Czech University of Life Sciences Prague

Faculty of Economics and Management

Department of Economics

Diploma Thesis

Determinants of Foreign Direct Investment in Developing Economies

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Determinants of Foreign Direct Investment in Developing Economies

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Objectives of thesis

The aim of the diploma thesis is to determine the main components affecting inward foreign direct investment in the selected geographical groups.

The aim will be fulfilled based on the partial aims. Then, several hypotheses will be defined and verified. Based on the results of and empirical analysis the final conclusions will be introduced.

Methodology

The diploma thesis will cover both theoretical and empirical part. Theoretical part will contain theoretical background of the selected topic as well as the methodological framework. Scientific literature will be used to prepare the literature overview. The empirical analysis will be based mainly on panel data analysis. Other suitable methods will be employed as well. Based on the empirical analysis the results will be presented and some recommendations will be suggested.

The proposed extent of the thesis

60 – 80

Keywords

FDI, determinants, panel data, developing economies.

Recommended information sources

DELLIS, K., SONDERMANN, D., & VANSTEENKISTE, I. (2017). Determinants of FDI inflows in advanced economies: Does the quality od economic structures matter? Working paper series 2006. European Central Bank.

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YASMIN, B., HUSSAIN, A., & CHAUDHARY, M. A. (2003). Analysis of factors affecting foreign direct investment in Developing countries. Pakistan Economic and social Review, XLI, 59-7

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Declaration

I declare that I have worked on my diploma thesis titled "Determinants of Foreign Direct Investment in Developing Economies" by myself and I have used only the sources mentioned at the end of the thesis. As the author of the diploma thesis, I declare that the thesis does not break copyrights of any other person.

In Prague on 05.04.2020 _____

Acknowledgement

I would like to thank my supervisor Ing. Lenka Rumánková, Ph.D., for her valuable advice and constant support during the work on this thesis, as well as the encouragement to tackle challenges and always try my best.

I would also like to thank Dr. Stephen Clark, whose teaching created my initial interest in the field of Econometrics and his lectures, that to a degree inspired the topic for this thesis.

Finally, I would like to thank my family, for their encouragement and unconditional support.

Determinants of Foreign Direct Investment in Developing Economies

Abstract

The main aim of the diploma thesis is to establish the significance of the determinants affecting inward foreign direct investment on the example of three geographical groups of developing economies: Africa, Developing Asia and Latin America and the Caribbean. The panel data was collected for fifteen countries from each group, 45 countries in total, for the years 2007 to 2017. A least squares dummy variable method is used for the model, specified as a fixed effects one, and verification of the goodness-of-fit of this method, compared to pooled ordinary least squares regression, is performed. The significant determinants for each country group are identified and analyzed. Answers are given to the following three questions: does higher corruption have a negative effect on the inward foreign direct investment for all three groups of developing economies; does higher economic openness of the country affect positively the inflow of investments; Are the same determinants in the foreign direct investment model significant for all three groups of developing economies. The obtained results show that there is no one unifying determinant for the three groups, and that determinants have different significance for each country group. This leads to the conclusion, that it is of utmost importance to take into consideration the specific conditions and characteristics of each country group when choosing proxies, which represent the determinants in the model, in order to obtain the most relevant and meaningful results.

Keywords: FDI, fixed effects, OLS, determinants, GDP, human capital, corruption, corporate tax, capital flows, panel data, developing economies.

Determinanty Přílivu Přímých Zahraničních Investic v Rozvojových Ekonomikách

Abstrakt

Hlavním cílem této práce je určit významnost hlavních determinantů, které ovlivňují příliv přímých zahraničních investic, na příkladu třech geografických skupin rozvojových ekonomik: Afriky, Rozvojové Asie a Latinské Ameriky s Karibikem. Sběr panelových dat byl proveden pro patnáct zemí z každé výše uvedené skupiny (dohromady 45 zemí) v letech 2007 až 2017. Práce je založena na modelu fixních efektů, který je odvozen s využitím metody LSDV. Zároveň je ověřována vhodnost této metody ve srovnání s Běžnou metodou nejmenších čtverců. Determinanty významné pro každou skupinu jsou identifikovány a analyzovány. Cílem je odpovědět na nasledující tři otázky: má-li vyšší míra korupce negativní dopad na příliv přímých zahraniční investic všech třech skupin rozvojových ekonomik; má-li vyšší míra ekonomické otevřeností zemí kladný dopad na příliv investic; jsou-li stejné determinanty v modelu přímých zahraničních investic významné pro všechny tři skupiny rozvojových ekonomik. Výsledky analýzy pak ukazují, že neexistuje jednotný determinant pro všechny tři skupiny, a že každá skupina zemí je ovlivňována jinými determinanty. Závěrem lze konstatovat, že při výběru proxy proměnných, které lze považovat za determinanty modelu, je nesmírně důležité vzít v úvahu specifické podmínky a vlastností každé skupiny zemí pro získání relevantních a smysluplných výsledků.

Klíčová slova: přímé zahraniční investice, fixní efekty, metoda nejmenších čtverců, determinanty, HDP, lidský kapitál, korupce, daň z příjmu právnických osob, kapitálový tok, panelová data, rozvojové ekonomiky

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List of abbreviations

FDI – foreign direct investment

LSDV – least squares dummy variable

OLS – ordinary least squares

IMF – International Monetary Fund

OECD – Organization of Economic Cooperation and Development

UNCTAD – United Nations Conference on Trade and Development

ILO – International Labor Organization

LDC – low development countries

LIC – low-income countries

GDP – gross domestic product

GNI – gross national income

EU – European Union

ODI – Overseas Development Institute

AMV – African Mining Vision

CPI – consumer price index

VAT – value added tax

WESP – World Economic Situation and Prospects

UN DESA – United Nations Department of Economics and Social Affairs

AIC – Akaike information criterion

BLUE – best linear unbiased estimator

VIF – variance inflation factor

GLS – generalized least squares

FGLS – feasible generalized least squares

EGLS – estimated generalized least squares

DTT – double taxation treaty

EPZ – export processing zone

R&D – research and development

1. Introduction

Living in the age of globalization and economic openness, it is difficult to imagine global development without foreign capital inflows and outflows. Foreign investment has become a powerful tool for acquiring external capital, which has a positive effect on the host country's development. These financial flows document the value of transactions across borders (in relation to direct investment) for a specific time period and they can be in the form of reinvestment of earnings, equity transactions and intercompany debt transactions, depending on the type of entry the foreign company chooses.

Governments, particularly in developing countries, understand the need of foreign financial capital in order to achieve their economy's growth objectives and goals. Instead of continuing as closed economies, countries have opened their borders to foreign investment, allowing for inflow of funds other than domestic investment. While opening the borders economically and signing extensive trade agreements has become an accepted practice and a truly valuable resource, to this day there are still differences in how economies treat foreign direct investment (henceforth FDI), and the level of demand in terms of their development. While developed countries have a long-established history of financial partnerships due to the economic stability and political security they possess, attracting investment still remains quite challenging for the less developed regions, such as developing middle and lower-income economies. Considering the financial benefits these investors bring to a host country, FDI can play a substantial role in the economy's development, not only economically, but in other sectors as well (social, political and cultural). Resulting indirect benefits or spillovers are an additional technological encouragement, which affects the levels of innovation and brings advanced technologies to a country that would otherwise be unable to procure these independently. This seemingly endless list of potential benefits is why policy-makers should pay great attention to what determines a successful, long-term investment inflow, how these determinants will challenge adaptations of the current policies and systems in place and to be prepared to conduct necessary adjustments, bringing prosperity to their regions in the long-term.

2. Objectives and Methodology

2.1. Objectives

In order to analyze the relationship between foreign direct investments and their determinants, a regression economic framework is established, and the model is defined as a fixed effects one. The panel data subject to analysis consists of seven determinants, representing the independent variables, with FDI as the dependent variable in the model. The indicators were chosen for 45 developing countries, divided into three groups of 15 countries for the geographical regions Africa, Developing Asia and Latin America and the Caribbean. These three groups of economically similar, but region-wise different countries were taken in order to determine whether all covariates prove to be equally significant in all cases, as well as answer the other questions posed in this paper. Out of the pool of countries from these 3 groups, 45 countries with most of their indicators available were chosen. 2017 was chosen as ending date, being the most recent year with decent data availability, while also in accordance with the rule of data being no older than three years compared to the current year (2020). The starting data was taken back to cover for a period of 11 years (2007 - 2017), in order to get a wider understanding of FDI fluctuations and trends in the chosen economic/political determinants. More information about each of the determinants is provided in the Literature review.

The main aim of this paper is to evaluate the significance of the chosen determinants affecting foreign direct investment inflows into developing countries. The partial aims are to estimate the goodness-of-fit of the chosen Fixed effects model in terms of how it compares to the pooled OLS method, and to answer the three questions posed bellow:

1. Does higher corruption have a negative effect on inward foreign direct investment?
2. Does higher economic openness of the country affect positively the inflow of investments?
3. Are the same determinants in the foreign direct investment model significant for all three groups of developing economies?

2.2. Methodology

2.2.1. Data sets and Estimation

For the purpose of this paper, panel data was gathered for the years 2007 to 2017, for the following variables: foreign direct investment inflow, market size, corruption, trade openness, infrastructure, human capital, corporate taxes and inflation. These variables are covered for fifteen countries from three areas of the developing world, namely from developing Asia, Africa and Latin America and the Caribbean. The chosen countries can be found in Appendix 1, from which they will be referenced later on in the paper by referring to their Country ID. The data sources are official databases from international financial institutions, such as: WORLD BANK, IMF, OECD, UNCTAND, ILOSTAT and others. Before the empirical estimation and after the data gathering, adjustments are made in order to secure higher quality quantitative data, and to ensure there are no missing values. The numerical values are limited to three decimal places. The panel data is balanced, meaning all countries have measurements in all time periods - 11, and each one has the same number of observations - 165.

The model is specified as a fixed effects model, while the parameters are estimated by the least squares dummy variable method (LSDV 1). The FDI model consists of one dependent, seven independent and 14 dummy variables (N-1), representing 15 countries per each group. The three country groups are analyzed separately. Verification of the models is conducted based on coefficient of determination (R^2) and F test for the fixed effects model, which compares the efficient pooled OLS model and the robust LSDV model and tests the degree to which the goodness-of-fit measures changes.

2.2.2. Foreign direct investment model specification

In order to provide answers to both the main and the partial aims, a model with seven regressors is constructed. The theoretical basis on which these regressors were chosen, and other possible proxies to be included in the model, is investigated in more detail in the Literature review in section 3.

Response variables:

1. Foreign Direct Investment – included in the model by a proxy of FDI net inflow as percent of GDP.

Covariates:

1. Market size – included in the model by a proxy of a annual percentage growth rate of GDP at market prices based on constant local currency;
2. Corruption – included in the model by a proxy of Corruption index, a political risk indicator;
3. Trade openness – included in the model by a proxy of import and export (trade) as percentage of GDP, an international economic indicator;
4. Infrastructure - included in the model by a proxy of number of mobile cellular telephone subscriptions per 100 people;
5. Human capital – included in the model as a proxy of labor productivity, i.e. growth rate of real GDP per employed person in percent (%), an ILO modelled estimate (ILOSTAT, 2020);
6. Corporate tax – included in the model as a proxy of the government's statutory corporate income tax rates (TAXFOUNDATION, 2019);
7. Inflation – included in the model as a proxy of Consumer Price index (CPI) measured as the change in prices of a basket of goods and services, which are commonly purchased by specific groups.

A summary of all variables, their proxies, abbreviations and sources are summarized in Table 1.

Table 1 Variable description, abbreviations and sources

Variables	**Proxy used**	**Abbreviation**	**Data source**
Foreign Direct Investment	FDI net inflow as percentage of GDP	FDI	WORLD BANK
Market size	GDP growth in %	GDP	WORLD BANK
Corruption	Corruption index	CORR	Transparency international
Trade openness	Import and export as % of GDP	OPN	WORLD BANK/OECD
Infrastructure	Mobile cellular telephone subscriptions (per 100 people)	INFR	WORLD BANK

Continuation of Table 1 Variable description, abbreviation and sources

Human capital	Growth rate of real GDP per employed person, in %	HMCAP	ILOSTAT
Corporate tax	Statutory corporate income tax rate	TAX	TAX FOUNDATION
Inflation	Consumer price index	CPI	WORLD BANK

Source: Compiled by the author, based on SHAH & KHAN, 2016

Based on the theoretical and econometric frameworks presented in this paper, the FDI inflow can be presented as the following function:

$$Foreign\ direct\ investment = f\ (Market\ size + Corruption + Trade\ openness + Infrastructure + Human\ capital + Corporate\ tax + Inflation) \quad (1)$$

When using proxies, the equation (1) is modified into equation (2):

$$FDI = \alpha + \alpha_1 GDP_{ji} + \alpha_2 CORR_{ji} + \alpha_3 OPN_{ji} + \alpha_4 INFR_{ji} + \alpha_5 HMCAP_{ji} + \\ + \alpha_6 TAX_{ji} + \alpha_7 CPI_{ji} + \varepsilon \quad (2)$$

where, α is the constant, *j* represents the countries from 1 to 15 for each geographical region, *i* represents the years 2007 to 2017, ε is the error term.

For the least squares dummy variable method, the country specification is modelled by N – 1 dummy variables, i.e. 14 in total. The parameter estimates of the dropped dummy variable for country number 15 is given by the model intercept, i.e. it represents the baseline intercept (reference point).

Since one of the posed questions in this thesis investigates whether the same determinants in the FDI model are significant for all three groups of developing economies, the expected outcomes, i.e. coefficient signs, are presented in the table below for all country groups at once. The sign for the Corruption indicator is positive, since based on the Transparency international corruption scale used in this model, the higher the value of the corruption index, the less corrupt the country (TRANSPARENCY INTERNATIONAL, 2016). Hence, the sign does not reflect corruption per se, but the corruption index value, which is inverted.

Table 2 Expected signs of coefficient for the regression on FDI

	Africa	Developing Asia	Latin America and the Caribbean
GDP	+	+	+
CORR	+	+	+
OPN	+	+	+
INFR	+	+	+
HMCAP	+	+	+
TAX	-	-	-
CPI	-	-	-

Source: Compiled by the author

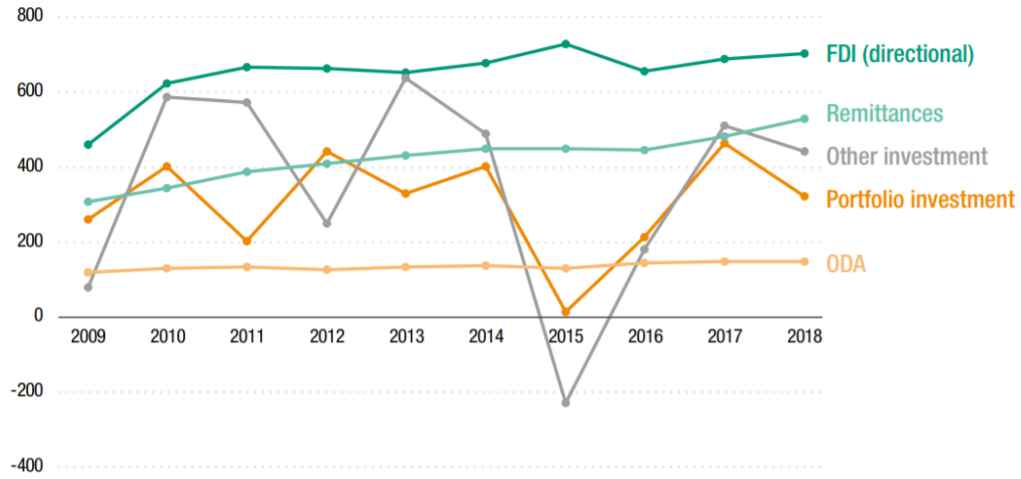
3. Literature Review

3.2. Foreign Direct Investment

FDI has non-arguably become a major indicator of a country's economic performance, and a common goal to achieve for many less developed countries (YASMIN, HUSSAIN, & CHAUDHARY, 2003). Generally, it is accepted that these investments result in a positive development of the host countries where the investments flow to, however, this is not as apparent as it may seem.

