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The relationship between foreign direct investment and the socio-economic development in Latin America & the Caribbean

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Abstract

This study examines the effect of FDI in Latin America and the Caribbean from 1995 to 2014. Furthermore, the study investigates the relationship between FDI and the social development, compared to the relationship between FDI and GDP per capita. This is investigated through a cross-country analysis with panel data. We provide evidence by using statistics from the World Bank (WGI), Transparency International (CPI) and United Nation Conference on trade and development (UNCTAD). The result suggests that an increase in FDI to Latin America and the Caribbean has a positive effect on the economic growth. Although, no evidence could be found that the social development have improved, according to the results when observing life expectancy and GINI Coefficient Index. Previously literature does not provide a unilateral picture of the effect FDI has on economic growth and social development. There are numerous perspectives in the issue, although there is a consensus in the literature advocating that a certain natural level of development in the country is necessary to make it possible to exploit the inflow of FDI.

Keywords: Foreign direct investment, FDI, economic growth, Latin America and the Caribbean, panel data, socio-economic development

Contents

1 Introduction

In this section our purpose and contribution to the literature will be explained after a short introduction where we give a review of the development of foreign direct investment.

The world is facing a rapid globalization and markets are getting more integrated while boarders diminish. As a result, global foreign direct investment (FDI) has attracted a lot of research lately. From the 1980s there has been a global rise in the FDI. The dominating investment policy trends are focusing on how to attract FDI to promote economic growth. This has been a starting point on an ongoing debate about the costs and benefit of FDI (UNCTAD 2006).

Most of the global FDI has been centred in the developed world, but it has shown to be of great significance on the economic growth to many developing countries as well. As a result, some policymakers in developing countries have paid attention to this and applied a strategic to attract these inflows of FDI (Herzer el al. 2008 p.793). In other words, it has become more common that governments attempt a liberalization strategy and focus on improving the investment climate in purpose to attract FDI and hence experience growth. Favourable policies have been applied to attract FDI to integrate with economic sectors and create opportunities for the domestic market. A conclusion from previous literature in the subject is that a consensus seems to seek understanding in the relationship between FDI and economic growth. There seem to be an absence in literature regarding the effect from FDI on the socio-economic conditions (Reiter & Steensma, 2010 p.1679). Growth has been described as a necessary condition for economic and social development in countries, but to be insufficient to give an overall picture of the well-being in an economy. Alternative measurements of social development has therefore been created as a complement to growth measurement and only observing income per capita in countries. Growth is necessary for increasing the real income per person, but the perspective of economic development is wider and includes numerous economic and social factors (Thirlwall, 2008).

1.1 Purpose

The primary objective of this thesis is to examine if there exists a relationship between (FDI) and an increase in the socio-economic conditions for people in Latin America and the Caribbean from 1995 to 2014. The study focuses on the effects on the inflows of FDI. We will also discuss the general consensus of what impact the economic and political structure have on the exploitation of the FDI to Latin America and the Caribbean.

The aim is to contribute to the ongoing debate about whether FDI generates an increase in gross domestic product (GDP) per capita in a country or not, although the main focus lies in making a comparison of the relation between FDI and social development variables. Initially the relation between FDI and GDP per capita is illustrated through a cross-country analysis. This result is compared to two regressions with socio-economic variables. In this study, we use data from mainly the World Bank (WGI) but also Transparency International (CPI) and United Nation Conference on trade and development (UNCTAD).

The purpose in this thesis is not only to observe the classical economic perspective but also closely observe what impact the FDI has on the social development in Latin America and the Caribbean. We have simply chosen to refer to gross domestic product (GDP) per capita as one perspective to observe the economic point of view. To be able to measure the social development, this study will observe life expectancy and GINI coefficient Index. The main reason for shedding light on income inequality is because we are interested in whether the income distribution in the chosen region has experienced a development after the increase of FDI inflows the last years.

2 Background

This chapter aims to provide an understanding of the significance of FDI and describe the development of FDI through time. This will be made both from a global perspective and from Latin America and the Caribbean countries point of view.

2.1 Foreign direct investment (FDI)

According to OECD (2008) a conventional definition of FDI, is that it is defined by a long-term relationship consisting of funding and ownership of foreign companies. In other words, FDI is the flow of capital that moves over boarders between economies. FDI is a central factor in the debate about globalization. The general view is that with the right political and economical structure, FDI can generate financial stability, promote economic growth and increase the living standard in a society. In most of the cases the foreign company needs to acquire at least 10 % of the voting power in the company to be defined as an FDI inflow. However, this percentage that defines FDI varies between countries. A common argument for FDI is that it is encouraging a long lasting economic relation between economies. If the host country has a steady policy framework, FDI promotes an integrated trade policy and helps the transfer of technology (OECD 2008 p.17).

FDI contributes to something called "spillover effects" that implies that a third part will be effected indirectly by the investments. The FDI to a country can in some cases have an impact on the level of human capital and technology in the host country and this is the so-called spillover effect. When a company integrates on a foreign market and becomes a multinational company there are mainly two factors that separate the company from the one on the domestic market in the host country. First, it can bring a certain level of technology that can be of advantage when acting on the domestic market with the local firms. In other words, it creates spill over effects to the host economy. In addition, it can create advantages with the new technology presented in the domestic market, combined with the expertise of local firms and knowledge of how the local markets is structured. The second factor is that when multinational companies establish on the market there will most probably be disturbances in the current equilibrium. That will create a necessary protectionism from the local firms to not lose their shares on the market. However, these spill-over effects are not constant, but they

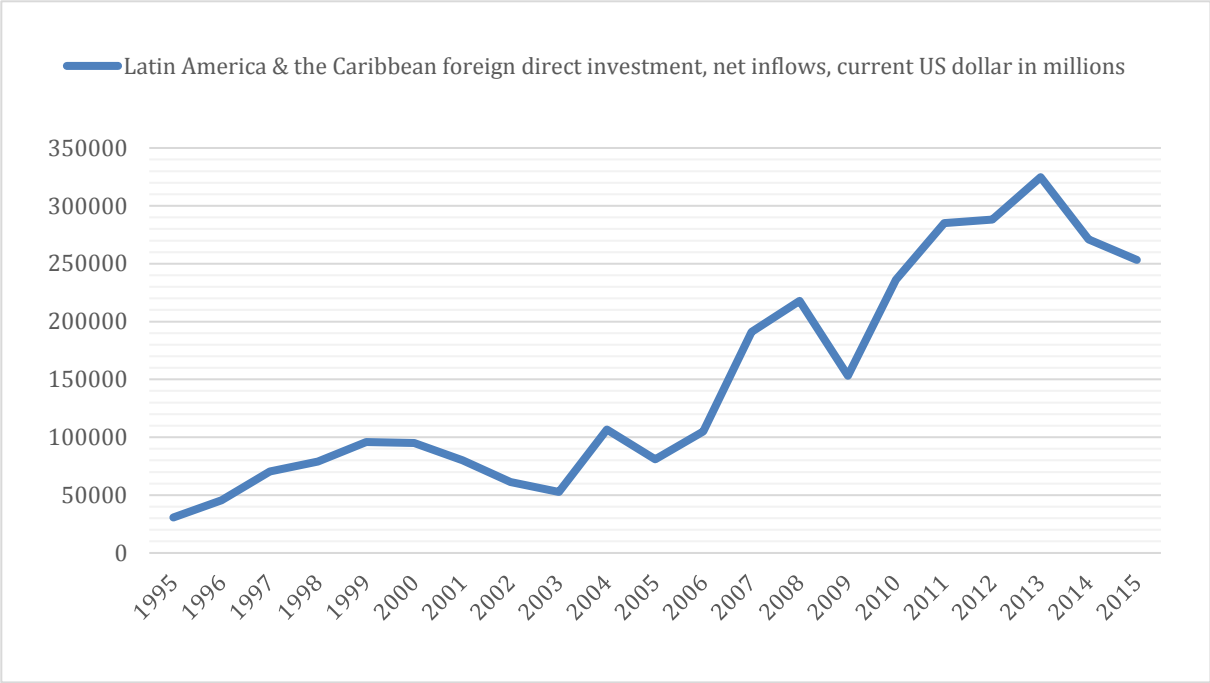
depend on what kind of investment is being made (Sjöholm & Blomström, 1999 p. 916). In the debate about spill over effects, Damijan et al. (2012; 2013) highlight FDI to be of great significance to the technology transfer for firms. They conclude that FDI tends to keep the costs for the host economy down since the multinational company generally is the financing part. FDI is also said to promote a rapid technology transfer to developing countries, which seems to be of great importance as well.

2.2 The development of FDI in Latin America and the Caribbean

A report from OECD (2010) shows that despite some fluctuations over the years, the global economy has experienced an increase in growth. The report also states that FDI have risen and a reason for this could be the rapid strategy of liberalization. Governments focusing on investment policy have become more common and trade is closely integrated with policies such as the economical, social and environmental issues (OECD, 2010). There are great deals of factors that indicate that openness is important for growth rather than being a closed economy (Roubini and Sala-i-Martin, 1992). Through more globally integrated markets it has become easier to operate across boarders, both for private investors and companies. The development of FDI is an important source for creating long- lasting links between economies (OECD, 2008).

