Foreign Direct Investment and Policy Decisions in Developing Countries Panel Study

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ABSTRACT

Given the importance of Foreign Direct Investment (FDI) in filling the saving-investment gap and transferring technological and managerial capabilities to developing countries, this paper examines the significance and impact of policy decisions on FDI inflow to developing countries. Using panel data from 103 lower-middle and upper-middle income countries for period 2000-2017, and by applying Random Effect Panel Regression models this paper identifies that inflation, corruption and Ease of Doing Business Indicators such as Time to Registering Property and Time to Enforce Contracts are significant policy variables impacting FDI inflows in developing countries. Additionally, this paper identifies that Population, GDP growth and Trade Openness are significant economic determinants of FDI inflow.

Keywords: FDI, Panel Study Analysis, Random Effect Model, Developing Countries

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1. Introduction

Foreign direct investment (FDI) became an increasingly influential element in global economic integration and development during recent decades. FDI inflow is essential for the developing countries in particular as FDI remains the largest external source of finance for them (UNCTAD, 2018). The lack of national savings to finance local investments is one of the economic problems that developing countries are facing (Khachoo & Khan, 2012). FDI not only fills a saving-investment and foreign exchange gaps in host countries, but it also serves as a means of transferring production, modern technology, skills, innovative capacity, and organizational and managerial practices (Azam, 2010). Hence, the inflow of FDI in developing economies can generate and accelerate economic growth.

Depending on the type of investment developed countries are an important receiver of FDI inflow as well. In 2005 total FDI inflow in the world was 945.8 billion USD, of which developed and developing countries received 62.4 % and 38.6% respectively (UNCTAD, 2007). In 2017 share of FDI flows in developed economies fell, while that to developing economies has increased. In 2017 global FDI inflow was estimated to be to 1.43 trillion USD out of which 47% went to developing and 50% to developed economies (UNCTAD, 2018). Taking into consideration the benefits that FDI is likely to provide, most of the developing countries are competing with each other to attract an increasing amount of FDI inflow. They adopt different promotional policies such as liberalization of trade regimes, the establishment of special economic zones and offering of incentives to the foreign investors (Mottaleb, 2007).

Using panel data from 103 developing countries for the time period 2000-2017, this paper is focused on the impact of different policy decisions on the net FDI inflow in developing countries. As policy variables the study considers profit tax, construction permit time, registering property time, resolving insolvency time, enforcing contract time, inflation, corruption, and trade

openness. Additionally, this paper aims to investigate and identify the underlying economic factors that impact the inflow of FDI in developing countries.

The remainder of this paper is organized as follows. Section 2 discusses the literature of earlier studies on the determinants of FDI. Data and methodology are discussed in section 3 and 4 respectively. Section 5 discusses the econometric results of this study. In section 6 current limitations and further improvements of this research will be considered. The conclusion of this research will be given in section 7.

2. Literature Review

There are many theories, which try to explain why a firm chooses to make a foreign direct investment for serving foreign markets instead of using other options such as exporting or licensing arrangements (Blonigen, 2005). Dunning (2001) in his Eclectic Theory of International Production argues that in order to have an FDI outflow from one country to another 3 conditions must be satisfied. The firm, which is considering investing in a different country should have both ownership advantage and internalization advantage, while the market, where the firm considers investing should offer a locational advantage. Firm-specific assets both tangible such as products or technologies and intangible such as patents, brand or management can create an ownership advantage. If the firm is able to ensure benefits from exploiting the ownership advantage when choosing to produce internally, the firm will gain an internalization advantage. Factors such as government regulations, production factor prices, access to customers, inflation, exchange rates, and institutional and political stability are relevant in determining destination countries for FDI which will offer locational advantages to the firm (Bevan & Estrin, 2004).

Dunning and Lundan (2008) describe four main types of FDI based on the motive behind the investment from the perspective of the investing firm: resource-seeking; market-seeking;

efficiency-seeking; capability-seeking. *Resource-seeking FDI* aims to acquire particular and specific resources at a lower real cost and of a higher quality. The motivation for the FDI is to make the investing enterprise more profitable and competitive in the markets it serves. *Market-seeking FDI* focuses on serving attractive local and regional markets. For this type of FDI market size and market growth are important determinants. *Efficiency-seeking FDI* aims to rationalize the structure of established investment in such a way that the investing company can gain the benefits of the economies of scale and scope and of risk diversification. *Capability-seeking FDI* by acquiring the assets of foreign corporations promotes the long-term strategic objectives of the firm. By acquiring other firm's global portfolio of physical assets and human competences, the multinational enterprise (MNE) aims either to sustain or strengthen its ownership-specific advantages or weaken those of its current or prospective competitors.