The comparison of FDI performance to other external sources on financing is presented on Figure 1, with an emphasis on the developing economies. (UNCTAD, World Investment Report, Special Economic Zones, 2019).

Figure 1: Developing economies: Sources of external finance, 2009 – 2018, in billions of dollars



Source: UNCTAD World Investment Report, 2019, based on KNOMAD (for remittances), UNCTAD (for FDI), IMF World Economic Dataset (for portfolio investment and other investment) and OECD (for ODA)

Inflows and outflows can also be called inward and outward flows. Outward flows depict transactions, as a result of which the investments in the foreign country are increasing by means of reinvestment of earnings or purchases of equity, minus any transactions that would decrease this investment in a company in a foreign country. The inward flows are opposite; they show transactions, that cause an increase in the foreign investment in the reporting country, minus any transactions that would cause a decrease.

FDI gained popularity and became valuable and desirable for nations in the early 1990's, compared to being fervently criticized for the previous 20 years, when the extent of

international collaboration between the countries was limited to import/export activities only (DUNNING & NARULA, 2003). Since then, this has become the subject of many theories, research papers and academic debates, covering not only the effect of FDI on economic growth, but the determinants and their differences when it comes to developed and developing countries as well.

While the governments of the host countries are, as a rule, expecting long-term gains and advancement of the country's competitiveness globally, policy makers should stay away from any generalizations and expectations about the effect of FDI on their particular economies based on previous historical records and effects they've had on other countries, while creating macro-strategies fitting to their own goals (DUNNING J. H., 1997). An additional incentive for trying to attract foreign capital would be the externalities that are believed to arise as a result: transfers and spillover of new technologies, which would bring most benefit to developing countries, while burdening them with no costs whatsoever (CARKOVIC & LEVINE, 2005). These spillovers are not a result of just any investment, so the country should encourage a certain type of investment most fitted to its needs. According to Dunning (1993), a company may have three main reasons for investment to a foreign country. Each of them generates a different FDI type: market-seeking, resource-seeking and efficiency-seeking. As the name states, market-seeking investment aims to support local/regional markets, by replicating its production in the host countries. These investments are also called horizontal, and this type is specifically reasonable for host countries with high import tariffs, high transportation costs and other obstacles, contributing and even more difficult and challenging market entry. The resource-seeking investment on the other hand is vertical. This usually means that the business relocated part of its production to the host country, because resources are not available or are more expensive to obtain in the home country. This can be raw materials, or cheaper labor or any natural resource. Efficiency-seeking FDI are oriented towards countries/regions, where they can achieve economies of scale and scope. As continuation of Dunning's work, it is important to mention his investment development path theory. According to this theory, countries can be classified into five "stages" or types, depending on their FDI per capita and GDP per capita ratio. The first group of countries are the Low development countries (LDC), which have no FDI outflows, and limited FDI inflows. An example of this would be a poor country, such as Ethiopia. The second group consists of other developing countries, receiving a more substantial inflows of FDI and having higher GDP. An example could be India. The third

group consists of countries with an even higher income, being somewhere between developing/developed, with FDI outflows. The groups four and five are the most developed ones and include countries where FDI outflows exceed inflows, and countries where the outflows are usually in balance with the inflows – most advanced economies.

3.2.1. Foreign Direct Investment in numbers

The total FDI flows have noticed a relatively steady growth over the years, with a peak on a world level for the years 2015 – 2016, as well as for the EU and OECD countries individually. Lower numbers are noted for the EU countries for the years 2008 – 2015, as a result of the unfolding of the European debt crisis, which affected not only FDI, but stalled economic growth in general. FDI inflows and outflows by main regions and economies for the years 2008 to 2018 can be found on Tables 3 and 4 (UNCTAD, World Investment Report, Special Economic Zones, 2019).

Table 3 FDI inflows, by region and economy, 2008-2018, in Millions of dollars

Region/ economy	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
World	1479747	1172234	1365106	1561353	1470333	1431163	1357239	2033802	1918678	1497370	**1297152**
Developed economies	784005	648778	679010	816836	741765	694848	623077	126859	119773	75925 6	**556892**
Developing economies	578008	461615	622300	665067	663602	652551	677399	728813	656289	690576	**706042**
Africa	58060	56652	46620	45633	56853	50074	53906	56874	46482	41389	**45902**
Asia	378481	316374	412817	416861	406096	415404	459982	514424	473325	492712	**511706**
Latin America and the Caribbean	138828	86490	160915	200567	197167	184392	161204	155912	135349	155404	**146720**
Transition economies	117733	61840	63796	79449	64966	83764	56761	36394	64653	47538	**34218**

Source: Compiled by the author from UNCTAD, 2019

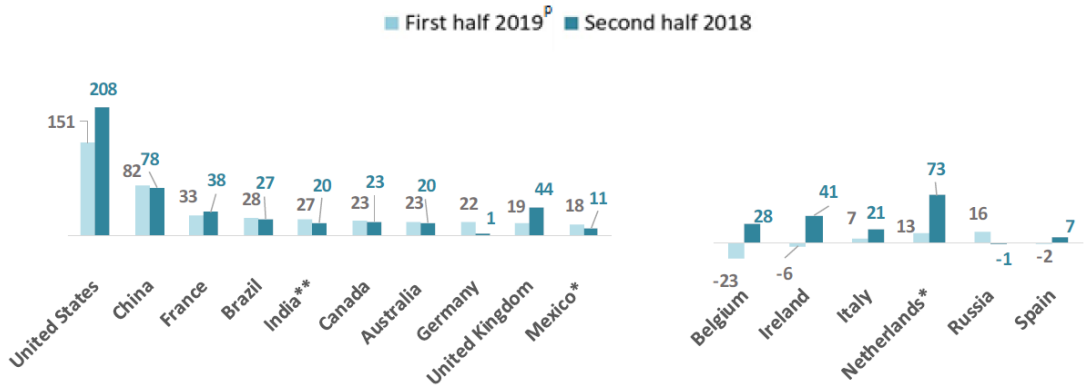
Table 4 FDI outflows, by region and economy, 2008-2018, in Millions of dollars

Region/ economy	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	2018
World	1701001	1098494	1373190	1564489	1277487	1376642	1298772	1682584	1550129	1425439	**1014172**
Developed economies	1366644	815990	965843	1128734	887843	892146	779536	1243499	1105082	925332	**558444**
Developing economies	274072	244127	356860	380104	356453	408699	446897	406999	419874	461652	**417554**
Africa	9879	6461	10468	5316	10676	11119	10532	9654	9497	13251	**9800**
Asia	226724	222728	291699	321354	306217	362730	412231	372558	399125	411913	**401467**
Latin America and the Caribbean	37374	14854	54565	53343	39294	34706	23989	24897	11132	36379	**6515**
Transition economies	60283	38376	50487	55650	33190	75796	72338	32084	25172	38454	**38173**

Source: Compiled by the author from UNCTAD, 2019

Looking at the most recent data, global FDI flows have decreased in the first half of 2019, compared to the flows for the same period in 2018, with an amount of USD 572 billion. Regionally, inflows to the African region have noticed an increase of 11% compared to the previous years, even though there has been certain decrease in the inflow to some of the bigger countries. The largest recipient region – Asia, has seen a growth of 4% for the year, while Latin America and the Caribbean failed to maintain growth, and had a decrease of inflows of 6% (OECD, 2019). The top ten FDI recipients for the first half of 2019, as well as other selected countries are presented on Figure 2.

Figure 2: Top 10 FDI recipients for the first half of 2019 and other countries



Source: OECD International Direct Investment Statistics database

Flows to developing countries have stayed consistent with their steady rise for the past couple of years, reaching a 2% growth in 2018. Considering the decline seen in developing countries, mostly as a result of US's repatriations of accumulated foreign earnings and the new tax reforms introduced in 2017, developing countries have reached a record share in global FDI – 54% (UNCTAD, World Investment Report, Special Economic Zones, 2019). 2018 has been a year of new investment policy development on a national level, which has proven to be quite critical of the foreign investments. More than 55 economies have initiated at least 112 new measures related to FDI. Countries are also becoming more careful with their screening procedures by updating existing mechanisms. Regardless, attracting investments is still a priority for many countries. In 2018, 40 new international investment agreements (IIA) were signed and brought the number of IIA to 2658 in the same year. In terms of industries and sectors, the highest number in Sales for net cross-border Mergers and Acquisitions (net cross-border M&As) for Latin America and the Caribbean belongs to the services sector (23,482 million dollars in 2018, 9,040 out of which accounting for services in electricity, gas and water), followed by Manufacturing (9,429 millions of dollars in 2018), with sales mainly in Chemicals and Chemical products. Sectors of greenfield projects that Latin America attracted most FDI to include: Business services (6,957 million dollars), Hotel services (6,916 million dollars) and Motor vehicles and other transport equipment (7,024 million dollars). In terms of economies, their biggest partners are the United States, Spain, the United Kingdom and China, from the list of other developing economies. The region's total share in world FDI for 2018 was 11,3% (UNCTAD, World Investment Report, Special Economic Zones, 2019). Developing Asia countries on the other hand have an almost tripled world share, coming up to 39,4% of world FDI. This is of course preconditioned by massive market players such as China, Hong Kong, and India, making this region the highest FDI recipient. In terms of industries and sectors, their highest sales for cross-border M&A's are in Mining (3,575 millions of dollars, with a strong decline from 2017, when the amount was 17,551), the food industry (6,008 millions of dollars) and Information and communication services (14,074 millions of dollars) in 2018. Most greenfield FDI projects were attracted to the manufacturing sector, including petroleum products, chemicals, transportation equipment and electronics, reaching a total number of 211,556 million dollars invested in developing Asia as a destination. Services are mostly focused on electricity, gas and water (55,829 millions of dollars) and construction (59,164 millions of dollars) for the year 2018 (UNCTAD, World Investment Report, Special

Economic Zones, 2019). According to the same World investment report for Special Economic Zones, the African developing region has had a total inflow of 45,9 billion dollars in 2018, bringing its share in the world FDI to 3,5%. The amount of sales on both M&A and greenfield projects is considerately lower, compared to the other two previously mentioned developing economies. The highest number for M&A belongs to financial and insurance services (1,615 million of dollars), while greenfield projects have had the biggest investment in Mining, Quarrying and Petroleum (16,778 million of dollars), which comes as no surprise, considering the natural resource and mineral richness of the region. Manufacturing of chemicals comes second (6,480 million of dollars), while the services sector ranges from four to six million dollars. The largest FDI recipient for 2018 was Egypt, mostly because of its gas and oil industries.

In terms of most recent data, FDI flows to developing economies remained stable, with a 16% of increase for Latina America and the Caribbean for 2019, 3% for Africa, and a decline of 6% for developing Asia. 2020 is expected to bring forth marginal growth to FDI flows, with corporate profits remaining high and a stable world economy growth (UNCTAD, 2020)

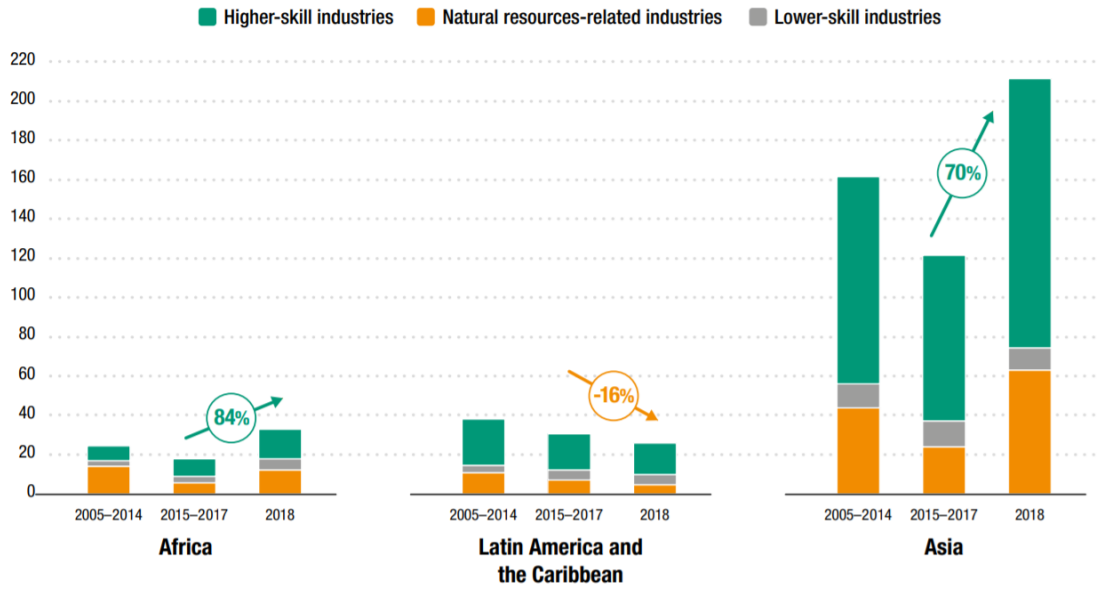
3.2.2. FDI by type of entry

The flow of funds in case of an investment can occur by either a greenfield-FDI or an acquisition-FDI. Both compose the heterogeneous flow of funds that FDI represents. Greenfield projects are an addition to the capital stock of a host country, while an acquisition encompasses a purchase of already existing production facilities in the host country. Because of their differences in addition of new capital assets, is it generally accepted that greenfield projects influence growth by actual, physical investment, while M&As achieve this through productivity growth.

2019 recorded the lowest level of cross-border M&A since 2014, with a decrease of 40%. Political occurrences such as Brexit, which slowed down growth in the Eurozone, are one of the main reasons for this number. In terms of sectors, services had the biggest fall (-56%), followed by manufacturing (-19%) and the primary sector (-14%). This drastic 40% decline of cross-border M&A, compared to the weaker 14% decline in total M&A, stays consistent with the increased unpopularity of this type of expansion in the last couple of years. Greenfield investment has remained stable, with a decrease of 22% in 2019, i.e. a decrease in value of announced greenfield investment projects from 999 billion US dollars

in 2018 to 784 billion US dollars in 2019 (UNCTAD, 2020) Some trends for the years 2005 – 2018 of greenfield investment into manufacturing are presented on Figure 3.