From the 1990s there has been an overall upward trend of FDI in developing economies and an even stronger trend for the Latin American and the Caribbean countries. In the 1990s there was a high share of the world FDI directed to this region, though very volatile. Latin America and the Caribbean experienced a decrease in the 2000s, followed by an increase after 2010 (Todaro, 2015). The fact that economies in the Caribbean are very different from each other has an impact on the overall trend. In the Caribbean, tourism is a main factor to attract FDI since it is an important income source. Therefore, governments construct policies to attract FDI. The policymakers endeavour a policy that targets liberalization with the purpose of creating an investment friendly climate. By reducing tariffs and quotas, the governance can make it easier to invest in the country and therefore attract foreign investors (ECLAC, 2015 p.67).

Figure 2.1: Inflow of FDI to Latin America & the Caribbean 1995-2015



Source: Figure 2.1 based on data from the World Bank.

This figure 2.1 with data collected from the World Bank illustrates the inflows of FDI to Latin America and the Caribbean from 1995 to 2014 and shows an overall upward trend. There was a modest increase from 1995 until 2003, but after this year the region experienced a take-off with some exception in 2004 until 2005 as well as after the financial crisis 2008. This region seems to have recovered quickly from the financial crisis and has continued to rise until 2013.

A report from OECD (2016) shows that from 2000 the Latin American and the Caribbean region experienced a 3 % increase of the average GDP growth. The poverty in this region decreased from 29 % to 16 % in 2013. Despite these recent improvements, the income inequality in this region experience a slower pace towards improvements compared to other developing countries. The report further presents that the level of education in this region is falling behind OECD countries. Observing education is a good measurement of the socio-economic conditions in Latin American and the Caribbean countries since OECD (2016) mentions that students' result are closely dependent on the overall socio-economic condition. Since this causes a skills gap in this region, there are difficulties for the labour market, which creates barriers for development. The lack of skills among many workers limits them to only low-productivity jobs with poorer working conditions. As a consequence, Latin America and the Caribbean have problems with a large informal labour market (OECD, 2016 p.23-24).

In Latin America and the Caribbean a major problem is that only half of women are integrated in the labour participation, and the labour participation refers to paid work. This leads to limitations in the economic sector and a great loss of potential. Between 2000 and 2010 the growth in female labour income was a main reason for 28 % of the reduction in inequality. Moreover, a higher share of females in the labour market is closely linked to a lower level of infant mortality and a higher life expectancy. Previous literature shows that the possibilities for childcare are a crucial variable to increase the opportunities for females in the labour market (Diaz et al. 2016).

There is not a one-sided perspective whether the FDI inflows promote economic growth in this region. Studies show different result depending on which perspective is being used. It is highly likely that under certain conditions FDI inflows can have a positive impact on economic growth in a country. Important circumstances for a country to experience an accelerated growth are a strategic work toward integrating the local businesses with the FDI inflow. However this is not the reality in the Caribbean. The capital stock in this region has increased and there are positive effects on the current account deficit. Despite this, there is a weak correlation between FDI and the capital stock, which makes the positive effects from FDI on this region small. An important factor to have in mind when observing countries in the Caribbean is vulnerability. Facing challenges such as natural disasters, climate changes and a weak economic structure position the countries in an exposed position and creates challenges of attracting FDI. FDI is a high share of the total GDP in this region, which is making the country more vulnerable to a decrease in the inflow. The distribution of FDI inflows varies, but is concentrated mostly in the tourist sector or the natural resources sector (ECLAC, 2015 p.66).

2.3 Economic growth and social development

In the 1980s the Latin American countries experienced reformations towards democratization. This development characterized most of the 1980s and the 1990s. In the 1990s all countries in the region had accomplished governments chosen from a free election, with one exception: Cuba. New governments focusing on reforms and strengthening the political and economical institutions replaced the typical populist military dictatorship. As a consequence of the more

liberal economic approach, the corruption developed to be of great concern. While these shifts were made of the governments, less attention was paid to the problem with corruption and therefore the development of corruption could continue to spread. In Latin American economies the corruptions is doubtlessly one of the greatest problems in the society. High corruption in a country does not attract FDI inflows in the same amount as a country with low corruption (Bolea, 2015 p. 121-122). Similarly, Pellegrini (2004) concludes that number of studies observe a negative relation between corruption and economic growth. He points out evidence of corruption slowing down economic growth, regarding investment as a main canal. He further mention in his study, the importance of trustworthy institutions and that a high level of corruption can create a climate where it is more favourable to use bribes as a income source.

Latin America and the Caribbean have made significant improvements in the access to water, sanitation, electricity, telecommunications and airports in the last years, which have had a great impact on the living standard. Still, the region is facing a modest improvement in the infrastructure and this causes the economic growth to slow down. Research suggests that improving a country's infrastructure can be of major significance on the growth and poverty reduction. It is also said to reduce inequality and be good for a country's competiveness (Fay & Morrison, 2007).

Thirlwall (2008) describes growth as a vital condition for economic and social development. It is perhaps not an adequate description because this aggregate measurement of growth through observing income per capita, does not take into account how the income is distributed in the country. The outcomes do not give information on whether it is consumption goods, investment or if it is of public use such as investment in the education or health sector. Also, the outcomes do not mention anything about under what conditions the outputs have been produced, in other words the social and economic background. To separate economic growth from socio-economic development, the socio-economic development focuses on the increase in the society's welfare.

2.4 Measurements of social development

Thirlwall (2008) also describe how research in this subject has developed alternative

measurement of social development as a complement to growth measurement and observing income per capita in countries. He suggests that these alternative measurements of economic well-being does not always correlate with income per capita. Moreover, he concludes that economic growth has not the same meaning as economic development. If real income per person is going to increase, growth is necessary. Although, a condition with a rise in growth does not imply that it is enough for experience economic development. Economic development is a wider concept, which includes economic and social factors such as the income distribution, the basic needs, and the well-being of people (Thirlwall 2008 p. 38-39).

There are a few ways to measure social development, but the most common of these measurements are the human development index (HDI) and the human poverty index (HPI) constructed by the United Nation Development program (UNDP) (ibid.). HDI is a collection of different measurement of social development. This measurement shows the human development in a country, based on education, health and real income per capita (Todaro, 2014). The HPI measurement consists of three basic factors: the percentage of the population that is expected to die before age 40, the adult illiteracy rate, and a deprivation index measuring the percentage of people without access to health services and safe water and children under a age of five that suffers from underweight from malnourishment. These measurements are used to give a wider framework since the alone effects of economic growth in poor countries does not imply for a development of the well-being (Thirlwall. 2008 p.39-40). Leone (2008) states that in the perspective of development, life expectancy is a standard indicator. She mentions in a study that, a higher life expectancy with a reduced mortality rate is fundamentals to development. How the adult mortality will continue to develop depend on whether there will be reforms in health technology and expenditure, lifestyle, diseases and economic development (Leone, 2008 p.380).

3 Related Literatures

In this section FDI and economic growth will be described in connection to previous literature. We will examine what the general theory presents about the effect from FDI on the development in the country receiving the inflow. Furthermore, our position in the existing research will be presented.

3.1 The General debate

In the end of the 1980s there was a huge increase of FDI that could be seen as a strong indication of the rapid globalization around the world. This was a starting point of a long debate concerning the positive and negative aspects of FDI inflows to a country. This rapid development resulted in FDI becoming the most important source of capital flows to emerging countries in the 1990s. Other studies argue that it dramatically aggravates the balance of payments and has a negative impact on the domestic market. The perspective that dominates the literature is that there is a positive relation between FDI inflows and economic growth. However, it emphasizes that it is necessary with a certain level of economic and political stability in the receiving country (Ozturk, I, p.80). Chowdhury and Mavrotas (2005, p.1) mention in their study about FDI and growth that the overall research in the subject has roots in the neoclassical growth model together with the endogenous growth model. They observe the relationship between FDI and economic growth through four levels: (i) The direct effect of FDI on the economic growth (ii) What determines the amount of FDI; (iii) The role of multinational corporate in the receiving countries; (iv) what trend the causality between the two variables shows.

A great part of the previous literature focuses on the Sub- Saharan Africa because of the high level of poverty in this region. Approximately 48 % of the people living in this region lives under one dollar per day. Therefore, the increase of FDI in this region is attracting many studies observing the effect this has on the development. According to Asiedu (2004), an increased labour participation is one way FDI can decrease the poverty in the host country. The new employment opportunities from the multinational companies could strengthen the domestic wages, increase the domestic employment rate and generate a transfer of technology that increases the productivity between domestic and foreign countries (Asiedu 2004 p.372).

The conclusion that could be made from the effects of FDI depends on what perspective the researcher chooses. To acquire an overall view of the current debate Ozturk (2007 p. 83 & 91) has summarized the effect of FDI on economic growth. He implies that the result varies depending on the cost of employment, openness, investment climate, the structures and the tax-system in the country. Also, factors such as free trade, market regulations, bank system, infrastructure and economic and political stability are important. All these factors are important to include for a conclusion whether FDI has a positive effect on the economic growth. In his research Ozturk (2007) presents a consensus of the result from numerous different studies observing whether there is a positive or negative correlation. He highlights evidence in one study showing that there exists a positive and a significant correlation between FDI and economic growth. Bengoa (2000 p.88) also gives evidence in his study that indicates a correlation between FDI and economic growth in Latin America. Assuming that there is a natural level of development in the country making it possible to exploit the inflow of FDI.

A study by Forte and Santos (2015 p. 25-26) was made with the aim to provide knowledge about FDI to Latin America by using a Cluster analysis. During the last 30 years the inflow of FDI has increased dramatically. Since 1982, the global amount of FDI has increased strongly in relation to multinational corporate activities. Furthermore, this study also concludes that the factors mentioned above, such as openness and economic stability, have a great impact on how a country exploit FDI.