Numerous empirical studies have been conducted by researchers in an attempt to identify the factors that influence the inflow of FDI. Some of these factors are suggested by the theories of the FDI, other factors included in the research have intuitive justification. As a result, the list of variables, identified as determinants of FDI and their direction of effect, differ depending on the study, used methodology, and countries of analysis. In the following section, some of the determinants and their relations to FDI will be discussed in the light of earlier studies.

Market Size

In different studies market size estimated by GDP and GDP per capita seems to be the most commonly used determinant of market-seeking FDI. However, in literature, the relationship between real GDP per capita and FDI is far from unanimous. Edwards (1990) and Jaspersen(2000) as a proxy of return on capital use the inverse of GDP per capita and conclude that real GDP per capita is inversely related to FDI. However, Jordaan (2004) states that FDI will move to countries

with larger and growing markets, and greater purchasing power, where firms are likely to receive a higher return on their invested capital. Khachoo and Khan (2012) in their study of 32 developing countries using panel data from 1982-2008 found out that along other variables GDP was a significant determinant of FDI. Mottaleb (2007) in the study of 60 low-income and lower-middle income countries identifies that higher GDP and GDP growth rate are important determinants for attracting FDI. In his research of *Economic Determinants of FDI in Armenia, the Kyrgyz Republic and Turkmenistan* Azam (2010) analyzed the data from 1991-2009 and concluded that market size positively affects the FDI inflow to studied countries. Asiedu (2002) in an attempt to explore whether factors that affect FDI in developing countries affect countries in sub-Saharan Africa differently determined that GDP per capita is a significant determinant of FDI inflow.

Economic Openness

Jordaan(2004) states that the impact of openness, measured by the ratio of export plus import to GDP, on FDI depends on the type of the investment. When the investment is market-seeking the lack of economic openness might have a positive effect on the FDI inflow. However, in the case of the resource-seeking FDI, multinational enterprises are more likely to invest in more open economies, since increased imperfections that accompany trade protection often imply higher transaction costs associated with exporting. Liargovas and Skandalis (2011) using a sample of 36 developing economies for the period 1990-2008 revealed that the long run, trade openness contributed positively to the inflow of FDI in developing countries. In contrast, the empirical results of Khachoo and Khan's study (2012) stated that while making a location decision foreign direct investor did not consider economic openness as an important factor.

Taxes

De Mooij and Ederveen(2003) in their synthesis of empirical research of *Taxation and Foreign*

Direct Investment provide an estimated median tax-elasticity of FDI of -3.3 across 25 studies. Implying that the increase of taxes in a host country will result in less FDI inflow. Further research points out that the effect of taxes on FDI can vary substantially by the types of taxes, measurements of FDI activity, as well as tax treatment in the host and parent countries (Blonigen, 2005).

A vast amount of empirical literature has been developed to analyze the determinants of FDI as a whole, however, the review of the above empirical studies indicates the lack of uniformity in the variables considered and in the final results obtained depending on the choice of countries, time-periods, and applied methodology. As already discussed in the literature review depending on the type of the FDI the determinants of it can differ. Given the data constraints, this study concentrates more specifically on the location advantage of FDI in Eclectic Theory of International Production framework. Out of 4 types of FDI, this study aims to analyze in a more holistic framework Resource-seeking and Market-seeking FDI. More specifically, this paper aims to determine the significance and impact of policy variables including profit tax, construction permit time, registering property time, resolving insolvency time, enforcing contract time, inflation, corruption, and trade openness on FDI inflows in developing countries.

3. Data

The data consists of yearly observations for the period 2000-2017 for 103 developing countries the list of which can be found in Appendix 1. According to the classification given by the World Bank, all selected countries belong to the category of upper middle or lower middle income. The secondary datasets for the selected countries and variables were obtained from the World Bank and Transparency International datasets. Table 1 provides descriptive statistics of dependent and exploratory variables included in the model.