Figure 3: Value of announced FDI greenfield projects for the years 2005 to 2018 in manufacturing, billions of dollars and per cent



Source: UNCTAD, 2019

3.3. Foreign Direct Investment Determinants

Existing literature provides a vast range of models using different determinants and conditionalities. While the composition has stayed relatively unchanged, differences have been observed in both the determinants' statistical significance and their effect direction. Because of lack of a consensus on the theoretical framework which can be used for subsequent empirical research on FDI, the sets of explanatory variables will sometimes vary greatly from study to study. This means that no such set can be regarded as "true" FDI determinants (MOOSA, 2005).

FDI determinants can be different in nature, some purely economical and providing structural summary of each country, while others, not so straightforward and more complex to measure – political and institutional characteristics (EDWARDS, 1990)**.** Edwards (1990) is dividing the possible regressors into three major groups, as variables that capture:

1. Structural characteristics of the economy;
2. Economic policies;
3. The political environment in the country.

Agglomeration can be considered the most important factor, affecting both horizontal and vertical FDIs. In the words of one of the most influential economists of his time, Alfred Marshall, these agglomerated economies, operating in a specific geographic area, can provide fast access to supply chains, provide specialized labor and have decent infrastructure and technological possibilities as a spillover (BLUNDELL-WIGNALL & ROULET, 2017). For some less developed regions, economic cooperation, or regionalism, would aid host countries by ensuring stable macroeconomic policies are introduced for all countries and coordinated between them later on. This could potentially provide a guarantee that they would all be on the same page in case of curbing corruption (ASIEDU, 2006).

The dependent variable FDI has found a couple of interpretations in the literature so far, however, in can be divided into three major groups of possible proxies (LIANG, 2010):

1. Measurement of the absolute and relative FDI value;
2. Number of inward FDI projects;
3. Different firm-level FDI characteristics.

The most common explanatory variables that have made presence in almost each model focusing on developing countries and emerging markets, are market size (measured in either GDP, GNP, outputs or population), the country's openness to trade, previous FDI inflow (lagged variable), taxation rates, tariffs, labor costs, human capital, risks, political stability, real effective exchange rates, corruption levels, levels of existing infrastructure and technology are only few of the other relevant factors, that could be included in the model, and will be analyzed deeper in the following sections 3.3.1. to 3.3.7. Market size, for example, can be considered a regressor, expected to be present in each model. Both its statistical significance and effect direction are also expected to comply with their values and theory. However, assignment of different proxies can undoubtedly affect these results. Market size can be substituted by both real GDP per capita and GDP per capita growth rate, as well as an absolute GDP proxy, but to prove to be statistically significant only when using the proxy GDP per capita growth rate (DEMIRHAN & MASCA, 2008). Total population can also be used as a market size proxy, and other regressors and proxies can form the following pairs: development level – GDP per capita, openness – total trade, human capital – primary education and trade liberalization – trade agreements (SHAH & KHAN, 2016).

Unlike developing countries, FDI inflows into advanced economies are mostly affected by the quality of institutions and economic structures, with proxies representing these conditions, such as fiscal and trade policies, labor and business regulations, property

rights, government spending etc., being even more significant for the Euro zone, compared to their overall significance for the OECD countries (DELLIS, SONDERMANN, & VANSTEENKISTE, 2017).

Looking at the three regions that developing countries are grouped in, it has been a generally accepted view that the Sub-Saharan region has certain differences when compared to the Asian and South American countries. This extensive belief has been adopted by African policy makers as well, making them believe that their region is structurally different, and doesn't have same implications when it comes to factors affecting investment in their country (ASIEDU, 2006). A specific factor to be considered while analyzing these particular investment flows are minerals and natural resources, both of which are abundant in the Sub-Saharan region. In the case of Ghana, for example, by the early 2000s well over 56% of the total foreign direct investments were attracted by the mineral sector i.e. for existing mine expansions, further exploration missions and mine development (AWUDI, 2002). Attracting strategic FDI, creating a conductive investment climate, increasing support for foreign investors and revision of the International trade and Investment frameworks are just some of the recommendations put forward in the African Mining Vision (AMV) and adopted by the Heads of State of the African union in 2009 (ILO, 2014).

As for the Asian developing economies, China can be labeled as the biggest foreign direct investment recipient in the developing world. For the year 2020, in comparison to the same time period last year, foreign investment in high-technology industries increased by 27,9%, while investment in services in the same sector increased by 45,5% (Trading Economics, 2020). For South Asia in particular, the past 15 years have caused a disproportionate inflow of foreign investment, which resulted in displacement of the domestic one. FDI inflows have also been concentrated heavily in the service industry, as opposed to manufacturing, because of underdeveloped infrastructure and lack of policies, providing effective regulation of foreign investment (SUNNY, 2015). Trade openness and foreign investment's benefits to economic growth have been strongly debated in some Asian countries, specifically the developing ones. In Malaysia, it has been found that trade openness has a long-term impact on economic growth, while FDI inflow is not significant in the long run (KAKAR & KHILJI, 2011). In terms of policy, a certain bilateral perspective should be considered for these countries. As an example, using Japan's economy, this means that highest expected FDI inflow to the host country will occur with a condition that both

the institutional push from home and pull from host country are at a high level (BAEK & OKAWA, 2001).

As the case with other countries, Latin American ones have become more open to FDI since the 1980s. This positive notion has affected market reformations, trade liberalization and other policies in the region. Historically speaking, this region has witnessed an incorporation of their governments and businesses, increasing the uncertainty of foreign investors (TREVINO, DANIELS, & ARBELAEZ, 2002)**.** Latin America and the Caribbean region have been a long-time victims of income inequality, with their countries always having one of the highest Gini values. For as close as 2017, the Gini coefficient for Brazil marked a staggering 51,3% (Statista, 2017). In conditions such as these, FDI can have both positive and negative consequences. It is highly likely that inward foreign investment will promote and deepen income inequality, since by default, it cannot induce all industry sectors to the same extent, and will only invest in workers with a certain skillset (TE VELDE, 2003). Since the region has been volatile in terms of political stability and democracy, governance is an important determinant to consider. While governance has been proven to be significant in FDI models related to Latin American countries, it has a negative coefficient according to some studies. This means that, contrary to popular opinion, poor governance seems to encourage FDI inflows into the country (SUBASAT & BELLOS, 2013). Apart from the classical FDI determinants (market size, infrastructure and other macroeconomic indicators) other variables, related to structural reforms in these countries, such as trade liberalization, privatization efforts and financial reform, can be included (CAMPOS & KINOSHITA, 2008)**.**

3.3.1. Market Size

Market size is a decision-making criterion when considering inward foreign direct investment. An apparent example of this is China, whose market size is a good explanation to this economy being the biggest recipient of FDI since the early 1980s, 90% of which has been mainly concentrated in the coastal areas (ODI, 1997). Another example is India, which like China, has a large market both economically and geographically, and has been one of the top investment receivers for the past 20 years. In econometric analysis, the market size determinant can take on many proxies, and it directly influences the significance of market size as a covariate. While total population, absolute GDP per capita, per capita real GDP, growth of per capital real GDP can all be used as a proxy, the results show that the ones

reflecting income, rather than the economy's size prove to be more significant, meaning that investors whose main goal is to increase profits would prefer a growing economy to a large one (DEMIRHAN & MASCA, 2008). An argument can be made in favor of larger markets being significant as well, if their size is an evidence of greater demand for goods and services, and of economies of scale. The higher income argument can also be mentioned here, seeing as in the investor's eyes, higher living standard means greater demand for not only domestic, but foreign goods as well (YASMIN, HUSSAIN, & CHAUDHARY, 2003).

3.3.2. Corruption level

There is no doubt that levels of corruption affect a country's attractiveness for investors. Investors either avoid corrupt environments because of the lack of transparency in the existing bureaucracy, or, in the case that the foreign companies do decide on investment, they usually go for a joint venture with a local player, that knows their way around in the local corruption labyrinth. Developing countries or those in transition have been noted to have higher levels of corruption. Factors affecting these levels may differ, but the most commonly mentioned ones can be said to be the existing political and economic environments, the society's ethical norms and legislations, and other purely ethnological factors, such as tradition, customs and habits (ŠUMAH, 2018). In terms of investments, corruption affects the total investments in the country, the size and form of foreign direct investment, the size of public investments (which in highly corrupted societies takes over a higher portion at the expense of private investments) and the quality of investment projects in general (TANZI & DAVOODI, 2000). It is worth mentioning that apart from the "grabbing hand" concept, which labels corruption as part of the cost function of the investor, there is also the "helping hand" or "grease the wheels" hypothesis, which states that with the help of corrupt regimes, companies can easily work their way around legislative and other administrative restrictions (BLUNDELL-WIGNALL & ROULET, 2017). Even though corruption measurement is quite complex and can provide ambiguous results depending on the measurement of choice, since its inception in 1995, it has become common practice to refer to Transparency International's flagship product – the Corruption Perceptions Index. The index helps rank 180 countries and territories based on a 0 (highly corrupt) to 100 (very clean) corruption scale. In regression models, the corruption index is often a proxy for political stability in the country overall, if there isn't a possibility to consider other political risks, such as crime, coups and wars etc.

3.3.3. Trade Openness

Dating as far as the 18th century, economic openness has become the fuel for unmatched economic advancement. Living in the era of globalization, it is only expected that economies would be open to movements of goods, services and capital. This facilitates economic growth not only by import of capital and goods, which results in increased competition, but also encourages economies of scale exploitation (KAKAR & KHILJI, 2011). Openness can be negatively correlated with a country's size, seeing as larger economies, which are often characterized as moderately less developed, have to produce more output for domestic markets. The degree of openness has a constant representation and is usually presented as a proxy, calculated by addition of all imports and exports, divided by the domestic product of the country. While it may seem obvious that there would be an indisputable linkage between FDI and a country openness to trade, studies have shown that this is not the case. Positive relationship between FDI and the degree of openness has been found for Latin America, with rather inconclusive results, however, regarding the whole complexity that this relationship presents, since specific mechanisms and country policies are not always considered in the proposed models (PONCE, 2006). Trade openness is positively related to FDI in the case of lower- to middle-income countries, seeing as the import opportunities resulting from it are a great encouragement for foreign investors (YASMIN, HUSSAIN, & CHAUDHARY, 2003) but not that significant in case of higher income countries.

3.3.4. Infrastructure

Historically speaking, up until the 1980s the state-owned enterprises, that is the public sector, had been responsible for both investment in existing infrastructure and its service delivery. Privatization has become a major component for developing countries in the past 20 years. The level of existing infrastructure has always played a major role in the development and the growth of developing countries, yet it remains a challenge for most of them, regardless of efforts and investment in these sectors. It is projected that in order to have any impact for Latin America and the Caribbean, Asia and Africa, the investment in infrastructure needs to be around 6% of the region's GDP (UNCTAD, 2018). In terms of foreign direct investment, weak infrastructure is considered a major constraining factor. While in some cases, when the host country's government encourages foreign participation, it can attract foreign investments in infrastructure, it is still considered a disadvantage in

countries lacking the basic requirements, such as: roads, railroads and communications (ODI, 1997).

Infrastructure has found different interpretation in many FDI models and is usually considered a part of the policy-related variables, that is the ones influenced by policymakers (ASIEDU, 2006). Since infrastructure has no numerical measure per se, it has found different proxy representation in econometric models. Asiedu (2006) and Demirhan et.al. (2008) use the proxy number of phone lines per 1,000 population, which is considered a standard measure in literature covering communication infrastructure development, with Demirhan arguing that this covers only the quantity, and not quality measure of infrastructure. Yasmin et. al. (2003) include infrastructure as a proxy of central government expenditures on communications and transport as percent of GDP.

3.3.5. Human capital

In terms of work force competency, literacy and skills, human capital is often included in the FDI equation. Higher levels of education should positively affect FDI, since they improve human capital. Education level is often connected with wages in the host country. Contrary to the popular belief that countries with low labor costs are more attractive for investors, higher labor costs can occur as a result of having a labor force with higher education level, hence able to provide greater productivity and quality (LIANG, 2010). Literature shows that in skilled labor-intensive industries, where higher education level is beneficial in terms of technology development, human capital positively affects inward FDI. Some more recent studies, however, have come up with inconclusive results, showing that there is no significant relationship between human capital and FDI for the Sub-Saharan region for example**.** Others have shown a significant relationship between the two, with increased investment affecting the education levels, and in turn the economic growth by technology and other spill-overs (KARAMBAKUWA, NEWADI, & PHIRI, 2019)**.** Studies about China have come to a similar conclusion, looking into the significance of the relationship as a whole and the regional distribution of inward FDI within the country, based on the region's human capital capabilities (CHENG & KWAN, 2000). Additionally, an argument can be made that it is not the education level per se that is important for attracting FDI, but the ability of this education to be translated into income received on the labor market in the host country (MININGOU & TAPSOBA, 2017)**.**

3.3.6. Tax rate

In terms of tax rates, the literature has tried to stay consistent with the notion that higher tax rates have a negative impact on investment. Most studies, however, often receive inconclusive results. While the direction of the effect between tax and FDI is presumed to be negative, the empirical findings provide negative, positive and inconclusive results (MOOSA, 2005). The tax rate stays an instrument for countries to compete for attracting FDI, because of limited capital availability. Not only this, but development is encouraged more by attracting the „right“ type of investment, meaning that governments should emphasize the importance of FDIs that are more likely to generate spillover benefits in the host economy, as in the case with technology, R&D activities and others dealing with intellectual property.

Tax variables, that are usually studied in relation to FDI and are found to be significant with a negative effect in general, are the following: corporate and income taxes, tax rate on dividends, share of tax revenue in the host country's GDP, deviation from the average corporate tax levels, etc. This negative impact originates from the notion that higher tax reduces the rate of return and this discourages FDI. This has caused countries to compete in terms of tax, by appointing regulations and reductions, in order to become more attractive to investors (ABDiOĞLU, BiNiŞ, & ARSLAN, 2016) Most commonly used incentives are:

1. Reduced corporate tax rates for specific activities and types of enterprises;
2. Tax holidays;
3. Property tax reductions;
4. Reduction of duties and import taxes;
5. Reduction of personal income tax or social security contributions;
6. Reduction of exemption of VAT and others. (EASSON, 2004)

While these incentives encourage the lessening of the tax burden of multinational enterprises, it is also considered „harmful“ in cases when it causes a distortion in investment and trade patterns, and when this burden is transferred to the smaller businesses in the host country (GROPP & KOSTIAL, 2000).

3.3.7. Inflation

Inflation is affecting countries globally and is one of the most commonly used macroeconomic indicator. In terms of development, different determinants have been found to be responsible for inflation levels in developed and developing countries. For example,

growth of money supply, government spending, changes in oil prices worldwide, population and exchange rates determine the levels for developed countries, while population is insignificant in case of developing countries (UKEssays, 2018). Levels of inflation tend to be lower in countries where the fixed exchange rates are lower, there is transparency in the work of the central bank, public debt ratios are kept low, and capital account openness is on a higher level (HA & IVANOVA, 2017).

