep.	Papua New Guinea
Central African Republic	Georgia	Liberia	Poland
Canada	Ghana	Lesotho	Portugal
Switzerland	Guinea	Lithuania	Paraguay
Chile	Gambia	Luxembourg	Russian Federation
China	Guinea-Bissau	Latvia	Rwanda
Cote D'Ivoire	Equatorial Guinea	Morocco	Sudan