3.2 FDI and Social Development

Within economics, there are few studies analysing the effect FDI has on the socio-economic perspective through a cross-country analysis. When studies mention economic welfare they are usually referring to Gross Domestic Products (GDP) and gives the perspective of utility and efficiency. Earlier studies give different result about the effects of FDI. Some are arguing that FDI promotes economic growth and has a positive impact, but others observe a negative impact on the development in the country receiving the inflow (Lehnert & Benmamoun & Zhao, 2013 p.287).

Blomström and Kokko (2003) argue that the common perspective regarding the positive effects of FDI should not be seen as obvious. As researchers have argued, the effects are

dependent on the host country's economical and political structure. However, there have been few studies of the overall impact FDI has on both the economic and the social development. It happens sometimes that researchers assume that the effects of FDI will automatically transfer into a stronger social development or an increased welfare (Blomström & Kokko, 2003). In our study we will take a position where we will observe how the welfare and social development have changed by the inflow of FDI. When measuring social development we will observe how life expectancy and the income distribution in the country have changed through observing the GINI coefficient Index.

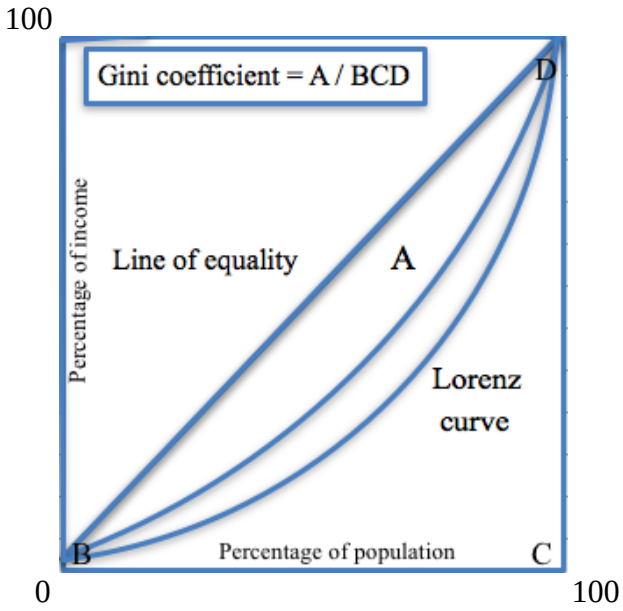
To our knowledge, this study is, the first to analyse the effect of FDI on the social conditions in Latin America and the Caribbean using a cross-country analysis. There is an absence in the studies concerning the perspective of a correlation between socio-economic aspects and FDI. Therefore, we will contribute to the literature by making a cross-country analysis using alternative measurement such as the GINI Index and Life expectancy as a comparison to the classical economical approach focusing on the change in GDP.

4 Data

In this section we will present the collected data and the time interval that will be the basis for our cross-country analysis. We construct a panel data set with 30 countries in the GDP measurement, 25 countries in life expectancy measurement and 21 countries in GINI index over four time periods.

4.1 Definitions

Figure 2: GINI-coefficient



Source: Own graph illustrating the GINI Index Coefficient.

The GINI coefficient is a measure of income inequality. The measurement is a scale from 0 to 100 that ranges the total income inequality. 0 represents perfect equality and 100 represents perfect inequality. Ultimately, the measurement gives a picture of how well income is distributed in a population. As we can see in the graph it is measured by separating the area between the perfect equality line and what we call the Lorenz curve. Additionally, to be able to construct a GINI coefficient measurement, the Lorenz curve is also necessary. The Lorenz curve is a graph that illustrates the distribution of income that deviates from perfect equality. The area A divided by the total area BCD gives the GINI coefficient. The GINI coefficient

measurement satisfies four important qualities that are desirable. The two Lorenz curves in the graph illustrate two situations. The Lorenz curve closest to the perfect equality represents a country with better income equality compared to the Lorenz curve to the right (Todaro, 2015 p. 208-209).

Todaro (2015) mentions four main points that are included in the GINI Index coefficient measurement.

1. *Anonymity principle,* which means that GINI coefficient is not dependable on who has the higher income. Additionally, GINI coefficient does not explain the characteristics of people dependent on their income.
2. *The scale independence principle* state that there is of no significance what size the economy is, or how the income is measured. In other words, it means that GINI index should not be affected of whether we measure in dollars or in Swedish kronor. Or, depending on how the economic situation in the country is.
3. *The population independence principle*: In a similar manner as the principle above, it simply implies that the measurement should not be based on the amount of people receiving income in a country.
4. *Transfer principle* implies that a transfer of some of the income from a person with high income to a person with low income, holding all other incomes constant, will cause the distribution to be more equal and closer to 0.

Gross domestic product (GDP), measures the value of a nations goods and services under a certain time period. It measures the total income of the production limited to a country's economy. GDP can be calculating by the general production function, where GDP is the sum of the gross value added. Value added is equal to the value of the goods and services that produces including inventory minus the costs for inputs in production process. Real GDP measure the value of GDP including price changes and it takes the inflation or deflation into consideration. Purchasing power parity is a theoretical exchange rate again for example us dollar it makes a market basket of good cost the same in US dollar in all countries. GDP purchasing power parity is GDP in the domestic country divided by purchasing power parity (Fregert & Jonung, 2014).

Gross National Income (GNI) measures the total value of goods and services produced in a

country, plus net factor income from abroad. GDP takes no consideration to the outflows and inflows of income and that's the difference between GDP and GNI (Feenstra and Taylor, 2014).

4.2 Model specification

To examine the effects of FDI on GDP and social development, we use central statistic on FDI net inflows in current US dollar. The thesis will include observations from 1995-2014 and consists of data from Latin America and the Caribbean. Table A1 in the appendix presents the countries in Latin America and the Caribbean that are included in the analysis. The data have been collected with consideration to available data and is distributed into four five-year intervals using a mean for the periods. The major reason for using grouped mean is to reduce the risk of short-term fluctuations affecting the results. By using a five- year averaging there will be a loss of some information but it will be relatively small.

Nonetheless, for studies observing growth it is desirable to use as long time interval as it is possible. The period is chosen due to available data. The time interval is relevant for observing the effects of FDI since these years have experienced a rapid increase of inflows and a great change towards globalization. There are 42 countries in Latin America and the Caribbean according to World Bank (2016), but not all countries had available data. Therefore, the countries missing a lot of data where excluded. Hence, this study contains data from 30 countries in the GDP measurement, 25 countries in life expectancy measurement and 21 countries in GINI index.

The majority of the variables were collected from World Development Indicators (WDI). Except, data for corruption and FDI inflows to Cuba. Information about corruption was obtained from the Transparency International (WGI), and the information about FDI inflows to Cuba was collected from UNCTAD, the World Investment Report. For a closer description of the sources for the variables, see Table A2 in Appendix.

The most central variables in our thesis are GDP, Life expectancy and GINI coefficient Index. GDPppp is used in the thesis as a measurement for the economic perspective, because it is the most common measurement in literature when comparing economic conditions between countries.

Table 4.1: Summary statistic

VARIABLES	(1) N	(2) mean	(3) sd	(4) min	(5) max
GDP per capita, ppp(current international dollar)	132	10,066	5,697	1,343	30,637
Lifeexpectancy in years	128	71.90	4.211	56.88	80.90
GINIindex	78	51.37	4.869	42.25	60.80

The data will be separated into three different outcomes with three different perspectives. In the first regression, the output from GDP will represent the economic perspective. GDP is a measurement of the economic value of activity added in a country (Feenstra and Taylor, 2014). The aim for GDP is to provide an overall picture of the economic activity in a country. The reason for choosing GDP when measuring economic conditions is simply because this is one of the most common measurements of economic condition in a country. Especially, useful when comparing the development in countries, although without mentioning anything about the social condition or the distribution in a country (NE, 2016). Therefore, in this study the observation of economic conditions is referring to GDP, which will be our dependent variable in the first regression analysis with 30 countries.

The controlling variables are openness and corruption and the variable of interest is FDI. These are included because previous literature has shown that these could have an impact on GDP in term of GDP. The primary objective of this thesis is to examine if there exists a relation between FDI and an increase in the socio-economic conditions for people in Latin America and the Caribbean. Therefore, FDI is the most central variable of interest and are collected as the net inflows of FDI in current US dollar. We have chosen to use data of net inflows of FDI in current US dollar rather than use percentage of GDP as many other studies examine. Our purpose is to study the effect of the social development and therefore we think this is better captured in a measure of net inflows.

The variable openness contains data of trade in percentage of GDP and shows the effects of openness. The openness of trade is an important factor of the human development especially since the liberalization trade has permeated the recent policy of governances. The data of openness was extracted from the World Bank (WDI). The last controlling variable in this

economic measurement is corruption. The variable contains data from the corruption perceptions index from Transparency International (WGI).

In the second regression that represents a socio-economic point of view, life expectancy will be our dependent variable since this is a common measurement when analysing social development. As mentioned in the section with previous literature, there is a complete measurement of social development, HDI that includes various variables. This is a good measurement since this gives an overall view and gather relevant variables, although we could not find enough available information about this measurement on the region we have chosen (Todaro, 2015 p.48). Due to this, life expectancy will represent the health aspect and combined with control variables it will be used to interpret what effects FDI has on the life expectancy in the chosen region of Latin America and the Caribbean. The explanatory variables are chosen with consideration to important factors for measuring social development according to previous literature. In this regression there is 25 countries observed.