In most cases, the damage inflation causes affects poorer households, that have a stronger dependency on income from their wages, and the least possibility to have any other types of assets apart from cash. For these reason, high inflation is associated with financial instability, slow growth and higher uncertainty about future inflation (IMF, 2001), which in turn lowers investor confidence and any incentive the population may have for savings.

On a global level, inflation levels have been on the decline for the past five decades, which is also the case for emerging and developing countries, despite the historically high levels affecting Latin America and the Sub-Saharan regions and overall monetary mismanagement consistent with less developed regions (WORLDBANK, 2020).

Inflation is one of the most commonly used macroeconomic indicators (apart from exchange rate) used in most econometric models when estimating FDI inflows. A commonly used determinant, which is also used in this thesis, is the Consumer Price Index (CPI), which measures the changes of prices in a market basket for either consumer goods or services common for a certain household type.

3.4. Countries classification

The commonly accepted classification is the World Bank classification of countries into four groups of income: high, upper-middle, lower-middle and low income, based on their Atlas methodology, which estimates the economy's size based on the GNI per capita parameter (WORLDBANK, 2020). For the year 2020, 31 low-income economies are defined, with a GNI per capita less than 1,025 dollars. The countries that made it to this group are the following: Afghanistan, Benin, Burkina Faso, Burundi, Central African Republic, Chad, Congo Democratic Republic, Eritrea, Ethiopia, Gambia, Guinea, Guinea-Bissau, Haiti, Democratic People's Republic of Korea, Liberia, Madagascar, Malawi, Mali, Mozambique, Nepal, Niger, Rwanda, Sierra Leone, Somalia, South Sudan, Syrian Arab Republic, Tajikistan, Tanzania, Togo, Uganda and the Republic of Yemen. Geographically most of these members are in Sub-Saharan Africa. The United Nations classification, unlike

World Bank, groups all economies into three large categories: developed economies, economies in transition and developing economies. This classification is presented in their World Economic Situation and Prospects reports (WESP), which aggregates data from sources such as: World Bank, International monetary fund (IMF), Statistics Division and Population division (UN/DESA), Organization of Economic Cooperation and Development (OECD), and others. WESP classifies the countries based on the exchange-rate conversions of national data. This allows for output aggregations for each individual country into both regional and global totals (UN/DESA, 2019). Within each broad group, countries are also separated based on their geographical proximity, for example into 3 groups: Africa, Asia, Latin America and the Caribbean, in the case of developing countries.

It could be said that historically high-income countries have had better economic performance compared to today's low-income countries, and this trend has been persistent from at least as early as the 19th century. Looking at it from an economic growth perspective, it can be said that it wasn't low growing rates that caused LIC to fall behind. On the contrary - even though they have higher growth rates compared to the developed countries overall, low-income countries also have higher shrinking rates (BROADBERRY & WALLIS, 2017), that, when balanced out, puts them in an unfavorable position in the long run. There are certain aspects that affect the subgroups within the LIC group and are specific for a certain region/culture. For example, the economic growth in African countries still greatly depends on investments in health and education, as well as on trade liberation (BANE, 2018). Low-income countries have big economic vulnerability, meaning that they are very sensitive to exogenous shocks, with lacking economic resilience and policies to support the countries in such times. The nature of shocks is quite unique as well. Compared to other economies, low-income countries are more vulnerable to external and domestic shocks, such as: natural disasters, political instability (both domestic and regional), trade shocks, demand shocks etc. In the case of developing countries, there are certain characteristics, that are consistent throughout all of them, regardless of geographical location. Apart from the obvious lower gross national income (GNI) per capita, these countries also notice larger discrepancies between incomes received, in other words – income inequality, which can be backed up by data published in the World Development Indicators (WORLDBANK, 2020). A popular measure of the degree of inequality is the Gini coefficient. Another factor is the country's dependency on the agrarian sector and produce. Developing countries are still considered to have a low level of industrialization when compared to their developed partners. While a

trend of decline of labor force presence in the agricultural sector has been noticed in Latin America, both Asia and Africa are still heavily dependent on agricultural and supplementary activities, with percentages of their labor force working in these fields ranging from 30% to as high as 80% of the overall labor force (Nust.na, 2017).

Developing countries also witness a higher propensity to consume rather than save. This, however, should not come as a surprise, since it's one of the main factors of the vicious poverty circle these countries are in. When income is low, private consumption is high and this leaves no space for capital formation. Worth mentioning would be Benjamin Higgins's (1912 - 2001) Theory of Technological dualism, which states that productive employment opportunities in a country are not limited because of lack of demand, but due to technological and resource limitations in the two sectors: modern and traditional rural sector. In terms of applying this to the financial sector, financial dualism takes roots in the inadequate level of development of the financial institutions in a developing country.

3.4. Econometric Framework

The following part will cover the econometric framework. The linear regression section will be mostly based on the literature study of two regression analysis titles: Regression Analysis: *Statistical Modeling of a Response Variable* (FREUND, WILSON, & SA, 2006) and *Introduction to Linear Regression Analysis* (MONTGOMERY, RECK, & VINNING, 2012), while for the fixed and random effects models, notes from Richard Williams (WILLIAMS, University of Notre Dame, 2018) will be used. These notes are based on *Fixed Effects Regression Models for Categorical Data* (ALLISON, 2009) from the *Quantitative Applications in the Social Sciences* series.

The most common ways of assessing a relationship when working with panel data are the following:

1. Pooled OLS (ordinary least squares) regression;
2. Fixed effects panel model;
3. Random effects random model.

Historically, the OLS methodology was widely accepted as a method for establishing significant FDI determinants and other similar studies in the 1960s and throughout the 1970s. In the eighties, however, new econometric tools started emerging, that could provide a better fit to the data type and objectives of these studies, and provide more accurate results, while

handling better the assumption transgression challenges, such as heteroscedasticity, endogeneity, non-linear regression, multicollinearity etc. (LIANG, 2010).

There are certain specifics as to which method is most appropriate and it largely depends on the type, amount and quality of data. The main difference of the pooled OLS regression, compared to the random and fixed effects model, is that it cannot be used in cases when the same variables change over the whole time period covered, as is the case in this study. For a better understanding, the linear regression, OLS and its assumptions will be investigated in more detail further on in the paper.

For the other two, a good way to determine the correct model is to use the Hausman specification test. The test has the requirement that two estimators should be present: a maximum likelihood one, which is consistent under the null hypothesis and inconsistent under the alternative one; and a second estimator, which is asymptotically less consistent under the null hypothesis compared to the first one, but still consistent under the alternative hypothesis (AMEMIYA, 1985). In a regression model, this test is used to uncover endogenous regressors. Endogeneity means that the values of some variables in the model and influenced and determined by other variables. Since the assumption of exogeneity is central for the ordinary least squares estimator to be BLUE, understanding whether the regressors are endogenous is of outmost importance before choosing a model. In terms of its usage in panel data analysis, the test provides insight into the correct choice between fixed and random effects model. The null hypothesis states that the preferred model is the random effects one (no correlation between the regressors and unique errors), while the alternate hypothesis states that the fixed effects model should be used.

3.4.1. Linear regression and OLS

A regression model describes a linear relationship, where the behavior of the dependent variable can be explained by the means of independent variables. The simplest regression model is the simple linear regressions model, which is written:

$$Y = b_0 + b_1 x + e \qquad (3)$$

where the intercept b_0 and the slope b_1 are unknown constants and e is a random error component. Two assumptions are made regarding the errors – that their mean is zero and that their variance is unknown σ^2.

$$E(e|X) = 0 \qquad (4)$$

$$E(e^2|X) = \sigma^2 \qquad (5)$$

b_0 and b_1 are called regressions coefficients, b_1 (slope) can be interpreted as the change of the mean of the distribution of *Y*, which is produced by a unit change in *x*.

The Ordinary Least Squares method is used to estimate the two regression coefficients b_0 and b_1, so that the sum of the squares of the differences between the observations *Yi* and the straight line is a minimum. Since it is concerned with the squares of the errors, it's goal is to find the line going through the sample data that minimizes the sum of the squared errors (FREUND, WILSON, & SA, 2006).

Least squares normal equation solution can be written as:

$$b_0 = Y - b_1 x \qquad (6)$$

When talking about the quality of these least squares estimator, the Gauss-Markov theorem should be mentioned. It states that for a linear regression model, whose errors are uncorrelated, expected to have a value of zero and have equal variance, the least square estimators are unbiased, and they are called the best linear unbiased estimators (BLUE).

In terms of evaluation of a model's appropriateness Akaike's (1974) information criterion AIC has found a broad use in statistics. Out of many, a model with the lowest AIC score is considered good. The criterion will not however, provide absolute values, i.e. it will not provide information regarding the other unfit models and their ranks in terms of most and least appropriate. The following formula is used to estimate the criterion (AKAIKE, 1974):

$$AIC = -2 * \ln(L) + 2 * k \qquad (7)$$

where, *L* is the likelihood value and *k* the number of parameters estimated.

In order to provide for satisfying results of the linear regression, it is of great importance to verify the pivotal OLS linear regression assumptions, such as:

1. Homoscedasticity;
2. Exogeneity;
3. Linear independence.

Their subsequent violations are as follows: heteroscedasticity, endogeneity and multicollinearity.

1. Homoscedasticity – Heteroscedasticity

Heteroscedasticity is another violation or the OLS assumptions. Since the ordinary least squares regression assumes that all errors have constant variance (are homoscedastic) across all data values, heteroscedasticity is a problem. It states that over the range of some measured values the errors spread changes systematically. This means that there is a defined

pattern the residuals follow; in which case the model is not trustworthy. While heteroscedasticity may initiate certain bias in the regression coefficient's estimates, it mainly affects the accuracy of the estimates of variances of the estimated mean of the dependent variable. The OLS estimates are no longer considered BLUE. Heteroscedasticity can be present in both cross-sectional, which can have a very broad range of values, and time - series data models, where the dependent variable can significantly change, in the case of its analysis in large timeframes (MONTGOMERY, RECK, & VINNING, 2012).

Apart from visual inspection, heteroscedasticity can be detected by running several tests, such as: Breusch-Pagan / Cook-Weisberg Test, White's general test (a special case of Breusch-Pagan, used for non-linear forms of heteroscedasticity) (WILLIAMS, 2020).
Theoretically speaking, when faced with indication that the dependent variable's distribution is non-normal, or there are some outlier affecting the model, the problematic observation could be discarded. Even though this makes sense statistically, it can't be applied in real life. In this situation, a robust regression procedure can be used as an alternative to OLS. This means that the model will satisfy the following criteria:

1. It will be unbiased and efficient;
2. The model's performance will not be greatly affected by small transgressions of the assumptions;
3. The model will not be rendered invalid in case of large transgressions of the assumptions.

If performed correctly, the robust regression analysis should theoretically provide the same results as an OLS, in the absence of outliers and with normal distribution present. The procedures themselves are relatively easy to perform. Other ways to deal with heteroscedasticity are model adjustments/variable transformation, using standard robust errors or using the weighted least squares option (WILLIAMS, 2020).

2. Exogeneity – Endogeneity

Endogenous variables are influenced by other variables (correlated with error terms) in the model while the exogenous are considered external (FREUND, WILSON, & SA, 2006). For a variable to be truly exogenous, it should be completely unrelated to any other variables in the model, both observed and unobserved. Endogeneity can occur for a couple of reasons, but most commonly it happens for one of the following two:

1. Omitted variable bias, meaning important variables are excluded/omitted from the model;

2. Simultaneity bias, meaning that the outcome variable is a predictor of x.

While the first bias can be used as an advantage for model estimation, the simultaneity bias is considered more difficult and it occurs when the outcome variable of interest is, in fact, a predictor of the x variable(s) in a model. Ignoring this simultaneity produces biased coefficients and leads to overestimation of the effect size of *x* in regression models

3. Linear Independence - Multicollinearity

If multicollinearity occurs in a model, it means that its independent variables are correlated. Seeing as the variables should be as their name states – *independent* (the change in one variable should not escalate a change in the other ones), this causes a problem during result interpretation and affects the overall model fit. A good way to describe such a regression analysis with multicollinearity would be to realize that even though the model is chosen correctly and the statistics obtained by this analysis are correct, the individual coefficients may not be very useful i.e. the overall efficiency of the analysis is jeopardized, seeing as the purpose of establishing separate effects from each individual factor cannot be reached. There are several reasons for multicollinearity, in some cases the data has been collected in an incomplete way, and in some, the independent variables that are chosen may be naturally correlated.

In order to help identify the magnitude as well as the variables involved in the multicollinearity, tools such as the variance inflation factor (VIF) can be of help. VIF for covariate xi can be calculated the following way:

$$VIFi = 1/1 - Ri^2 \qquad (8)$$

where Ri^2 is the coefficient of determination.

A popular cutoff value for the degree of multicollinearity which is seriously affecting the estimation of coefficients is taken to be 10. This value is not supported theoretically, and it is more of a rule of thumb (MONTGOMERY, RECK, & VINNING, 2012). It is also quite convenient spot the value 10 amongst other values in the VIF list. An important aspect to be considered is that the VIF value should be evaluated taking into consideration the overall fit of the studied model – the same VIF value might be strong enough to affect a model with lower R^2, but not large enough to affect a model with large R^2. For this reason, it is also reasonable to calculate the equivalent statistic for the whole regression model ($1/1-R^2_{model}$) and compare it to VIF. The result will be an indication of how many of the correlations between the independent variables are stronger than the regression relationship itself.

3.4.2. Fixed and Random effect model

Panel data can be quite simply explained as a mix of both time series and cross-sectional data. In terms of empirical analysis, this data type is mainly found in studies covering a group of subjects (countries, cities, firms etc.), with individual cases observed over the same time periods. Regardless of the subject, the errors in the regression model will be correlated, since there are characteristics that have been omitted and cannot be observed. Most commonly used models, when needed to solve the correlated errors problem, are the fixed and random effects. The functional forms of the fixed and random effect models are given by formulae 9 and 10 respectively:

$$y_{it} = (\alpha + u_i) + X'_{it}\beta + v_{it} \quad (9)$$

$$y_{it} = \alpha + X'_{it}\beta + (u_i + v_{it}) \quad (10)$$

where u_i is a fixed or random effect specific to individual (group) or time period that is not included in the regression, and errors are independent identically distributed.

A third possibility could be using a Mixed effects model, which contains both fixed and random effects. These mixed models are particularly useful in longitudinal studies, when the same statistical units are subjects of repeated measurements. The Hausman test, which addresses the appropriateness of a model to be used based on the data, was explained earlier in this chapter. There are some considerations that will affect the choice of the right model:

1. Nature of omitted variables in the model:

It is better to use a fixed effects model if it is believed, that there are omitted variables, that are correlated to the other variables in the model. The claim supporting this, is that hopefully, the omitted variables affect the subject constantly, that is they have the same effect now compared to later. For this to hold truth, the variables need to have time-invariant values (no change in the value over time) and time-invariant effects (same effect over time). In contrast, random effect model is used under the assumption that there are either no omitted variables, or they are not related to the other variables in the model. Ideally, unbiased estimates are expected, however, more often these omitted variables will result in at least some level of bias in the estimates.

2. Variability:

The fixed effects model needs greater variability within its subjects. If there is little to no change, the model will not work. Random effects model on the other hand tolerated less variability, but the coefficients are more likely to be biased. To sum up, it can be said that variables with time-invariant values will be estimated in the random effects model, but

these estimates may be biased and the researcher will have no control over them, while the fixed effects model will not include in itself the effects of these variables, meaning it will partial them out (WILLIAMS, 2020).

The estimation for the fixed effects model is done by either LSDV (least squares dummy variable) or using within effect estimation. Hypothesis are tested using the F test. The random effects model is estimated using GLS (generalized least squares), FGLS (feasible generalized least squares) or EGLS (estimated generalized least squares). Hypothesis are tested by the Breusch – Pagan Lagrange Multiplier test. Using pooled OLS regression is favored over the other two methods when the null hypothesis is not rejected in both the F test and the Lagrange multiplier (PARK, 2011).

Since the least squares dummy variable regression is OLS with dummy variables, one of the key problems that have to be avoided is the perfect multicollinearity. LSDV can be implemented in three ways, each aiming to make the model identified by imposing a constraint. In LSDV 1, the model used in this paper, one of the dummy variables is dropped, and it becomes the baseline intercept, or reference point. LSDV 2 suppresses this intercept, while LSDV 3 imposes a restriction. The dummy coefficients and the way they are approached in all three models can be summarized in more detail on Figure 4.

Figure 4: Summary of dummy coefficients in LSDV 1, LSDV 2 and LSDV 3

	LSDV1	LSDV2	LSDV3
Dummies included	$d_1^{LSDV1} - d_d^{LSDV1}$ except for $d_{dropped}^{LSDV1}$	$d_1^* - d_d^*$	$d_1^{LSDV3} - d_d^{LSDV3}$
Intercept?	α^{LSDV1}	No	α^{LSDV3}
All dummies?	No (*d-1*)	Yes (*d*)	Yes (*d*)
Constraint (restriction)?	$\delta_{dropped}^{LSDV1} = 0$ (Drop one dummy)	$\alpha^{LSDV2} = 0$ (Suppress the intercept)	$\sum \delta_i^{LSDV3} = 0$ (Impose a restriction)
Actual dummy parameters	$\delta_i^* = \alpha^{LSDV1} + \delta_i^{LSDV1}$, $\delta_{dropped}^* = \alpha^{LSDV1}$	$\delta_1^*, \delta_2^*, \ldots \delta_d^*$	$\delta_i^* = \alpha^{LSDV3} + \delta_i^{LSDV3}$, $\alpha^{LSDV3} = \frac{1}{d}\sum \delta_i^*$
Meaning of a dummy coefficient	How far away from the reference group (dropped)?	Actual individual intercept	How far away from the averaged group effect?
H_0 of the t-test	$\delta_i^* - \delta_{dropped}^* = 0$	$\delta_i^* = 0$	$\delta_i^* - \frac{1}{d}\sum \delta_i^* = 0$

Source: PARK, 2011

4. Practical Part

4.1. Data collection and adjustments

In order to collect data of highest relevance and quality, and to make sure the panel dataset is as balanced as possible, official databases, such as the World Bank, OECD, UNCTAD, ILO and others were used. Certain adjustments had to be made for some indicators.

The Corruption perception index noted a change in its methodology in 2012. The old methodology listed countries on a scale from 0 to 10, with the less corrupted countries having a score closer to 10. New methodology was introduced in 2012, which listed countries on a scale from 0 to 100, with the less corrupted countries having a higher score. Since this study covers a period from 2007 to 2017, it uses data calculated by both methodologies. Hence, adjustments were made for the countries in the time period 2012 to 2017. Their scores are adjusted in the model to fit on the same scale as per the old methodology. For example, a country with a score of 76 by the new methodology is taken as 7,6. It should also be noted, that the CPI score is reported with a standard error and 90% confidence interval. This reflects the variance present in the values of the source data that comprises the CPI score (TRANSPARENCY INTERNATIONAL, 2016).

Also, the list of countries for developing Africa had to be adjusted because of missing data for Somalia for the years 2007 to 2012. Values were missing for the indicators: Economic output, FDI inflow, Corporate tax levels, Consumer Price index and Trade openness (import and export values). Because of this Somalia was excluded from the initial list, and another East-African country – Kenya, was included in its place. Availability in general was one of the major obstacles for acquiring high quality data. In order to evade data imputation methods that would further complicate and possibly distort the results, some data sets were adjusted in terms of countries (e.g. Somalia exclusion) and proxies for some indicators were modified. This lack of data was most present when dealing with the Sub-Saharan countries and Africa in general. For others, for missing entries in the time span of 2-4 years, data was taken from Statista (STATISTA, 2020). There are 1320 observations for each group of countries, i.e. 3960 observations in total.

Before input of the data into the statistical software, it was initially gathered in Microsoft Office Excel individually and then accumulated into Panel Data format. An example of how the individual excel tables look like can be found on Figure 5, where the

variable Trade Openness in terms of its proxy is collected for the 15 countries from Latin America and the Caribbean. The data values are rounded to three decimal places and are obtained by summation of two separate data sets of import as percentage of GDP and export as percentage of GDP for the set of countries.

Figure 5: Trade openness as export and import as % of GDP, Latin America and the Caribbean, 2007-2017

Country Name	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Haiti	52.182	56.922	58.284	80.091	76.424	70.064	70.275	71.258	70.552	73.342	75.316
Jamaica	101.244	113.577	86.885	80.920	83.822	82.040	83.269	84.750	76.124	76.462	83.548
Uruguay	59.210	65.208	53.394	51.699	53.247	55.061	49.718	49.088	45.328	41.310	39.764
Costa Rica	86.912	86.934	70.178	68.219	69.451	68.145	65.618	67.046	62.518	63.928	66.049
Dominican Republic	61.947	61.392	50.612	56.000	58.990	58.389	56.682	55.496	52.171	51.586	50.225
Guatemala	67.898	64.125	57.106	62.115	63.984	60.982	58.548	56.718	51.306	47.005	45.657
El Salvador	77.621	80.666	66.071	73.537	79.276	77.649	80.451	78.106	76.561	72.932	74.458
Mexico	56.795	57.777	55.968	60.760	63.470	65.767	63.765	64.964	71.166	76.100	77.194
Argentina	40.945	40.403	34.057	34.971	35.206	30.527	29.334	28.407	22.486	26.094	25.223
Brazil	25.293	27.258	22.106	22.772	23.934	25.114	25.786	24.685	26.954	24.542	24.144
Chile	76.407	80.790	66.337	69.064	72.206	68.272	64.973	65.273	58.972	55.710	55.671
Colombia	37.184	39.244	35.142	34.320	39.529	38.871	38.011	37.488	38.361	36.203	35.261
Peru	55.688	58.434	48.112	51.673	55.988	52.620	49.787	46.853	45.163	45.389	47.514
Ecuador	62.587	68.057	52.105	60.303	64.490	61.751	59.606	57.708	45.244	38.521	42.422
Paraguay	79.001	76.160	67.388	77.950	76.442	72.560	70.636	67.629	64.514	65.390	68.678

Source: Compiled by the author, based on WORLD BANK/OECD databases

In order to ensure correct data transfer, the data for the indicators were saved in three excel sheets, each representing a region, and containing data on 8 indicators. The final data in its panel form is presented on Figure 6. A Country ID column was added, in order to be used for dummy variable transformation.

Figure 6: Panel data for Developing Asia, 8 indicators for the FDI model and 15, 2007 – 2017

Country ID	Country	Year	FDI	GDP	CORR	OPN	INFR	HMCAP	TAX	CPI
1	Cambodia	2007	10.039	10.213	2.0	138.268	18.884	6.7	20	7.668
1	Cambodia	2008	7.875	6.692	1.8	133.320	30.518	2.9	20	24.997
1	Cambodia	2009	8.925	0.087	2.0	105.138	44.474	-3.2	20	-0.661
1	Cambodia	2010	12.491	5.963	2.1	113.604	56.950	0.4	20	3.996
1	Cambodia	2011	11.995	7.070	2.1	113.582	94.606	3.8	20	5.479
1	Cambodia	2012	14.146	7.313	2.2	120.597	129.259	7.9	20	2.933
1	Cambodia	2013	13.583	7.357	2.0	130.046	134.860	8.4	20	2.943
1	Cambodia	2014	11.097	7.143	2.1	129.612	133.896	5.3	20	3.855
1	Cambodia	2015	10.099	7.036	2.1	127.864	134.334	5.1	20	1.221
1	Cambodia	2016	12.282	7.031	2.1	126.950	126.317	2.8	20	3.045
1	Cambodia	2017	12.570	7.015	2.1	124.788	116.013	5.3	20	2.891
2	China	2007	4.401	14.231	3.5	62.193	157.444	13.7	33	5.571
2	China	2008	3.734	9.654	3.6	57.613	181.003	9.6	25	8.610
2	China	2009	2.569	9.400	3.6	45.185	197.071	9.4	25	1.169
2	China	2010	4.004	10.636	3.5	50.717	208.514	10.4	25	2.810
2	China	2011	3.709	9.551	3.6	50.741	245.664	9.2	25	5.804
2	China	2012	2.827	7.860	3.9	48.268	286.054	7.6	25	6.108
2	China	2013	3.040	7.769	4.0	46.744	298.290	7.5	25	5.507
2	China	2014	2.568	7.300	3.6	45.065	314.542	7.1	25	6.045
2	China	2015	2.201	6.905	3.7	39.629	314.922	6.8	25	4.559
2	China	2016	1.569	6.737	4.0	37.210	321.452	6.6	25	2.370
2	China	2017	1.368	6.757	4.1	38.150	328.790	6.7	25	1.227
3	Indonesia	2007	1.603	6.345	2.3	54.829	40.188	1.6	30	6.407
3	Indonesia	2008	1.826	6.014	2.6	58.561	59.701	2.8	30	10.227

Source: Compiled by the author, based on WORLD BANK, ILOSTAT, OECD, Transparency International and Tax Foundation

4.2. Empirical estimation

4.2.1. Descriptive Statistics

Summary statistics for the FDI model are given in Tables 5 to 7, for all three country groups. IBM's SPSS statistical package was used for calculation. The number of valid cases for each country group is 165, with no missing values, staying consistent with the balanced quality of the panel data.

Table 5 Descriptive statistics for developing Asia

Descriptive Statistics

	N	Minimum	Maximum	Mean		Std. Deviation
	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic
Foreign Direct Investment Inflow	165	-37,155)	43,912	4,54268	,505271	6,490328
Market Size	165	-4,704)	17,291	5,60584	,228212	2,931433
Corruption	165	1,800	6,400	3,62052	,082069	1,054198
Trade Openness	165	35,304	200,385	87,04474	3,267068	41,966249
Infrastructure	165	18,884	328,790	108,22891	4,234892	54,398174
Human Capital	165	-5,050)	13,650	3,45661	,271360	3,485683
Corporate Tax	165	14,000	35,000	24,88582	,415157	5,332786
Inflation	165	-3,749)	27,956	5,49432	,364221	4,678505
Economic Output	165	558,052	40541,862	6229,39109	621,174265	7979,127912
Valid N (listwise)	165					

Source: Author's computation in IBM SPSS

Table 6 Descriptive statistics for Africa

Descriptive Statistics

	N	Minimum	Maximum	Mean		Std. Deviation
	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic
Foreign Direct Investment Inflow	165	-6,057)	16,629	3,16533	,270193	3,470697
Market Size	165	-17,669)	19,675	4,41985	,302184	3,881623
Corruption	165	1,500	4,400	2,81974	,054738	,703127
Trade Openness	165	20,723	122,446	66,25191	1,534790	19,714741
Infrastructure	165	6,129	130,554	63,43598	2,554389	32,811720
Human Capital	165	-18,360)	18,690	1,71855	,324688	4,170695
Corporate Tax	165	20,000	40,000	30,52848	,418290	5,373033
Inflation	165	-72,730)	156,960	6,96520	1,152768	14,807574
Economic Output	165	286,330	5592,326	1941,42044	114,273619	1467,871219
Valid N (listwise)	165					

Source: Author's computation in IBM SPSS

Table 7 Descriptive statistics for Latin America and the Caribbean

Descriptive Statistics

	N	Minimum	Maximum	Mean		Std. Deviation
	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic
Foreign Direct Investment Inflow	165	-,613)	11,790	3,53933	,189555	2,434878
Market Size	165	-5,919)	11,144	3,17652	,227385	2,920809
Corruption	165	1,400	7,400	3,83322	,115430	1,482721
Trade Openness	165	22,106	113,577	57,97125	1,384406	17,783014
Infrastructure	165	26,329	178,594	105,32601	2,344647	30,117542
Human Capital	165	-8,150)	11,040	1,22933	,244258	3,137556
Corporate Tax	165	10,000	35,000	27,37564	,485322	6,234068
Inflation	165	-,731)	41,200	5,86722	,424739	5,455873
Economic Output	165	619,813	16973,674	7237,14798	313,297811	4024,383246
Valid N (listwise)	165					

Source: Author's computation in IBM SPSS

4.3. Fixed Effects Method

The Fixed Effects model is estimated by the least squares dummy variable method, as presented in the Methodology section. For this estimation, IBM SPSS software is used. The results are summarized in 3 tables, table 9 to table 11, each corresponding to a country group. The tables contain the most important results of estimation. Coefficients are given for the 7 determinants, the intercept, 14 dummy variables, and verification data regarding the R-squared, F-value, the total sum of squares and the sum of squared residuals.

The original output from the software, can be found in APPENDIX 3. For testing the partial aim regarding the goodness-of-fit comparison, pooled OLS results for the three country groups are given in APPENDIX 2, in the format of the original software output.