In this measurement where life expectancy is the dependent variable the controlling variables are openness, corruption, health expenditure, skilled staff, maternal mortality, governments expenditure on education and primary completion-rate. The variable of interest is FDI. The variables FDI, openness and corruption are being explained above and the data is being used in the same way in this perspective. Besides these three variables, there are a few more included in this regression to minimize the risk of omitted variables in the social condition we will observe. Health expenditure is how much the government spends on health per capita in current US dollar. This includes the total of the government's health expenditure in both private and public sector. Skilled staff is measuring births attended of skilled health staff in percentage of total births. Maternal mortality ratio is the number of female deaths caused from pregnant related issues per 100.000 live births. Government expenditure on education is the percentage of GDP that government spends on education. Which includes the deaths of females until 42 days after the abortion as well, the data do not include females suffering from AIDS. The last control variable is the primary completion rate, measuring the difference between new student and repeaters in the primary compulsory school, independent of age (WDI, 2016).

In the third and last regression the *GINI coefficient Index* will be used as the dependent variable. The aim here is also to provide a socio-economic perspective and to be able to give the most complete overall picture of the effects of FDI. Since GDP does not give any

information about income distribution, it is of relevance to study the GINI coefficient Index as a complement to the overall picture of the change in this time interval and region. We are interested in observing how the capital from FDI is distributed in a country. Moreover analyse in what extent the effects reach everyone in the society, or whether only the effects that occurs of FDI favour a small part in the society. According to UN (2016), social injustice slow down the human development and research has shown that independent on economic background, the society gains from an improved income distribution.

In this regression, there are 21 countries observed. The data is chosen with consideration to available data, which means the lack of data for some countries reduces the number of countries to 21.

When GINI Index is our dependent variable the controlling variables are GDP and corruption, and the variable of interest is FDI. These variables are being explained above and the data is being used in the same way in this perspective.

All collected data for both the dependent and independent variables are grouped into a 5-year interval over 20 years observing a mean in the periods. A variable description is presented in Table A3. The purpose by measuring Life expectancy and GINI Coefficient Index is to present a view of the social development. Social development is a wide expression and this study has limited the perspective of social development by observing GINI Coefficient Index as the income distribution combined with life expectancy. This will be the basis when we are mention social development.

4.3 Interaction terms

In the economic perspective, interaction terms are included in the study to examine whether there is a correlation of two independent variables, FDI and openness and also FDI and corruption. The interaction term between our two independent variables FDI and openness is the product of (FDI*Openness). The purpose by including the interaction term is because it allows the effect on GDP when there is a change in FDI to be dependable of openness and allows the effect of a change in openness to depend on the value of FDI (Stock et al, 2011). The corruption combined with FDI is the second interaction term and will be used in the same way.

In the socio-economic perspective with life expectancy and GINI index the interaction terms are included by the same reason as in the economic perspective, to examine if there exists a correlation of two independent variables. The interaction term between our two independent variables FDI and health expenditure is the product of (FDI*health expenditure). As previous, the purpose by including the interaction term is because it allows the effect on life expectancy when there is a change in FDI to be dependable of health expenditure and allows the effect of a change in health expenditure to depend on the value of FDI. The government expenditure on education combined with FDI is the second interaction term and will be used in the same way.

5 Methodology

To answer the question if FDI have an impact on the economic growth and the social development in Latin America and the Caribbean we will use a cross-country analysis. In this section a description of the cross-country analysis and fixed effects will be given.

5.1 Econometric model

To be able to analyse whether there is a relationship between FDI and GDP, and also the relationship between FDI and the socio-economic development, a quantitative research will be made. This study presents a cross-country analysis by using panel data. A cross-sectional analysis observes countries over a specific time. Since we are interested in both differences across countries and over time, we combine a cross-sectional analysis with time series data (Stock et al, 2011 p.54). By doing this, we construct a cross-country analysis. The advantage of using a cross-country analysis is that we are able to observe different behaviour of countries over time. Additionally, we learn about the socio-economic relationships across between countries over time. A general critique against cross-country analysis is that fundamental structural factors might be different between countries and that inferences are limited in the cross-country analysis (Wooldridge, 2014 p.361).

The use of panel data in a cross-country analysis is significant through an econometric perspective in our analysis. A vital advantage of using panel data is that it gives the

differences between countries and heterogeneity can be distinguished. Moreover, the number of observations expands when the model takes time (T) and different countries (N) into consideration. By using this, the reliability in the model increases. Panel data can be used over a long time, and over many countries, although in this study 30 countries will be used over a time period of 20 years regarding to available data (Wooldridge, 2014 p.372). Another common problem when using panel data in a cross-country analysis is the issue with autocorrelation, which means that the data are correlated over time (Stock et al, 2011).

Some variables in the regression model are used as logarithmic variables to better fit our model. Transforming a variable into a logarithmic variable is a general method to solve an issue with non-linearity between the independent and the dependent variables. A condition for the ordinary least squares method (OLS) is that the variables need to be normally distributed. By doing this transformation into logged variables, the highly skewed variables transforms into a normal distribution of the residuals. GDP and FDI will be transformed into logarithmic variables and can be interpreted as the percentage change. In addition, the logarithmic transformation of GDP and FDI provides a normal distribution of the residuals and there is no violation to the OLS assumption about normal distribution (Wooldridge, 2014 p.96-97; 155-156).

There is a risk for omitted variables in the regression model that could make the model misleading. This means that there is a risk that we exclude variables that are of significance to our model. Therefore, it is of great importance to include all the explanatory variables that we value as important. Obvious evidence for a model suffering from omitted variables are estimators with unexpected signs, or with large values. To avoid this problem with omitted variables we have included the explanatory variables that are relevant according to previous research (Westerlund, 2005 p.157-158).

Our first function estimates the effect of FDI on GDP with fixed effect. To control for omitted variables the model includes explanatory variables. By doing this, the model accounts for the effects from openness and corruption and avoid an overestimated effect of FDI. The function includes interaction terms to examine whether there is a correlation of the independent variables.

$$GDP - growth_{it} = \beta_1 FDI_{it} + \beta_2 Openness_{it} + \beta_3 Corruption_{it} + \beta_4 (FDI_{it} * Openness_{it}) + 5(FDI_{it} * Corruption_{it}) + \alpha_i + v_t + u_{it}, \quad t = 1,2,3,4$$

In our second and third functions with the socio-economic perspective the explanatory variables from the economic growth perspective are included to examine if there exists a correlation between FDI and life expectancy, also the correlation between FDI and GINI index. By including the same explanatory variables, as before we are able to compare our functions. Moreover, we have included new explanatory variables in our functions with life expectancy and GINI index.

$$Life\ expectancy_{it} = \beta_1 FDI_{it} + \beta_2 Openness_{it} + \beta_3 Corruption_{it} + \beta_4 (FDI_{it} * Openness_{it}) + 5(FDI_{it} * Corruption_{it}) + \beta_4 Healthexpenditure_{it} + \beta_5 Skilledstaff_{it} + \beta_6 Goverment\ expenditure\ on\ education_{it} + \beta_7 Maternalmortality_{it} + \beta_8 Primarycompletionrate_{it} + \beta_{11}(FDI_{it} * Healthexpenditure_{it}) + \beta_{12}(FDI_{it} * Goverment\ expenditure\ on\ education_{it}) + \alpha_i + v_t + u_{it}, \quad t = 1,2,3,4$$

$$GINIindex_{it} = \beta_1 FDI_{it} + \beta_2 Openness_{it} + \beta_3 Corruption_{it} + \beta_4 (FDI_{it} * Openness_{it}) + \beta_5 (FDI_{it} * Corruption_{it}) + \beta_6 GDPppp_{it} + \alpha_i + v_t + u_{it}, \quad t = 1,2,3,4$$

5.2 Fixed effects

By including fixed effects for country and time we control for unobserved heterogeneity. The fixed effects model arises from the assumption that the variables in the error term are correlated with the dependent variable. This could lead to biased estimates. Therefore, we need to remove these omitted variables effects by control for fixed effects. We do this by including a dummy variable in our model that controls for each country and years. Fixed effects regression introduces a new variable for each country (i) and each year (t). Moreover, the risk for the model to suffer from omitted variable decreases, but the risk for omitted variables bias does not go away completely (Wooldridge, 2014 p.392-393). By using a fixed effect model and include a dummy variable, we can analyse how the variables for countries change over time. The fixed effect model makes it possible to observe the effect of a specific country by eliminate the effect of time invariant characteristics. Moreover, in this way we can control for yearly time effects as well as for country fixed effects, and controlling for correlations with the outcome variable (Torres-Reyna, 2007). Based on the yearly country panel data for the period 1995-2014, the best way to estimate the effects of FDI through different years is to use a fixed effects model.

To make sure the study is correct, tests have been made for normal distribution,

multicollinearity, heteroscedasticity, autocorrelation and controlling for fixed effects as can be seen in the section above. In the study, there has been some lack of available data for some variables, which creates a risk for omitted variables in the model. By controlling for fixed effects in our model, we remove some of the risk of a possible correlation between FDI and the observed and unobserved factors in the countries. In this way we account for unobserved heterogeneity and are able to observe causal effects from FDI.