Table 8 LSDV estimation output for developing Asia FDI model

		Coefficient	Std. Error	t-value	Sig.
1	(Constant)	6,409	7,837	,818	,415
	Market Size	1,563	,295	5,301	,000
	Corruption	-4,037)	1,400	-2,885)	,005
	Trade Openness	,042	,040	1,050	,295
	Infrastructure	,040	,017	2,337	,021
	Human Capital	-,636)	,280	-2,271)	,025

Continuation of Table 8 LSDV estimation output for developing Asia FDI model

	Corporate Tax	-,019)	,186	-,100)	,921
	Inflation	,127	,106	1,203	,231
	DV1	-3,592)	4,942	-,727)	,469
	DV2	-9,104)	4,544	-2,004)	,047
	DV3	-5,023)	3,091	-1,625)	,106
	DV4	-1,089)	4,970	-,219)	,827
	DV5	2,031	3,632	,559	,577
	DV6	-5,779)	3,719	-1,554)	,122
	DV7	-3,120)	4,684	-,666)	,506
	DV8	-6,928)	5,705	-1,214)	,227
	DV9	-7,123)	3,549	-2,007)	,047
	DV10	-1,514)	3,490	-,434)	,665
	DV11	-3,186)	3,254	-,979)	,329
	DV12	9,118	3,437	2,653	,009
	DV13	4,893	3,479	1,406	,162
	DV14	,700	3,579	,195	,845
Verification					
	R – square	,542			
	RSS	3166,265			
	TSS	6908,396			
	F	8,048			

Source: Author's computation in IBM SPSS

Table 9 LSDV estimation output for Africa FDI model

		Coefficient	Std. Error	t-value	Sig.
1	(Constant)	-2,472)	4,076	-,607)	,545
	Market Size	,283	,122	2,323	,022
	Corruption	-1,356)	,878	-1,544)	,125
	Trade Openness	,058	,021	2,808	,006
	Infrastructure	,011	,014	,754	,452
	Human Capital	-,277)	,113	-2,460)	,015
	Corporate Tax	,134	,123	1,089	,278
	Inflation	-,010)	,015	-,658)	,512
	DV1	-,725)	1,241	-,584)	,560
	DV2	-,129)	1,245	-,104)	,917
	DV3	2,676	1,373	1,949	,053
	DV4	-,286)	1,566	-,183)	,855
	DV5	-1,633)	1,602	-1,019)	,310
	DV6	-3,625)	1,931	-1,877)	,063

Continuation of Table 9 LSDV estimation for Africa FDI model

	DV7	-,421)	1,820	-,231)	,817
	DV8	-1,681)	1,303	-1,290)	,199
	DV9	5,556	1,531	3,628	,000
	DV10	-6,236)	1,684	-3,703)	,000
	DV11	2,838	1,174	2,416	,017
	DV12	-1,742)	1,487	-1,171)	,243
	DV13	6,808	1,165	5,843	,000
	DV14	,547	1,304	,420	,675
	Verification				
	R-square	,571			
	RSS	846,939			
	TSS	1975,501			
	F	9,074			

Source: Author's computation in IBM SPSS

Considering the nature of the independent variables, the Coefficient column in tables 8-10 give the Unstandardized beta coefficients. Full output, containing the standardized beta can be found in APPENDIX 3. Country ID in Appendix 1 can be used as reference for the 14 dummy variables, with the 15th being excluded (reference countries: Turkey, Benin and Paraguay). The degrees of freedom are 143 in all three cases – the model loses 14 more degrees of freedom due to the 14 dummy variables.

Table 10 LSDV estimation output for Latin America and the Caribbean FDI model

		Coefficient	Std. Error	t-value	Sig.
1	(Constant)	-7,735)	1,922	-4,024)	,000
	Market Size	-,026)	,071	-,374)	,709
	Corruption	1,250	,440	2,838	,005
	Trade Openness	,117	,018	6,349	,000
	Infrastructure	-,008)	,006	-1,402)	,163
	Human Capital	,020	,061	,333	,739
	Corporate Tax	-,153)	,055	-2,779)	,006
	Inflation	,003	,027	,094	,925
	DV1	4,164	1,282	3,249	,001
	DV2	3,281	1,440	2,278	,024
	DV3	3,310	2,395	1,382	,169
	DV4	4,414	1,962	2,249	,026
	DV5	6,344	1,266	5,010	,000
	DV6	4,787	1,301	3,678	,000

Continuation of Table 10 LSDV estimation of Latin America and the Caribbean FDI model

	DV7	2,125	1,335	1,592	,114
	DV8	3,970	1,389	2,858	,005
	DV9	8,398	1,818	4,619	,000
	DV10	9,525	1,930	4,936	,000
	DV11	3,177	2,230	1,425	,156
	DV12	8,459	1,626	5,203	,000
	DV13	7,425	1,525	4,869	,000
	DV14	2,867	1,056	2,716	,007
	R-square	,734			
	RSS	258,989			
	TSS	972,295			
	F	18,755			

Source: Author's computation in IBM SPSS

5. Results and Discussion

5.1. Model goodness-of-fit

This section will investigate the goodness-of-fit measures of the chosen Fixed effects LSDV 1 model. Testing the model, its significance (p-value) and preferable use over the polled OLS method is established by the F-test. The null hypothesis in this case states that, except for one, all other dummy parameters are zero H_0: $\mu_1 = ... = \mu_{n-1} = 0$. The alternative is that at least one dummy parameter is not zero.

Table 11 F test results for all country groups

Country group	F value	Model fit
Asia	8,048 [0.000]	Reject H_0
Africa	9,074 [0.000]	Reject H_0
Latin America and the Caribbean	18,755 [0.000]	Reject H_0

Source: Author's computation

As seen in Table 11, the F value in all three cases seem to be large enough to reject the null hypothesis. The probability is <0.05 in all three cases. This means that the goodness-of-fit has increased in the Fixed effects model and it is a better fit for the observed data compared to pooled OLS.

The RSS (sum of squares due to error or residuals) decreased for all three country groups for LSDV, compared to polled OLS, as can be seen on Table 12.

Table 12 RSS for pooled OLS and LSDV 1

Country group	Pooled OLS RSS	LSDV 1 RSS
Asia	4103,320	3166,265
Africa	1335,402	846,939
Latin America and the Caribbean	446,210	258,989

Source: Author's computation

The LSDV did, however, lose 14 degrees of freedom because of the dummy variable inclusion.

The R squared values are given in Table 13. As seen in the table, the Fixed effects model resulted in an increase in R-squared and adjusted R-squared values. While the R-squared does not necessarily inform on whether the data and predictors are biased, or whether the higher the value the better the fit of the model per se, it does provide a useful estimate of the movement relationship between the dependent variable FDI and the

covariates for each country group. Latin America and the Caribbean model has the highest R values for both pooled OLS and the LSDV model. The LSDV model accounts for 73,4 percent of the total variance in Foreign Direct Investment inflow into the group's countries.

Table 13 R-squared and Adjusted R-squared values for pooled OLS and LSDV 1

Country group	**R-squared**		**Adjusted R-squared**	
	Pooled OLS	LSDV 1	Pooled OLS	LSDV 1
Asia	,406	**,542**	,380	**,474**
Africa	,324	**,571**	,294	**,508**
Latin America and the Caribbean	,541	**,734**	,521	**,695**

Source: Author's computation

Since the LSDV model has proved to be a better fit, as compared to OLS, in the next section 5.2., the estimated coefficient in all three FDI models will be evaluated individually.

5.2. Evaluation of the estimated coefficients

Table 14 Summary of expected and actual estimated coefficients, stated in the methodology section for the FDI model

	Africa		**Developing Asia**		**Latin America and the Caribbean**	
Outcome	**Expected**	**Actual**	**Expected**	**Actual**	**Expected**	**Actual**
GDP	+	+	+	+	+	-
CORR	+	-	+	-	+	+
OPN	+	+	+	+	+	+
INFR	+	+	+	+	+	-
HMCAP	+	-	+	-	+	+
TAX	-	+	-	-	-	-
CPI	-	-	-	+	-	+

Source: Author's computation

In terms of how the actual coefficients met the theoretical expectations, it can be said that there are substantial differences. All three groups of countries have 4 accurate covariate signs. The differing signs are marked with red in Table 14. It was expected that a higher corruption index (lower corruption) will encourage FDI inflow, but the contrary has been

proven for African and Asian countries. These two regions show more similarity with their Human Capital coefficients having the opposite (negative) signs, stating that higher labor productivity discourages FDI inflow. Latin America and the Caribbean are more distinct in the actual outcome, with GDP growth, infrastructure development and inflation levels having the opposite signs. The results provide interesting insight into the significance of the covariates to the model in general. The level of statistical significance is given by the p-levels for each covariate, which are given in Tables 9 – 11, in the Sig. level column, and summarized in Table 15.

Table 15 Significance p-values, significance codes: '***' 0,001; '**' 0,01; '*' 0,05; '.' 0,1; 'E' insignificant

	Africa		**Developing Asia**		**Latin America and the Caribbean**	
Outcome	**p-value**	**Significance level**	**p-value**	**Significance level**	**p-value**	**Significance level**
GDP	,022	*	,000	***	,709	E
CORR	,125	E	,005	**	,005	**
OPN	,006	**	,295	E	,000	***
INFR	,452	E	,021	*	,163	E
HMCAP	,015	*	,025	*	,739	E
TAX	,278	E	,921	E	,006	**
CPI	,512	E	,231	E	,925	E

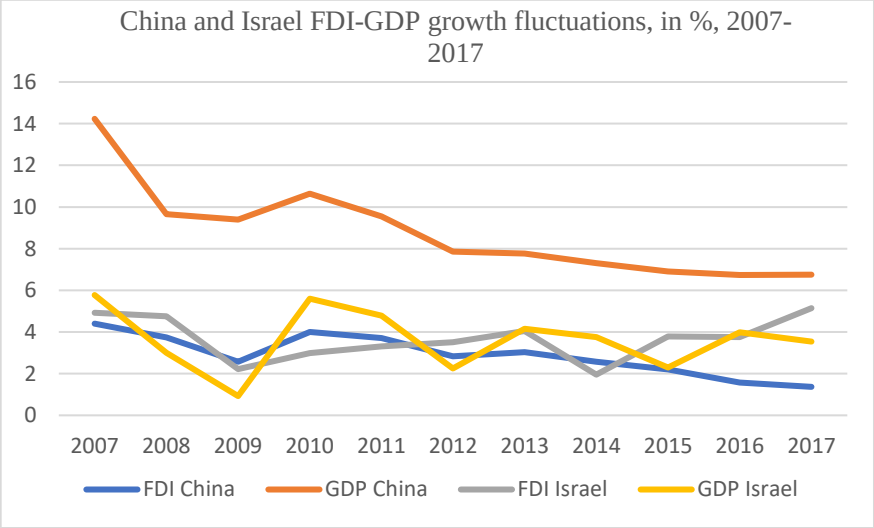
Source: Author's computation

Table 15 shows that there is no one covariate that could be considered significant for all three groups of countries. There can be more reasons for this. It can be argued that the timeframe of 10 years was not enough to capture the effect of these variables on the outcome, and that they would prove to be significant in a 20 years analysis. Since most of the covariates have strong support in academic literature, their insignificance can be the result of inappropriately chosen/formulated proxies as well.

5.2.1. Asia FDI model estimates

The results summed up in Tables 14 and 15, provide insightful information about the determinants of FDI inflow in the Asian countries. Consistent with theory, market size affects FDI inflows significantly, which is confirmed by the largest t-value in the model (t-value: 5,301>1,96), when compared to other determinants. The actual coefficient also carries the expected positive sign, meaning that market size (proxy GDP growth) has a positive effect on FDI inflow. Developing Asia as a region is home to many fast-growing economies, that have seen their rise during the 11-year period taken in this paper. With giant players such as China and Israel, this outcome comes as no surprise (Figure 7). Even though proxies used for denoting market size are a subject of constant debate, it can be said that the GDP growth in percent was a suitable choice for this model. Since the market size in this case does not reflect the actual population of the countries, it can be said that investors prefer economically growing countries, compared to just large economies.

Figure 7: China and Israel fluctuations of FDI inflows and GDP growth in percent, for years 2007 to 2017



Source: WORLD BANK, 2020

Corruption levels are significant (t-value: -2,885<-1,96; p-value: ,005), but with a negative coefficient sign, unlike the expected plus. As a reminder, the Corruption index has an inverted value, in other words the higher the Corruption perception index, the lower are the levels of corruption in the country. This means that less corrupted countries are also less attractive for foreign investors. While it is unexpected, this result is consistent with the "helping hand" concept, mentioned earlier on in this paper, according to which corrupted

legislative bodies and corrupt regimes provide more workarounds for companies (BLUNDELL-WIGNALL & ROULET, 2017).

Infrastructure, with the proxy mobile cellular telephone subscriptions (per 100 people), has the expected positive effect on FDI, and is significant to the model (t-value: 2,337>1,96; p-value: ,021). While the developing countries in this group differ greatly in many economic and social aspects, technologically they do not have such great discrepancies. Many of these countries are influenced by the proximity of China, which is a known tech giant, thus increasing the population's contact with technology in the ways of land/mobile phones, internet connection etc. China's high technology exports for the year 2017 come to a staggering number of 654,187,610.24 in current US dollars. While the proxy worked well for this model, future research may require this determinant to be modified in order to reflect the real image, for example, using the broadband subscription or a number of secure internet servers (per one million people) as proxies.

Human Capital was included in the model as an ILO estimate that is supposed to reflect labor productivity, i.e. the growth rate of real GDP per employed person in percent. It is significant (t-value: -2,271<-1,96; p-value: ,025), but seems to have a negative effect on FDI, unlike the expected positive sign of the coefficient. Cheap labor force is a characteristic of many developing countries in both Asia and Africa. While this paper is aimed at supporting literature stating that higher labor productivity (with higher costs), is more attractive to investors, the results show that low-cost labor remains a preference in the case of developing Asian nations.

Trade openness, corporate tax and inflation levels are insignificant in the model. Regardless, some explanation to the possible reasons behind their signs will be given. Trade openness and corporate tax levels have the expected signs: a positive coefficient in the case of trade openness and a negative coefficient for corporate tax. In terms of signs, the estimates behaved in the way supported by theory, i.e. the more open the country is to trade in terms of import and export, the more attractive it is to investors. Higher corporate tax has a negative influence on the decision to invest due to the large portion of added costs it brings. Inflation returned a different sign, showing that for developing Asia, higher inflation can attract more investors. The reason for this may be the mild inflation in some countries, which is considered positive in cases when it encourages consumption and consumer demand, affecting economic growth in the country. Hyperinflation and inflation crisis in general may

be more problematic for other parts of the world, with the 1997 Asian financial crisis being the only serious event the Asian markets have faced in the last 30 years.

The country dummies resulted in significant coefficients for Israel (,009), China (,047) and Bangladesh (,047) with respect to Turkey as the reference country. All other were insignificant.

5.2.2. Africa FDI model estimates

Africa's analysis yielded to three significant coefficients out of the seven. Before looking into each regressor and understanding why it matters or it doesn't, and the extent of this relationship, a note should be made about the quality of data. The Sub-Saharan countries still remain quite challenging in terms of data collection. Similar to other countries, data was sourced from international financial and development institutions, but the author cannot guarantee complete transparency of the data in terms of how truthfully it was collected within the countries. This may have affected the significance of some determinants and the overall quality of the model output.

Like developing Asia, corporate tax and inflation are insignificant in the current model, with p-values of ,278 and ,512 respectively. The actual coefficient sign for inflation remained consistent with the expected and signifies a negative relationship, i.e. high inflation may discourage investors. Understanding this sign is more straight-forward compared to the Asian countries discussed before. South Africa experienced high inflation levels all throughout the 1970s and 1980s, with some stabilization taking place by the 1990s. Africa is very dependent on its commodity export and vulnerable to such shocks. These commodity shocks are quite important to the economies, explaining up to 10% of the inflation variations (LOUNGANI & SWAGEL, 2001). The most important inflation drivers in these countries for the past 25 years have been domestic supply shocks, shocks to exchange rates and other monetary variables (NGUYEN, DRIDI, UNSAL, & WILLIAMS, 2015).

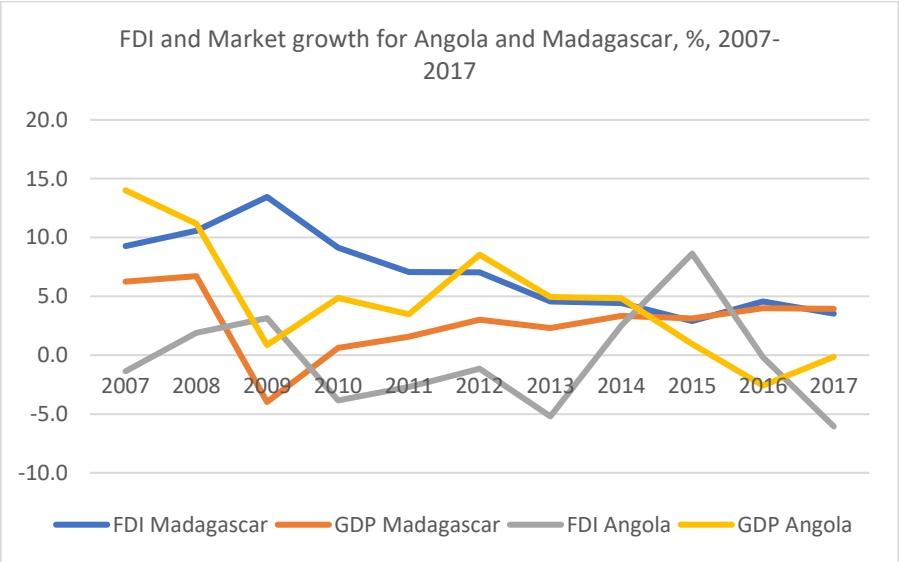
While there seems to be no significant relation between corporate tax levels and FDI, the positive coefficient provides interesting insight in how this region differs from the others. Corporate tax is only one aspect of the overall tax regime of a country. Hence, the positive coefficient may result from omitting information about the number of DTT's (Double taxation treaties), EPZs (export processing zones), different tax rates, special policies on employees and R&D, etc. Additionally, there seems to be an increase in investment after reforms in the tax regimes (STAPPER, 2010).

Infrastructure and corruption are not significant in the regression, with corresponding p-values ,452 and ,125. The infrastructure coefficient sign is consistent with the expected sign, both are positive. The reason for insignificance in this case might originate from the chosen proxy. While mobile cellular telephone subscriptions (per 100 people) is an effective proxy for Asian countries, Africa is less reliant on information technology and more dependent on its commodity export and production. This means that a different proxy, oriented more on transport (rail lines, roads, port traffic), rather than communications, would provide better insight in the infrastructure and investment relationship. In the case of corruption, as with developing Asia, the same concept of "helping hand" can be applied.

Trade openness is the most significant determinant when it comes to investment in Africa (t-value: 2,808>1,96; p-value: ,006). The coefficient is positive, which means that investors are attracted to more economically open countries. Being a continent of extremes, Africa has the world's largest production and export of gold and diamonds, while at the same time is struggling with satisfying basic facilities and food needs. This trade openness is aided to a great extent by their trade partners and investors from Germany, China and Japan. Considering that trade and investment can be considered two sides of the same coin, these two activities often go together, and depending on their line of business, companies can give preference to one over the other.

Market size (t-value: 2,323>1,96; p-value: ,022) and Human capital (t-value: -2,460<-1,96; p-value: ,015) are significant in the model. The market size coefficient is positive, as supported by theory, stating that economically growing markets are important to investors. This has great significance for the Sub-Saharan countries, which have had slower growth rates historically, compared to other emerging markets. FDI and GDP growth fluctuations for 2 typical African country representatives are presented on Figure 8.

Figure 8: Angola and Madagascar fluctuations of FDI inflows and GDP growth in percent, for years 2007 to 2017



Source: WORLD BANK, 2020

Human capital, i.e. labor productivity, appears to have a negative coefficient and, like developing Asia, is in line with the assumption that cheaper labor force is attracting investors. This is related to Africa's industry portfolio as well. Their main industries, such as mining, quarrying, manufacturing and power generation/distribution, do not require a high-skilled workforce.

The country dummies resulted in significant coefficients for Madagascar (,000), Angola (,000), Niger (,000) and Zambia (,017) at the ,05 level, with respect to Benin as the base country. Chad (,063) and Egypt (,053) are significant at the ,1 level. All others are insignificant.

5.2.3. Latin America and the Caribbean FDI model estimates

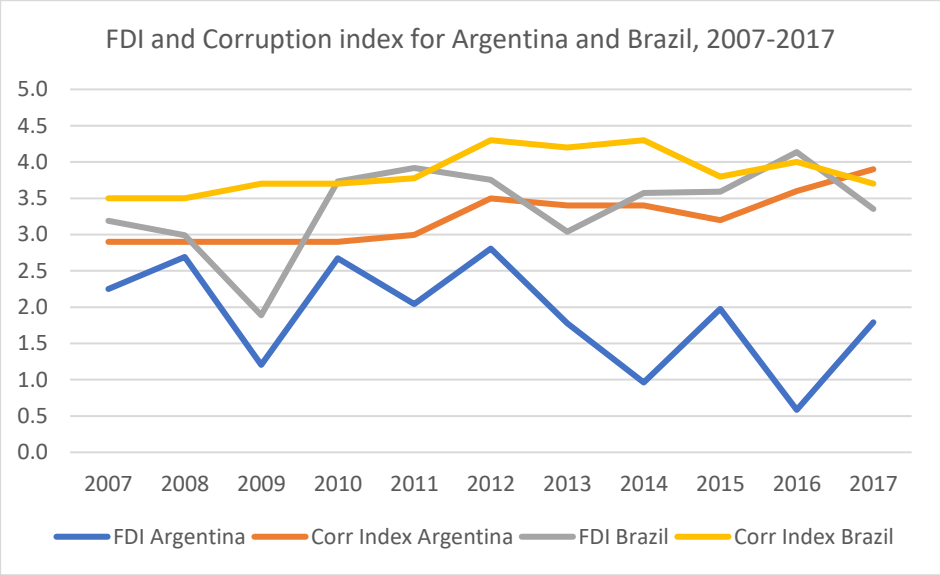
The Latin America and Caribbean countries model is distinguished from the other two. It has the highest p-value, and it is the only model for which corporate tax proved significant. It also has a higher number of significant coefficients of the country dummy variables (11 out of 14). Only three countries, DV3 (Uruguay), DV7 (El Salvador) and DV11 (Chile) are statistically insignificant. All others have statistically significant parameters, with high levels of probability.

Trade openness (t-value: 6,349>1,96; p-value: ,000), Corruption (t-value: 2,838>1,96; p-value: ,005) and Corporate tax (t-value: 2,323>1,96; p-value: ,022) are significant for FDI inflows in the countries of Latin America and the Caribbean. The actual

signs for the coefficients are in line with the expected values and in accordance with the theory presented in this paper. Trade openness encourages investment inflow into the country, and it is an important factor, considering the dependencies of the region on commodities export as a whole. FDI is also positively affected by the decrease of corruption levels, i.e. countries with lower corruption levels attract more FDI. Higher corporate taxes discourage investment.

In terms of corruption, Latin American countries and the Caribbean hold their title of the most corrupted region, with data to prove that the region still remains "the most distrustful place on Earth." This remains a big challenge for their economic growth and gaining the trust of investors, considering the most corrupt institutions are: the police, politicians, local government representatives, judges, tax officials, business executives and religious leaders (PRING, 2017). These institutions play a decision-making role in context of foreign investment strategy and policies.

Figure 9: Argentina and Brazil fluctuations of FDI inflows and Corruption perception index (inverted), for years 2007 to 2017



Source: WORLD BANK, 2020, Transparency International 2020

Even though insignificant, it is important to note that this is the only country group which had the expected positive sign for the Human capital determinant which, if significant, would mean that a higher labor productivity of a more skilled worker, and consequently a more expensive one, does encourage foreign investors.

Market size coefficient is negative. A negative coefficient could result from internal consumption being the main driver of economic growth, with smaller gains in GDP growth. The insignificance of this parameter may also be connected to the fact that the region has witnessed quite large FDI drops and peaks in the natural resources sector, because of commodity prices fluctuations. For example, FDI inflow into the primary sectors decreased by 53% during the years 2011 and 2016. Because of these shifts, key investors have started diversifying the sectors they enter and expanding into services and manufacturing. For example, the average investment by sector for communications was 7% for the years 2005-2007, with an increase up to 20% in ten years' time, 2015-2017 (ECLAC, 2017).

As with the other two regions, inflation is insignificant to the model, with the actual sign being opposite compared to the expected. As with the Asian countries, the reason behind this may be the mild inflation, which is considered positive in terms of economic growth.

Infrastructure is insignificant and has a negative coefficient. This may originate from the usage of a wrong proxy, unadjusted to the region's special needs. The proxy used reflects communications development, while it would probably yield to more significance if it was replaced by one reflecting more pressing issues this region is facing, such as: low-quality transport services, lacking a dense and affordable network because of population density, high electricity and water access. The investment in communications, however, exceeds the one in transportation to a great degree in some countries, as in the example of Argentina, where in 2015, 493,218 million USD were invested in telecommunications, and only 3,675 million USD in transportation.

5.3. Dummy Variables interpretation

As stated before, the dropped dummy from each model is represented in the LSDV as the intercept. This dummy is the baseline intercept and each of the coefficient values for DV1-DV14 represent the deviation of each group's intercept from the baseline one. This is the essence of the fixed effects model – to show that each country has its own intercept, while all countries within the geographic group share the same slopes of regressors (Corruption, Trade openness, Human Capital, GDP growth etc.).

The standardized beta coefficients of the dummy variables, as well as their significance, are given in Table 16.

Table 16 Dummy variables coefficients for developing Asia, Africa and Latin America and the Caribbean

Dummy variable	**Africa**		**Asia**		**Latin America and the Caribbean**	
	Coefficient	Sig.	Coefficient	Sig.	Coefficient	Sig.
DV1	-,052	,560	-,138	,469	**,428**	**,001**
DV2	-,009	,917	**-,351**	**,047**	**,337**	**,024**
DV3	,193	,053	-,194	,106	,340	,169
DV4	-,021	,855	-,042	,827	**,454**	**,026**
DV5	-,118	,310	,078	,577	**,652**	**,000**
DV6	-,261	,063	-,223	,122	**,492**	**,000**
DV7	-,030	,817	-,120	,506	,218	,114
DV8	-,121	,199	-,267	,227	**,408**	**,005**
DV9	**,401**	**,000**	**-,275**	**,047**	**,863**	**,000**
DV10	**-,450**	**,000**	-,058	,665	**,979**	**,000**
DV11	**,205**	**,017**	-,123	,329	,326	,156
DV12	-,126	,243	**,351**	**,009**	**,869**	**,000**
DV13	**,491**	**,000**	,189	,162	**,763**	**,000**
DV14	,039	,675	,027	,845	**,295**	**,007**
INTERCEPT (DV15)	-2,472)	,545	6,409	,415	**-7,735)**	**,000**

Source: Author's computation, based on IBM SPSS output

As seen on Table 16, the models for Africa and developing Asia did not manage to prove that there are significant differences between the analyzed countries, with the exception of DV9 (Madagascar), DV10 (Angola), DV11 (Zambia) and DV13 (Niger) for Africa, and DV2 (China), DV9 (Bangladesh) and DV12 (Israel) for developing Asia. Data for Latin America and the Caribbean shows that there are significant differences between the countries, with the only insignificant countries being DV3 (Uruguay), DV7 (El Salvador) and DV11 (Chile). The significant country-specific dummy variables estimate the difference (for all years) in the FDI in the specified country, relative to the reference one, while controlling for all other regressors (CORR, CPI, INFR etc.), meaning that the difference is common to all years in that country, making the "effect" of the country being fixed across all years.

A couple of interpretations are listed below on the example of African countries:

1. The intercept of Chad (DV6 in table 16) is ,261 smaller than the baseline intercept -2,472, but isn't statistically significant at the ,05 level (,063);
2. The intercept of Madagascar (DV9) is -2,472 (-2,472+0,401), ,0401 larger than that of baseline intercept (p<,000);

3. The intercept of Zambia (DV11) is ,205 larger than that of baseline intercept -2,472, and the deviation is statistically significant at the ,05 significance level (p<,017).

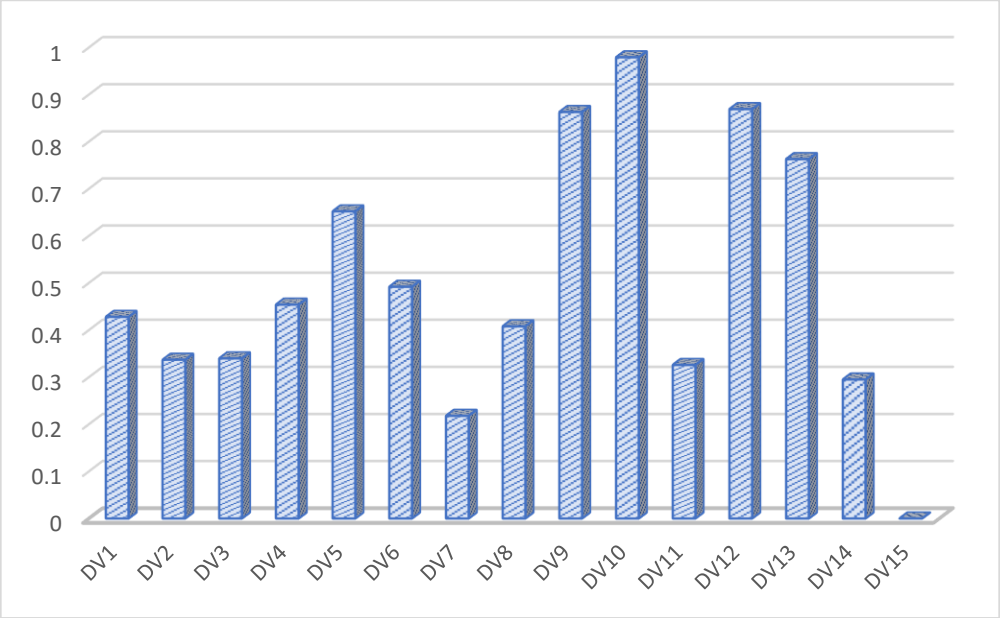
In this way, regression equations for each country can be constructed. A couple of examples are given below, based on Latin America and the Caribbean countries.

Haiti (DV1): FDI = **(-7,735 + 0,428)** - 0,032*GDP + 0,761*CORR +0,856*OPN – 0,104*INFR + 0,026*HMCAP – 0,392*TAX + 0,006*CPI;

Jamaica (DV2): FDI = **(-7,735 + 0,337)** - 0,032*GDP + 0,761*CORR +0,856*OPN – 0,104*INFR + 0,026*HMCAP – 0,392*TAX + 0,006*CPI.

A visual representation of the differences in country dummy variables in comparison with the baseline intercept (DV15), is given on Figure 10.

Figure 10: Differences in country dummy variable for Latin America and the Caribbean, compared to baseline intercept



Source: Author's computation, based on IBM SPSS output

Based on Figure 10, it is seen that the following countries, differ the most, i.e. have the highest dummy variable values: DV9 (Argentina), DV10 (Brazil), DV12 (Colombia) and DV13 (Peru), all significant at the ,000 level.