A normal distribution is illustrated through a histogram in figure A1, A2 and A3, where the residuals are normal distributed after we transformed a variable into a logarithmic variable. By doing this, the highly skewed data transforms into a normal distribution of the residuals (Westerlund, 2005 p.134). To detect whether there is multicollinearity we observe the correlation. By controlling for high correlation one should be observant of a higher level than 0.8. Through a VIF test we control for any problem with multicollinearity. A value close to 1 implies that there is no problem with multicollinearity (Westerlund, 2005 p.160). In our cross country analysis we observe heteroscedasticity by plotting the residuals as can be seen in appendix, figures A4, A5 and A6. To remove any problem with heteroscedasticity, the easiest way is to use heteroscedasticity robust standard error. We add the option robust to control for heteroscedasticity (Wooldridge, 2014 p.431). An additional concern when using regressions with times series data is serial correlation. A situation with serial correlation is a violation to an OLS test, and means there is a correlation across time. As a consequence, the inference would be inadequate (Wooldridge, 2014 p.341 & 283).

6 Result

In this section the result will be presented and compared to previous literature. The three different perspectives are presented separately along with a comparison of the previous literature. The measurements are connected in the overall discussion about the sensitivity of the data and the heterogeneous effects.

There are three cross-country regressions, with three different outcomes. The number of countries included varies in the models, according to available data and this can be seen in the Appendix Table A1. The purpose is to examine how FDI affects GDP and also the effects FDI has on the social development by looking at socio-economic variables. Coefficients under a level of 5 % are of significance and in some cases coefficients under a 10 % level will also be accounted for.

6.1 The relationship between GDP and FDI

Table 6.1 GDP per capita, PPP (current international dollar)

VARIABLES	(1) Fixed Effects
lFDI	0.157***
	(0.0394)
Openness	0.00613***
	(0.00201)
Corruption	0.00971
	(0.0515)
FDI_openness	0,0000000674**
Measured in millions	(0,0000000244)
FDI_Corruption	-0,00000022*
Measured in millions	
	(0,00000012)
Constant	5.356***
	(0.634)
Observations	101
Number of country1	30
R-squared	0.622
Country Year FE	YES
Control Test	YES

Robust standard errors in parentheses
*** Significance at the 99% level
** Significance at the 95% level

* Significance at the 90% level

The GDP regression measures the effects of FDI on GDP per capita with openness and corruption as interaction terms. In this regression we are interested in the overall effect from the FDI inflow on the GDP per capita in the region. The outcome for GDP is the log amount of inflows of FDI, and the amount of GDP per capita in logged valued. In this regression FDI has a positive significant effect as expected on the economic growth in Latin America and the Caribbean. If FDI increase with 1 %, the GDP increases with 0.157 % regarding to the current size of the inflows of FDI. The level of openness in a country shows to be of significance on the GDP per capita. The result estimate that when the level of openness increases by 1 unit, the GDP per capita increase by 0.613 %. In the table, the interaction term with FDI and openness is significant which indicates that countries with a higher level of openness tend to experience a positive effect on the GDP with an increase of FDI.

This result confirms previous literature regarding a causal effect between FDI and the change in GDP. Furthermore, governments using a more liberal trade policy as a strategy to attract FDI could experience an increase in GDP. Trends and time-varying controls are included in the model, and the results suggest that an inflow of FDI to Latin America and the Caribbean has a significant increase in the economic growth. The result further suggests that the control variables are positively correlated with the outcome and the explanatory variable.

In the result the variable with corruption show no significance, which means that a conclusion whether corruption have an impact on GDP cannot be made. The interaction term with FDI and corruption is significant on a significance level of 10 %, although there is nearly no effect on GDP per capita with an increase of the inflows of FDI. The problem concerning the high spread of corruption in Latin America and the Caribbean, this result estimates that corruption has no effect on GDP is a deviation from previous literature. A high level of corruption in a country is according to previous literature making a country less attracting to FDI. We can conclude that corruption has significant effect on GDP per capita, but the effect is close to zero. The unexpected negative sign of corruption can imply that the model suffers from omitted variables. In this regression, we are only interested in the effects on GDP, and only through an economic view, therefore we have included the most relevant variables according to previous literature.

6.2 The relationship between Life expectancy and FDI

Table 6.2 Life expectancy

VARIABLES	(1) Fixed Effects
lFDI	-0.0613
	(0.135)
Openness	0.0214***
	(0.00602)
Corruption	0.267**
	(0.109)
FDI_openness	0,00000059
	(0,00000518)
FDI_Corruption	-0,000000032
	(0,000000011)
Healthexpenditure	0.00185**
	(0.000867)
Skilledstaff	0.0380***
	(0.0107)
Government expenditure on education	0.217**
	(0.102)
Maternalmortality	-0.0318***
	(0.00530)
Primarycompletionrate	0.0442***
	(0.0110)
FDI_Healthexpenditure *Measured in millions*	0,000000031
	(0,0000001)
FDI_Government expenditure on education *Measured in millions*	-0,000000064***
	(0,0000000021)
Constant	65.49***
	(2.757)
Observations	71
Number of country1	25
R-squared	0.926
Country Year FE	YES
Control Test	YES

Robust standard errors in parentheses
*** Significance at the 99% level
** Significance at the 95% level
* Significance at the 90% level

Table 6.2 shows that a majority of the included variables are relevant to estimate since they show sign of significance. An exception is FDI, which is the variable of interest. The reason for using the amount of explanatory variables in this regression is to minimize the risk of omitted variables bias. The regression includes variables that have according to previous literature proved to be of importance for the social development. The fact that FDI is not of significance means that FDI tends to have no effect on life expectancy. Therefore, we include two interaction terms, (FDI*health expenditure) and (FDI*government expenditure on education). When estimating the interaction term however, FDI and health expenditure is not significant. This means that we cannot see whether there exist any relation between our interaction term and life expectancy. In the other interaction term (FDI*government expenditure on education) there is a significant negative effect. This means that countries where government spend less money on education, experience a negative life expectancy with an increase of FDI. The increase of FDI in recent years has not lead to government spending more money on education. However, our interaction term with (FDI*openness) shows no significant value and it is of no use. The maternal mortality shows a significant value and has a negative correlation with life expectancy. The economic interpretation is that when there is a reduction in maternal mortality, life expectancy seems to increase. All other included explanatory variables are of significance and have positive effects on life expectancy.

As mentioned in the beginning of the study, the corruption is of big concern in this region. The result estimates a significant value and the economic interpretation is that a decrease in corruption in Latin America and the Caribbean causes life expectancy to increase. These estimates are expected from what earlier studies have shown. As a conclusion, we cannot find any evidence that FDI has a positive effect on life expectancy. We are aware of that the time interval can create limitations in the effects, because in a longer perspective, the values might be significant, although, this will not be examined in this paper.

6.3 The relationship between GINI Coefficient Index and FDI

Table 6.3 GINI Coefficient Index

VARIABLES	(1) Fixed Effects
lFDI	1.516***
	(0.496)
Openness	-0.0416*
	(0.0216)
Corruption	-0.950
	(1.318)
FDI_openness	0,00000033*
Measured in millions	(0,00000012)
FDI_Corruption	-0,000000054***
Measured in millions	
	(0,000000023)
lGDPppp	-8.889***
	(2.187)
Constant	104.4***
	(17.52)
Observations	73
Number of country1	21
R-squared	0.487
Country Year FE	YES
Control Test	YES

Robust standard errors in parentheses
*** Significance at the 99% level
** Significance at the 95% level
* Significance at the 90% level

The GINI index regression measures the effect FDI has on the income distribution. The result estimates a significant value for FDI on GINI, and a positive correlation. The economic interpretation for this is that if FDI increases by 1 %, GINI index increase by 0.152 units according to the GINI measurement. In other words, this implies that an increase in FDI also decrease the income distribution measured in GINI index, according to the current inflows of FDI we have observed. Generally, FDI could be creating well paid job opportunities and increase the social conditions, but since the circumstances in Latin America and the Caribbean are limited this might not be the case. The high corruption and weak political and economical stability is one explanation why FDI might not create these general effects.

No significant effect was found for corruption. The result further suggests that if GDP increase by 1 %, GINI Index decrease by 0.089 units in the GINI measurement scale.

Countries with an increase in the GDP, will according to this results experience an increase in the income distribution, because of the negative correlation. Corruption is not a significant variable, and therefore a conclusion whether it has positive or negative effects on the income distribution are not possible to determine. Furthermore, the interaction term (FDI*corruption) is significant but estimates a value close to zero.

We have controlled for fixed effects in all three models, although the problem with omitted variables could remain. Especially, in the first regression when measuring GDP, since we have very few explanatory variables. The model will therefore most likely suffer from omitted variable bias. This means that FDI could have an upward bias on GDP and a consequence of this could cause the model to be inconsistent. In other words, the model has endogeneity. In addition, the estimate tends to be overestimated as a consequence of reverse causality. A possible solution for omitted variables and endogeneity could be to include an instrument variable. When using an instrument variable, it is of great importance that the instrument variable we add to the model is likely to be valid (Wooldridge, 2014 p. 544). Hence, this falls outside the limitations of this study. The model experiences a correlation between the explanatory variables and the omitted variables, but there is no causal effect. Although, by controlling for fixed effect we minimize the risk for omitted variables and reduce the bias.

In the model where we measure life expectancy, we have included explanatory variables that seems to be relevant from previous literature to measure the social development in a country. By including these explanatory variables we minimize the risk of omitted variables. Although, we need to be aware of that if we include irrelevant variables, the ordinary least squares (OLS) estimator would be unbiased, but as a consequence, the standard error is larger than it would be without irrelevant variables (Andren 2007 p. 83-86). Even if this would be the case, we avoid bias and inconsistency by includes these explanatory variables.

Similarly, with the models above, a control for fixed effects has been made. The issue with omitted variables have a similar manner as in the economic growth model. FDI will most likely to suffer from upward bias on GINI. Moreover, the model is endogenous. If we would include more explanatory variables the estimates would probably estimate a smaller effect on GDP since FDI probably includes the effects from the omitted variables.

A number of control tests have been made to check the quality of the statistics. It proves that there is no concern of multicollinearity since the VIF test gives acceptable values see table

A14. Moreover, the correlation shows no sign of a level higher than 0.8. When using cross-country analysis heteroscedasticity does not cause bias or inconsistency in the estimated coefficient, but create inference problem. We investigate if the test is homoscedastic by plotting the data and can conclude that we have heteroscedasticity data. By using robust statistics we control for heteroscedasticity (Wooldridge, 2014). In each regression, state specific linear time trends and controls are included. Moreover, we control for the effects over time as well as for the individual fixed effects. As a consequence, we can estimate the causal effects of our variables.

6.4 Heterogeneous effects

By using panel data we are able to specify differences between countries, because countries are not homogenous. Heterogeneous year specific effects of FDI are explored to examine the degree of heterogeneity across time. The fact that countries are homogenous and have different characteristics is of great importance. The level of openness, corruption and the natural level of development have a great impact on how the country exploits the inflows of FDI and this can explain the difference in outcome. In other words, a country with a certain natural level of development will most likely have a better ability to exploit inflows of FDI and experience an increase in GDP. In this heterogeneity analysis, the countries are separated into two groups depending on the gross national income (GNI). Countries with an income higher than 8000 US dollar per capita will be defined in this study as high-income countries and below this chosen limit will be countries with low-income.

36 countries are included in the analysis for low-income countries. In Table A4, the results for life expectancy are presented. As previously, FDI shows no significance on life expectancy in high income-countries. Our interactions-terms (FDI*health expenditure) and (FDI*government expenditure on education) show no significant effect on life expectancy. When observing heterogeneous effects, there are some insignificant values, which could be a consequence of few observations. Table A5 shows that in the high-income countries, the result from life expectancy estimates some insignificant values. As a conclusion, there seems to be no heterogeneous effects in our function with life expectancy.

The high-income countries contain of 35 observations and estimate a result without a significant value of FDI on GINI index, and are of no use. The result with GINI index is presented in Table A6. In table A7, we estimate a result where FDI is significant in the low-income countries. The economic interpretation is that if FDI increase with 1 % in these countries with low income, the GINI index will increase by 0.018. In addition, there is a positive correlation between FDI and the GINI Index measurement. The inflows of FDI cause the income distribution to worsen among low income. While our main result with all 21 countries included FDI increases by 1 %, GINI Index will decrease by 0.015. This result shows that the level of FDI to a country with low income do not have positive effects on the income distribution. According to this result, there are heterogeneous effects from FDI between low and high-income countries.

6.5 Sensitivity analysis

The purpose with a sensitivity analyse is to verify how sensitive the output is to changes in the input. It is always a good idea to check if the variables are normal distributed and if there exists any outliers (Wooldridge, 2014 p.544-545). Then we can verify which variables that are important to control and which one to exclude. To decide whether our results are valid we conduct a sensitivity and robustness checks on the main results. If the results are not affected by small changes we could establish that the model is robust. We examine if the results are robust by changing the inputs and the form of the function. Observing figure A1, A2 and A3, that illustrates a scatter plot, we can conclude that robust option is necessary. By using robust statistics we can strengthen our statistic model and reach accurate results even though our conditions are poor. Moreover, the statistics will not be as sensitive when using robust data or affected by outliers in the same amount. Robust statistics provides a model where we do not need to specify our outliers and exclude them; instead the model describes the part of the data that could be observed as “good”. Heteroscedasticity implies that the variance is not constant for the error terms. By the use of robust standard errors we control for heteroscedasticity in the error term (Andrén 2007 p.114-116). For example, the GDP tends to increase when FDI increase, which creates problem with heteroscedasticity. As a consequence, there will be an increased variation in the error term for FDI. Therefore, the use of robust standard error is necessary.

The included variables show expected signs, except from corruption that estimate a negative sign that is a deviation from what previous literature imply. This could have various reasons such as a different time interval or that the measurement of corruption can be questioned. As mentioned in sections above, the use of fixed effects can reduce the unobserved effect. A comparison between annual cross section and panel data should show similar estimates if the data are robust. If the result, on the other hand shows a difference, the reason for this could be that we have controlled for yearly and country fixed effects (Wooldridge, 2014).

There are certain difficulties when examine if we have causality in our models, and this is not unusual when using time series data. Different economic and political structure makes it difficult to determine this. The inflows of FDI are probably related to various factors that have an impact on GDP and the social development. The advantage of using a fixed effect model is that we can control for yearly time effects as well as for country fixed effects. By controlling for fixed effect we want to find a causal conclusion from our data. If we manage to hold the relevant variables constant and then discover a connection between FDI and the outcome, we might find a causal relationship. There is support in our study that the increasing inflows of FDI to Latin America and the Caribbean have increased GDP. The recent trend where governments attempt a liberalization strategy and focus on improving the investment climate in purpose to experience growth and an increase in GDP is proved to be of significance. On the contrary, there is no evidence in this study that the social development measured in life expectancy and GINI index will experience a similar improvement.

We analyse if the results are sensitive, by excluding outliers. We begin with excluding the countries with the highest income, which is Trinidad and Tobago. The reason for excluding this country is because it is a deviation from the rest of the data. Table A8 and A9 show that there are nearly no changes in the point estimate when observing GDP and life expectancy. The overall results show no change in the significance, when including or excluding the outliers, which implies that the data is robust to the exclusion of the two countries with the highest incomes.

We further analyse how sensitive the data is by excluding the countries with the largest deviation related to income, which in this case is Haiti. In the economic growth outcome in Table A10, the data shows a slightly change in the significance when excluding the outlier. In the result where we excluded the country with the lowest income, it shows a significant value of the interaction term (FDI*openness) on GDP at a 1% level. While in the main result, the

interaction term (FDI*openness) is significant on a 5% level. When observing the effects from FDI on GINI index as can be seen in Table A11, the main result shows a small change in the significance when excluding the outlier. In the result where we excluded the country with the lowest income, it shows a significant value of FDI on the GINI index at a 5% level. While in the main result, FDI is significant on a 1% level. Furthermore, the overall results seem to be robust to the exclusion of the country with the lowest income.

Therefore, when estimating this kind of large regions, there might be problem since countries are heterogeneous. A common problem when experiencing outliers is that the estimated outcome becomes misleading. Additionally, when using small data sets the results are more sensitive (Wooldridge, 2014 p. 264). In our case, we have included as many countries that where possible according to available data. By including more countries we might be able to estimate a more trustworthy result, but as we mentioned the data was limited.

7 Conclusion

In this section a review of the result will be given. The question: What is the relationship between FDI and social development will be discussed.

In this study, we examine whether there exists a relationship between FDI and GDP per capita and between FDI and social development in Latin America and the Caribbean. The relationship is being studied from 1995 to 2014 and the data have been grouped to reduce the risk of short-term fluctuations. In recent years the inflows of FDI has increased dramatically and the effects has been debated ever since (UNCTAD, 2006). The level of political and economic structure in the receiving country has shown to be of great importance for the ability to exploit FDI. The result from previous literature implies that there are positive effects on GDP from FDI. On the contrary, the impact on the social development from FDI is not unilateral.

The conclusion from our result shows that an increase of FDI has a positive relationship with GDP per capita in Latin America and the Caribbean. Therefore, policies aiming at promoting liberalization and a more open economy will probably experience a more positive effect on economic growth. This result is consistent with previous literature regarding the relationship between FDI and GDP.

The overall conclusion of this study is that FDI has a considerable effect on the GDP per capita, increasing the GDP by 0.157 %, regarding to these current inflows of FDI. Open countries tend to experience an even larger increase. The trends in Latin America and the Caribbean towards this kind of policies indicate that there will be a continuous increase of GDP per capita in the countries. Nevertheless, our result shows no evidence that the social development measured in life expectancy and GINI index will experience a similar improvement. When measuring life expectancy we cannot find any evidence that FDI has a positive effect on life expectancy, but over a longer perspective we cannot exclude a significant effect. In the perspective of social development we observe no relationship between FDI and the social development. Even though GDP has increased as a consequence of the rise in FDI, we distinguish a total negative effect on the social development according to the non-effects on life expectancy and the negative effects on the income distribution. We find no evidence that an increase of FDI indicate an increase of health expenditure and have

positive effects on life expectancy. On the other hand, government expenditure on education decreases when FDI increases. Since the effect from government expenditure on education and FDI has a negative correlation with life expectancy and the economic interpretations is that when FDI increase the government tends to spend less money on education. This is a possible explanation because FDI tends creates low skills jobs and that could hamper the social development and cause limitations for the development of the labour market.