5.4. Results summary

The obtained results, considering their significance and proper coefficient estimation, can help answer the question posed in the beginning of the paper. While they were all answered in the previous section, a short summary will be provided for each of them:

1. Does higher corruption have a negative effect on inward foreign direct investment?

The level of corruption proved to be significant for FDI inflow in two country groups – Asia and Latin America and the Caribbean. The results, however, are inconclusive in terms of coefficient signs. Countries with lower corruption levels (higher corruption perception index) in Latin America attract more investment. Corruption does continue to be a serious issue in these countries, hindering not only investment and economic growth, but their development in general. Corruption is significant for developing Asia as well, but unlike Latin America, corruption rather encourages foreign investment. The level of corruption has to be taken into consideration, with most Asian countries having lower corruption levels that Latin American ones, but the results are still in support of the „greasing wheel“ theory, meaning that corrupted institutions provide loopholes and other ways to exploit the country's structures, which can prove to be beneficial for investment in certain sectors dealing with higher restrictions or regulation.

2. Does higher economic openness of the country affect positively the inflow of investments?

Economic openness has a positive effect on FDI inflows for Africa and Latin America and the Caribbean and is insignificant for developing Asia. Africa and Latin America are to a degree unified by the structure of their exports and imports, with a large part of their export still accounting for natural resources, which is not the case with Asia, whose main export commodity is technology. This difference could be a factor affecting the significance of economic openness in the FDI model.

3. Are the same determinants in the foreign direct investment model significant for all three groups of developing economies?

Referring to table 15, there is not a single determinant significant for all three groups of countries. A determinant that could be left out of the model and is insignificant for all three groups is inflation, i.e. the CPI proxy. Taxes and infrastructure are each significant for only one group, while market size, human capital and trade openness are significant for two country groups, which could mean that further development of these determinants in future studies could provide even more meaningful results. This variation in the set of significant explanatory variables is consistent with the notion Moosa (2005) poses, that there are no "true" FDI

determinant and that they would vary depending on the study. The unifying factor for the three country groups is their label as developing and emerging economies. The differences, however, are present on every other level: their economies, climate, natural resource abundance, societal norms, and even cultural aspects such as religion and tradition. These can affect the way the countries conduct business and the degree to which they are ready to internationalize, open borders and create a welcoming environment for foreign investment. For this reason (as well as the fact that most determinants proved insignificant because of their proxies while having strong methodological support), the proxies and determinants in each model must be chosen carefully and adjusted for each region, considering all the differences mentioned above.

6. Conclusion

In conclusion, it can be summarized that the significance of foreign direct investment determinants for three geographically different country groups was evaluated with the use of a LSDV method for the predefined fixed effects model. Each determinant was checked for significance and for coefficient signs, showing how the coefficients performed in terms of expected and actual values. All three country groups resulted in different determinants being significant, which can originate from their political, economic, societal and other environmental components. While the research proved fruitful and provided meaningful results, future improvements to the model should be made, to enable the chosen proxies in the model to include these country/region-specific circumstances.

The fixed effects model verification showed that it was indeed a better fit for the chosen panel data and was a more accurate analysis method, compared to pooled OLS.

The three posed question were also answered, giving inconclusive results, while once again underlining the differences between the country groups. Higher corruption can have both positive and a negative effect on FDI inflows. Higher level of trade openness is beneficial for attracting investors, however, it is not significant for all country groups. The significant determinants were not the same for the country groups, and sometimes the actual coefficient signs had the opposite sign, as in the case of corruption, which showed that while high corruption stalls the investment in one country, it proves to be quite encouraging for investors on the different side of the world.

While the thesis gives insight into the determinants of FDI, more conclusive and relevant results could be obtained in future work, if the challenges and results discussed in this work are taken into consideration.

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APPENDIX 1 Developing countries

Country ID	Developing countries by region		
	Asia	**Africa**	**Latin America and the Caribbean**
1	Cambodia	Algeria	Bahamas
2	China	Morocco	Jamaica
3	Indonesia	Egypt	Uruguay
4	Malaysia	Tunisia	Costa Rica
5	Mongolia	Cameroon	Dominican Republic
6	Philippines	Chad	Guatemala
7	Thailand	Congo Democratic Republic	El Salvador
8	Viet Nam	Kenya	Mexico
9	Bangladesh	Madagascar	Argentina
10	India	Angola	Brazil
11	Sri Lanka	Zambia	Chile
12	Israel	Zimbabwe	Colombia
13	Jordan	Niger	Peru
14	Lebanon	Nigeria	Ecuador
15	Turkey	Benin	Paraguay

Source: United Nations, WESP

APPENDIX 2 Ordinary Least Squares Output

1. Developing Asia pooled OLS complete output

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,637[a]	,406	,380	5,112318

a. Predictors: (Constant), Inflation, Trade Openness, Human Capital, Corruption, Corporate Tax, Infrastructure, Market Size

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2805,075	7	400,725	15,332	,000[b]
	Residual	4103,320	157	26,136		
	Total	6908,396	164			

a. Dependent Variable: Foreign Direct Investment Inflow

b. Predictors: (Constant), Inflation, Trade Openness, Human Capital, Corruption, Corporate Tax, Infrastructure, Market Size

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	1,830	3,210		,570	,569
	Market Size	1,656	,271	,748	6,120	,000
	Corruption	-,541)	,429	-,088)	-1,260)	,210
	Trade Openness	,043	,010	,276	4,262	,000
	Infrastructure	-,001)	,009	-,006)	-,084)	,933
	Human Capital	-,779)	,249	-,418)	-3,131)	,002
	Corporate Tax	-,251)	,087	-,206)	-2,873)	,005
	Inflation	,126	,096	,091	1,306	,193

a. Dependent Variable: Foreign Direct Investment Inflow

Source: Author's computation in IBM SPSS

2. Africa pooled OLS complete output

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate

1	,569[a]	,324	,294	2,916461

a. Predictors: (Constant), Inflation, Corporate Tax, Trade Openness, Human Capital, Infrastructure, Corruption, Market Size

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	640,099	7	91,443	10,751	,000[b]
	Residual	1335,402	157	8,506		
	Total	1975,501	164			

a. Dependent Variable: Foreign Direct Investment Inflow

b. Predictors: (Constant), Inflation, Corporate Tax, Trade Openness, Human Capital, Infrastructure, Corruption, Market Size

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	1,337	2,130		,628	,531
	Market Size	,347	,122	,388	2,851	,005
	Corruption	2,580	,443	,523	5,827	,000
	Trade Openness	,004	,012	,023	,319	,750
	Infrastructure	-,065)	,010	-,615)	-6,640)	,000
	Human Capital	-,311)	,112	-,374)	-2,766)	,006
	Corporate Tax	-,083)	,051	-,129)	-1,637)	,104
	Inflation	-,007)	,017	-,030)	-,423)	,673

a. Dependent Variable: Foreign Direct Investment Inflow

Source: Author's computation in IBM SPSS

3. Latin America and the Caribbean pooled OLS complete output

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,736[a]	,541	,521	1,685853

a. Predictors: (Constant), Inflation, Corruption, Human Capital, Trade Openness, Corporate Tax, Infrastructure, Market Size

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	526,085	7	75,155	26,443	,000[b]
	Residual	446,210	157	2,842		
	Total	972,295	164			

a. Dependent Variable: Foreign Direct Investment Inflow

b. Predictors: (Constant), Inflation, Corruption, Human Capital, Trade Openness, Corporate Tax, Infrastructure, Market Size

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	-3,335)	1,196		-2,788)	,006
	Market Size	,119	,078	,143	1,529	,128
	Corruption	1,275	,101	,776	12,578	,000
	Trade Openness	,029	,008	,215	3,583	,000
	Infrastructure	-,018)	,005	-,220)	-3,416)	,001
	Human Capital	-,038)	,071	-,050)	-,544)	,587
	Corporate Tax	,064	,024	,165	2,719	,007
	Inflation	,010	,025	,023	,397	,692

a. Dependent Variable: Foreign Direct Investment Inflow

Source: Author's computation in IBM SPSS

APPENDIX 3 Fixed Effects LSDV 1 Output

1. Developing Asia LSDV complete output

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,736[a]	,542	,474	4,705498

a. Predictors: (Constant), Lebanon, Trade Openness, Inflation, Philippines, Jordan, Sri Lanka, Cambodia, Indonesia, Mongolia, Israel, Market Size, India, Thailand, Bangladesh, Malaysia, Infrastructure, China, Human Capital, Corporate Tax, Vietnam, Corruption

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3742,131	21	178,197	8,048	,000[b]
	Residual	3166,265	143	22,142		
	Total	6908,396	164			

a. Dependent Variable: Foreign Direct Investment Inflow

b. Predictors: (Constant), Lebanon, Trade Openness, Inflation, Philippines, Jordan, Sri Lanka, Cambodia, Indonesia, Mongolia, Israel, Market Size, India, Thailand, Bangladesh, Malaysia, Infrastructure, China, Human Capital, Corporate Tax, Vietnam, Corruption

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	6,409	7,837		,818	,415
	Market Size	1,563	,295	,706	5,301	,000
	Corruption	-4,037)	1,400	-,656)	-2,885)	,005
	Trade Openness	,042	,040	,269	1,050	,295
	Infrastructure	,040	,017	,334	2,337	,021
	Human Capital	-,636)	,280	-,341)	-2,271)	,025
	Corporate Tax	-,019)	,186	-,015)	-,100)	,921
	Inflation	,127	,106	,092	1,203	,231
	Cambodia	-3,592)	4,942	-,138)	-,727)	,469
	China	-9,104)	4,544	-,351)	-2,004)	,047
	Indonesia	-5,023)	3,091	-,194)	-1,625)	,106
	Malaysia	-1,089)	4,970	-,042)	-,219)	,827
	Mongolia	2,031	3,632	,078	,559	,577
	Philippines	-5,779)	3,719	-,223)	-1,554)	,122

	Thailand	-3,120)	4,684	-,120)	-,666)	,506
	Vietnam	-6,928)	5,705	-,267)	-1,214)	,227
	Bangladesh	-7,123)	3,549	-,275)	-2,007)	,047
	India	-1,514)	3,490	-,058)	-,434)	,665
	Sri Lanka	-3,186)	3,254	-,123)	-,979)	,329
	Israel	9,118	3,437	,351	2,653	,009
	Jordan	4,893	3,479	,189	1,406	,162
	Lebanon	,700	3,579	,027	,195	,845

a. Dependent Variable: Foreign Direct Investment Inflow

Source: Author's computation in IBM SPSS

2. Africa LSDV complete output

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,756[a]	,571	,508	2,433649

a. Predictors: (Constant), Nigeria, Infrastructure, Kenya, Zimbabwe, Cameroon, Market Size, Zambia, Angola, Egypt, Madagascar, Algeria, Inflation, Niger, Morocco, Congo Democratic Republic, Tunisia, Chad, Trade Openness, Human Capital, Corruption, Corporate Tax

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1128,562	21	53,741	9,074	,000[b]
	Residual	846,939	143	5,923		
	Total	1975,501	164			

a. Dependent Variable: Foreign Direct Investment Inflow

b. Predictors: (Constant), Nigeria, Infrastructure, Kenya, Zimbabwe, Cameroon, Market Size, Zambia, Angola, Egypt, Madagascar, Algeria, Inflation, Niger, Morocco, Congo Democratic Republic, Tunisia, Chad, Trade Openness, Human Capital, Corruption, Corporate Tax

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	-2,472)	4,076		-,607)	,545
	Market Size	,283	,122	,316	2,323	,022
	Corruption	-1,356)	,878	-,275)	-1,544)	,125
	Trade Openness	,058	,021	,328	2,808	,006
	Infrastructure	,011	,014	,103	,754	,452

	Human Capital	-,277)	,113	-,333)	-2,460)	,015
	Corporate Tax	,134	,123	,208	1,089	,278
	Inflation	-,010)	,015	-,042)	-,658)	,512
	Algeria	-,725)	1,241	-,052)	-,584)	,560
	Morocco	-,129)	1,245	-,009)	-,104)	,917
	Egypt	2,676	1,373	,193	1,949	,053
	Tunisia	-,286)	1,566	-,021)	-,183)	,855
	Cameroon	-1,633)	1,602	-,118)	-1,019)	,310
	Chad	-3,625)	1,931	-,261)	-1,877)	,063
	Congo Democratic Republic	-,421)	1,820	-,030)	-,231)	,817
	Kenya	-1,681)	1,303	-,121)	-1,290)	,199
	Madagascar	5,556	1,531	,401	3,628	,000
	Angola	-6,236)	1,684	-,450)	-3,703)	,000
	Zambia	2,838	1,174	,205	2,416	,017
	Zimbabwe	-1,742)	1,487	-,126)	-1,171)	,243
	Niger	6,808	1,165	,491	5,843	,000
	Nigeria	,547	1,304	,039	,420	,675

a. Dependent Variable: Foreign Direct Investment Inflow

Source: Author's computation in IBM SPSS

3. Latin America and the Caribbean LSDV complete output

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,857[a]	,734	,695	1,345775

a. Predictors: (Constant), Ecuador, Human Capital, Trade Openness, Guatemala, Dominican Republic, Mexico, Chile, Uruguay, Peru, Haiti, Inflation, Costa Rica, Colombia, El Salvador, Corporate Tax, Infrastructure, Argentina, Market Size, Jamaica, Brazil, Corruption

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	713,306	21	33,967	18,755	,000[b]
	Residual	258,989	143	1,811		
	Total	972,295	164			

a. Dependent Variable: Foreign Direct Investment Inflow

b. Predictors: (Constant), Ecuador, Human Capital, Trade Openness, Guatemala, Dominican Republic, Mexico, Chile, Uruguay, Peru, Haiti, Inflation, Costa Rica, Colombia, El Salvador, Corporate Tax, Infrastructure, Argentina, Market Size, Jamaica, Brazil, Corruption

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	-7,735)	1,922		-4,024)	,000
	Market Size	-,026)	,071	-,032)	-,374)	,709
	Corruption	1,250	,440	,761	2,838	,005
	Trade Openness	,117	,018	,856	6,349	,000
	Infrastructure	-,008)	,006	-,104)	-1,402)	,163
	Human Capital	,020	,061	,026	,333	,739
	Corporate Tax	-,153)	,055	-,392)	-2,779)	,006
	Inflation	,003	,027	,006	,094	,925
	Haiti	4,164	1,282	,428	3,249	,001
	Jamaica	3,281	1,440	,337	2,278	,024
	Uruguay	3,310	2,395	,340	1,382	,169
	Costa Rica	4,414	1,962	,454	2,249	,026
	Dominican Republic	6,344	1,266	,652	5,010	,000
	Guatemala	4,787	1,301	,492	3,678	,000
	El Salvador	2,125	1,335	,218	1,592	,114
	Mexico	3,970	1,389	,408	2,858	,005
	Argentina	8,398	1,818	,863	4,619	,000
	Brazil	9,525	1,930	,979	4,936	,000
	Chile	3,177	2,230	,326	1,425	,156
	Colombia	8,459	1,626	,869	5,203	,000
	Peru	7,425	1,525	,763	4,869	,000
	Ecuador	2,867	1,056	,295	2,716	,007

a. Dependent Variable: Foreign Direct Investment Inflow

Source: Author's computation in IBM SPSS