The GINI index implies that the income distribution has worsened, related to FDI. Moreover, the overall result shows that even though the countries have experienced a rise in capital as consequence of FDI, it shows no sign of improving the life of every individual. A possible explanation for this could be the lack of economic and political structure in Latin America and the Caribbean, which makes the total effect negative. As we have seen, this region has a characteristic with a wide spread of corruption, an informal sector and instable institutions, and it was not until the beginning of 1990s that the countries experienced democratization. Even though our result indicates that corruption is of no significance on GDP, this is a deviation from what previous literature suggest and we therefore believe corruption still could affect the ability to attract FDI. This implies that with a more stable economic and political structure, the countries might have been able to exploit the benefits that come with foreign direct investment.

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Appendices

Table: A1 Countries included in the models. X if countries are included.

Countries	Economic growth	Life Expectancy	GINI Coefficient Index
Argentina	X	X	X
Bahamas	X		
Barbados	X	X	
Belize	X	X	X
Bolivia	X	X	X
Brazil	X	X	X
Chile	X	X	X
Colombia	X	X	X
Costa Rica	X	X	X
Cuba	X	X	
DominicanRepublic	X	X	X
Equador	X	X	X

El Salvador	X	X	X
Greneda	X		
Guatemala	X	X	X
Guyana	X	X	
Haiti	X		X
Honduras	X	X	X
Jamaica	X	X	X
Nicaragua	X	X	X
Panama	X	X	X
Paraguay	X	X	X
Peru	X	X	X
St. Lucia	X	X	
St. Vincent and the	X	X	
Suriname	X		
TrinidadandTobago	X	X	
Uruguay	X	X	X
Venezuela	X		X
Mexico	X	X	X

Table: A2 Included variables

Included variables	Database	Unit
GDP	World development Indicators	GDP per capita, PPP (current international dollar)
FDI	World development Indicators and UNCTAD	Foreign direct investment, net inflows (BoP, current US dollar)
Openness	World development Indicators	Trade % of GDP
Corruption perceptions index	Transparency International	International transparency
Life expectancy	World development Indicators	Life expectancy at birth, total (years)
Government expenditure on education	World development Indicatord	Government expenditure on education, total % of GDP
Health expenditure	World development Indicators	Healt expenditure per capita (current US dollar)
Maternal mortality rate	World development Indicators	Total % of relevant age group
Primary Completion rate	World development Indicators	Total(% of relevant age group)
Gini Coefficient Index	World development Indicators	GINI index (World Bank estimate)
Skilled staff	World development Indicators	Births attended by skilled health staff (% of total)

Table: A3 Variable descriptions

Table 1	Variable Descriptions
FDI	Foreign direct investment, net inflows (BoP, current US dollar)
GDP	Gross domestic product per capita, PPP (current international dollar)
Life Expectancy	Life expectancy at birth, number of years
GINI Index	A scale from 0(perfect equality) to 1(maximal inequality)
Openness	Trade in % of GDP
Corruption	On a scale from 10 (highly clean) to 0 (highly corrupt)
Health expenditure	Per capita (current US dollar)
Skilled Staff	Births attended by skilled health staff (% of total)
Maternal mortality	Per 100.000 live births
Primary Completionrate	Total(% of relevant age group)
Government expenditure on education	Government expenditure on education, total (% of GDP)

Table A4 Life expectancy:
Heterogeneity - Low income countries

VARIABLES	(1) Fixed Effects
lFDI	0.00590
	(0.328)
Openness	0.0183
	(0.0107)
Corruption	0.127
	(0.450)
FDI_openness	5.24e-11*
	(0)
FDI_Corruption	2.55e-10
	(2.89e-10)
Healthexpenditure	0.00666**
	(0.00277)
Skilledstaff	0.00626
	(0.0190)
Government expenditure on education	0.248
	(0.389)
Maternalmortality	0.000113
	(0.0143)
Primarycompletionrate	0.103***
	(0.0244)
FDI_Healthexp	0
	(0)
FDI_Government expenditure on education	-1.43e-09
	(8.66e-10)
Constant	56.95***
	(9.785)
Observations	36
Number of country1	13
R-squared	0.957
Country Year FE	YES
Control Test	YES

Robust standard errors in parentheses
*** Significance at the 99% level
** Significance at the 95% level
* Significance at the 90% level

Table A5 Life expectancy:
Heterogeneity - High income countries

VARIABLES	(1) Fixed Effects
lFDI	0.149
	(0.173)
Openness	0.0229**
	(0.00841)
Corruption	0.147
	(0.159)
FDI_openness	0
	(0)
FDI_Corruption	0*
	(0)
Healthexpenditure	0.000241
	(0.00145)
Skilledstaff	0.0635
	(0.105)
Government expenditure on education	0.422*
	(0.199)
Maternalmortality	-0.0354
	(0.0210)
Primarycompletionrate	0.0393
	(0.0293)
FDI_Healthexp	0
	(0)
FDI_Government expenditure on education	-0,00000624*
	(0,00000034)
Constant	60.00***
	(8.445)
Observations	35
Number of country1	12
R-squared	0.927
Country Year FE	YES
Control Test	YES

Robust standard errors in parentheses
*** Significance at the 99% level
** Significance at the 95% level
* Significance at the 90% level

Table A6 GINI index:

Heterogeneity - High income countries

VARIABLES	(1) Fixed Effects
lFDI	1.203
	(1.459)
Openness	-0.0258
	(0.0301)
Corruption	-0.332
	(1.449)
FDI_openness	0
	(0)
FDI_Corruption	-0*
	(0)
lGDPppp	-5.815
	(3.780)
Constant	81.73**
	(26.69)
Observations	35
Number of country1	9
R-squared	0.557
Country Year FE	YES
Control Test	YES

Robust standard errors in parentheses
*** Significance at the 99% level
** Significance at the 95% level
* Significance at the 90% level

Table A7 GINI index:

Heterogeneity - Low income countries

VARIABLES	(1) Fixed Effects
lFDI	1.750***
	(0.463)
Openness	-0.0544
	(0.0360)
Corruption	-3.250
	(2.042)
FDI_openness	0
	(0)

FDI_Corruption	-3.40e-10
	(6.43e-10)
lGDPppp	-9.545**
	(3.310)
Constant	111.7***
	(24.85)
Observations	38
Number of country1	12
R-squared	0.585
Country Year FE	YES
Control Test	YES

Robust standard errors in parentheses
*** Significance at the 99% level
** Significance at the 95% level
* Significance at the 90% level

Table A8 GDP per capita:

Robustness - High income countries are omitted

VARIABLES	(1) Fixed Effects
lFDI	1.516***
	(0.496)
Openness	-0.0416*
	(0.0216)
Corruption	-0.950
	(1.318)
FDI_openness	0*
	(0)
FDI_Corruption	-0***
	(0)
lGDPppp	-8.889***
	(2.187)
Constant	104.4***
	(17.52)
Observations	73
Number of country1	21
R-squared	0.487
Country Year FE	YES
Control Test	YES

Robust standard errors in parentheses
*** Significance at the 99% level
** Significance at the 95% level
* Significance at the 90% level

Table A9 Life expectancy:

Robustness - High income countries are omitted

VARIABLES	(1) Fixed Effects
lFDI	-0.0613
	(0.136)
Openness	0.0214***
	(0.00604)
Corruption	0.267**
	(0.110)
FDI_openness	0
	(0)
FDI_Corruption	0***
	(0)
Healthexpenditure	0.00185**
	(0.000869)
Skilledstaff	0.0380***
	(0.0108)
Government	0.217**
	(0.103)
Maternalmortality	-0.0318***
	(0.00531)
Primarycompletionrate	0.0442***
	(0.0110)
FDI_Healthexp	0
	(0)
FDI_Gover	-0***
	(0)
Constant	65.58***
	(2.766)
Observations	70
Number of country1	24
R-squared	0.926
Country Year FE	YES
Control Test	YES

Robust standard errors in parentheses
*** Significance at the 99% level
** Significance at the 95% level
* Significance at the 90% level

Table A10 GDP per capita:

Robustness - Low income country is omitted

VARIABLES	(1) Fixed Effects
lFDI	0.175***
	(0.0431)
Openness	0.00606***
	(0.00206)
Corruption	0.00507
	(0.0518)
FDI_openness	0***
	(0)
FDI_Corruption	-0*
	(0)
Constant	5.063***
	(0.693)
Observations	98
Number of country1	29
R-squared	0.634
Country Year FE	YES
Control Test	YES

Robust standard errors in parentheses
*** Significance at the 99% level
** Significance at the 95% level
* Significance at the 90% level

Table A11 GINI index:

Robustness - Low income country is omitted

VARIABLES	(1) Fixed Effects
lFDI	1.642**
	(0.684)
Openness	-0.0407*
	(0.0216)
Corruption	-0.997
	(1.292)
FDI_openness	0*

	(0)
FDI_Corruption	-0***
	(0)
lGDPppp	-9.082***
	(2.257)
Constant	103.6***
	(18.07)
Observations	71
Number of country1	20
R-squared	0.487
Country Year FE	YES
Control Test	YES

Robust standard errors in parentheses
*** Significance at the 99% level
** Significance at the 95% level
* Significance at the 90% level

Table A12: Correlation matrix: GDP per capita

	lGDPppp	lFDI	Openess	Corrup~n	FDI_op~s	FDI_Co~n
lGDPppp	1.0000					
lFDI	0.4376	1.0000				
Openess	-0.1164	-0.2485	1.0000			
Corruption	0.4815	0.0310	-0.1028	1.0000		
FDI_openess	0.3505	0.6875	-0.1253	0.0983	1.0000	
FDI_Corrup~n	0.2916	0.6200	-0.2509	0.1400	0.8541	1.0000

Table A12: Correlation matrix: Life expectancy

	Lifeex~y	lFDI	Openess	Corrup~n	FDI_op~s	FDI_Co~n	Health~e	Skille~f	Govern~t	Matern~y	Primar~e	FDI_He~p	FDI_Go~r
Lifeexpect~y	1.0000												
lFDI	0.3003	1.0000											
Openess	-0.0865	-0.2028	1.0000										
Corruption	0.4231	-0.0932	-0.1174	1.0000									
FDI_openess	0.3497	0.6831	-0.0231	0.0443	1.0000								
FDI_Corrup~n	0.3550	0.7163	-0.1453	0.1521	0.9097	1.0000							
Healthexpe~e	0.6447	0.2963	-0.0634	0.5954	0.3686	0.3925	1.0000						
Skilledstaff	0.6091	0.1011	-0.0287	0.4480	0.1627	0.1950	0.5334	1.0000					
Government	0.1826	-0.2447	-0.0216	0.1615	0.0273	0.0052	0.2289	0.1937	1.0000				
Maternalmo~y	-0.7851	-0.1454	0.1494	-0.5594	-0.2277	-0.2583	-0.5736	-0.6759	-0.0770	1.0000			
Primarycom~e	0.2965	0.2512	-0.1467	0.2435	0.1805	0.2329	0.3591	0.5161	0.3248	-0.3320	1.0000		
FDI_Health~p	0.3783	0.6662	-0.0977	0.0970	0.9409	0.9387	0.4794	0.2078	0.0590	-0.2589	0.2075	1.0000	
FDI_Gover	0.3086	0.7284	-0.1509	0.0135	0.9591	0.9196	0.3670	0.1829	0.0550	-0.2359	0.2486	0.9375	1.0000

Table A12: Correlation matrix: GINI index

	GINIin~x	lFDI	Openess	Corrup~n	FDI_op~s	FDI_Co~n	lGDPppp
GINIindex	1.0000						
lFDI	-0.0989	1.0000					
Openess	-0.0837	-0.3559	1.0000				
Corruption	-0.2670	0.3572	-0.1205	1.0000			
FDI_openess	-0.0812	0.7166	-0.1279	0.2490	1.0000		
FDI_Corrup~n	0.0300	0.6594	-0.2760	0.2774	0.8470	1.0000	
lGDPppp	-0.4380	0.7281	-0.2516	0.4945	0.4926	0.4177	1.0000

Table A13: Test for normal distribution

Jarque- Bera	
Regression model	0.849

Table A14 VIF: Test for multicollinearity

VIF-test	mean
Economic growth model	2.62
Life expectancy model	4.27
GINI Index model	1.39

Table A15: Test for heteroscedasticity

Heteroscedasticity	P-value	Outcome
Economic growth model	0.000	heteroscedasticity
Life expectancy model	0.000	heteroscedasticity
GINI Index model	0.000	heteroscedasticity

Figure A1: Test for normal distribution GDP

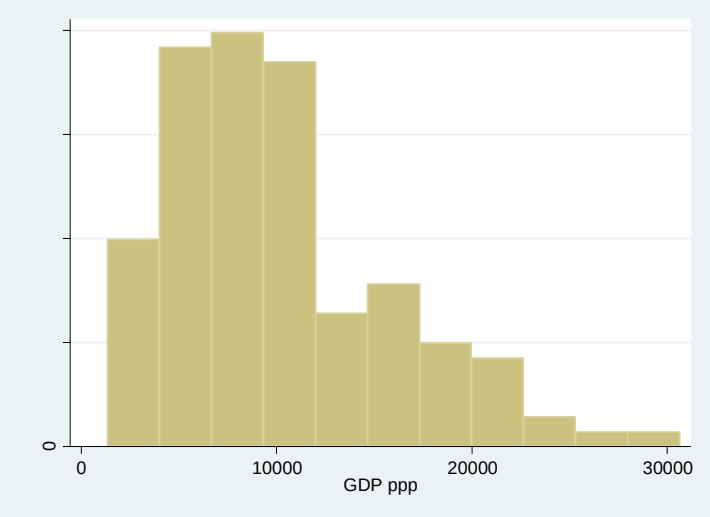

Figure A2: Test for normal distribution Life expectancy

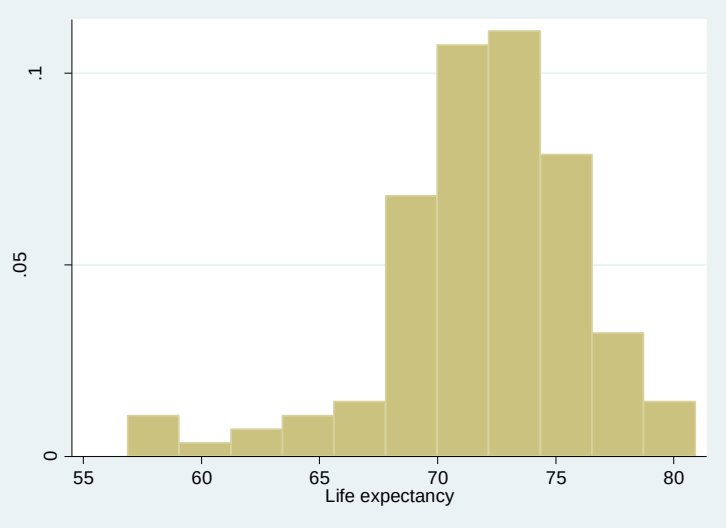

Figure A3: Test for normal distribution GINI Index

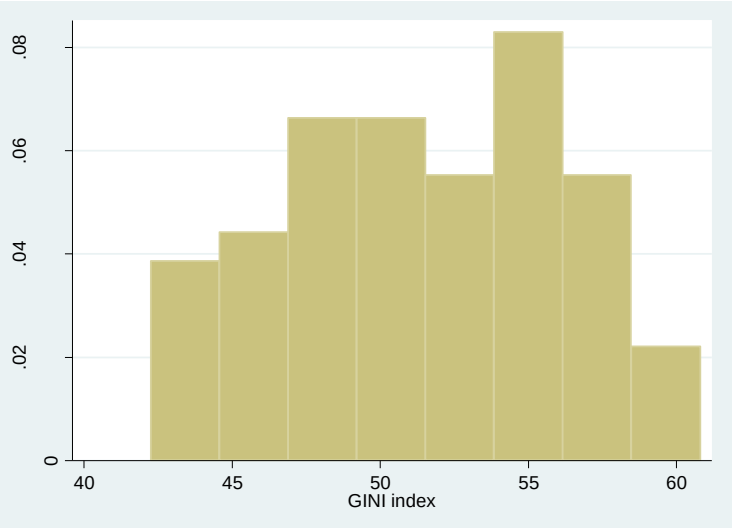

Figure A4: Heteroscedasticity

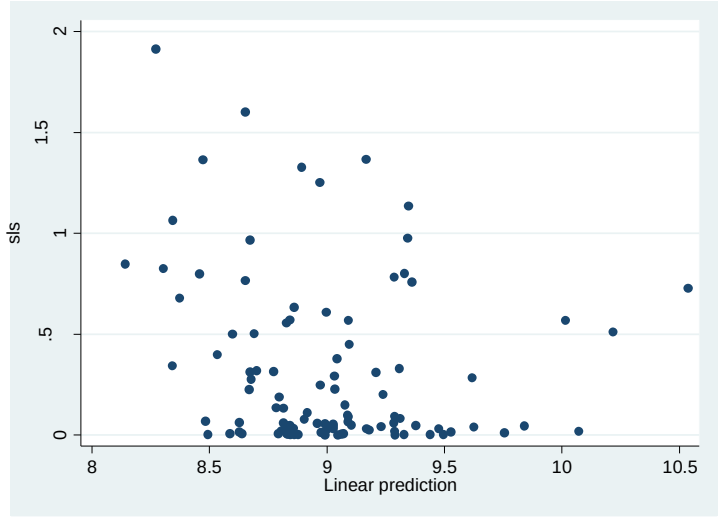

Figure A5: Heteroscedasticity

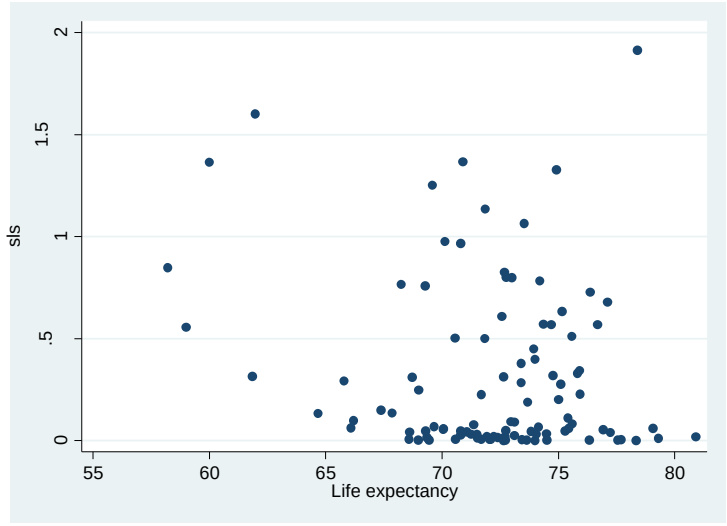

Figure A6: Heteroscedasticity