Table 1 Descriptive Statistics

Variable	Description			Mean	Std. Dev.	Min	Max	Obs.		Ex. Imp.
FDI	Net Foreign Direct Investment (% of GDP)	overall		4.735	8.48	-56.46	217.92	N =	1786	
		between			4.02	-1.99	23.77	n =	101	
		within			7.48	-75.50	198.88			
ln Pop	Total Population	overall		15.445	2.38	9.15	21.05	N =	1854	Positive
		between			2.39	9.24	21.01	n =	103	
		within			0.09	15.08	15.80			
ln GDP	Gross Domestic Product (constant 2010 US$)	overall		23.592	2.364	17.18	29.953	N =	1824	Positive
		between			2.389	17.31	29.243	n =	103	
		within			0.259	22.296	24.326			
ln GDPpc	GDP per capita (constant 2010 US$)	overall		8.102	0.75	5.85	9.92	N =	1824	Positive
		between			0.73	6.58	9.54	n =	103	
		within			0.20	7.17	8.76			
GDPgr	GDP growth (annual %)	overall		4.458	6.19	-62.08	123.14	N =	1822	Positive
		between			2.38	-1.35	16.65	n =	103	
		within			5.79	-62.54	122.68			
GDPgr_prior1	GDP growth (annual %) of previous year	overall		4.458	6.27	-62.08	123.14	N =	1816	Positive
		between			2.58	-1.07	18.04	n =	103	
		within			5.81	-61.26	123.96			
OP	Trade Openness	overall		79.747	41.12	0.00	247.78	N =	1854	Positive
		between			33.63	0.00	172.54	n =	103	
		within			23.89	-86.67	203.86			
INF	Inflation, consumer prices (annual %)	overall		6.9	8.86	-18.11	98.22	N =	1626	Positive
		between			5.53	1.45	34.21	n =	94	
		within			7.34	-15.45	91.66			
Tax	Profit tax (% of points)	overall		15.631	9.66	0.00	53.00	N =	1140	Negative
		between			8.46	0.00	33.30	n =	95	
		within			4.73	1.08	45.24			
CON	Construction Permits: Time(days)	overall		168.497	105.19	0.00	714.00	N =	1140	Negative
		between			88.14	0.00	657.17	n =	95	
		within			58.06	-99.67	457.83			
REG	Registering Property: Time(days)	overall		53.257	67.68	1.00	513.00	N =	1070	Negative
		between			58.55	5.23	513.00	n =	91	
		within			31.49	-73.24	252.03			
RES	Resolving insolvency: Time(days)	overall		2.819	1.20	1.00	6.00	N =	1023	Negative
		between			1.16	1.00	6.00	n =	82	
		within			0.36	0.03	4.33			
ENF	Enforcing contracts: Time(days)	overall		532.305	188.08	0.00	828.00	N =	1442	Negative
		between			11.26	492.36	551.50	n =	103	
		within			187.74	39.95	867.95			
CPI	Corruption Perception Index	overall		29.654	12.93	1.00	65.00	N =	1130	Negative
		between			9.10	4.00	50.27	n =	81	
		within			9.67	-14.62	50.67			
Cr	Crisis Dummy Variable			0.5	0.5	0	1		N=1854	Negative

More detailed information about explanatory variables can be found in Appendix 2.

While conducting the research there were some data restrictions that limited the research. For Ease of Doing Business Indicators such as Registering Property, Resolving Insolvency, Enforcing Contracts the data is missing observations for period 2000-2004, for Construction Permits and Profit Tax observations are available starting from 2006.

The data on CPI as well has some missing observations for studied developing countries for the time period 2000-2017.

To increase the precision of the estimates some transformations were made for explanatory variables. As we assume the effect of population, GDP and GDP per capita on FDI differs depending on their current levels, and because their values are large in the model the natural logarithm of these variables are included.

As a measure of trade openness, the sum of export and import as a percentage of GDP was used. Annual data for exports and imports as a percentage of GDP was obtained from World Bank.

Corruption Perception Index (CPI), which ranks 180 countries and territories by their perceived levels of public sector corruption according to experts and businesspeople, uses a scale of 0 to 100, where value of 0 is highly corrupt and 100 is very clean. According to their CPI countries were divided into three groups: high corruption countries (CPI:0-30), medium corruption countries (CPI:31-70); and low corruption countries (CPI:71-100). As data indicates for the developing countries included in this research CPI ranges from 1-65, thus we only consider high and medium corruption countries in the scope of our research.

As data contained some observations of hyperinflation, observation for countries and years where inflation was above 100% were removed in order to obtain more precise estimations.

Figure 1 Average Net FDI Inflow in Developing Countries
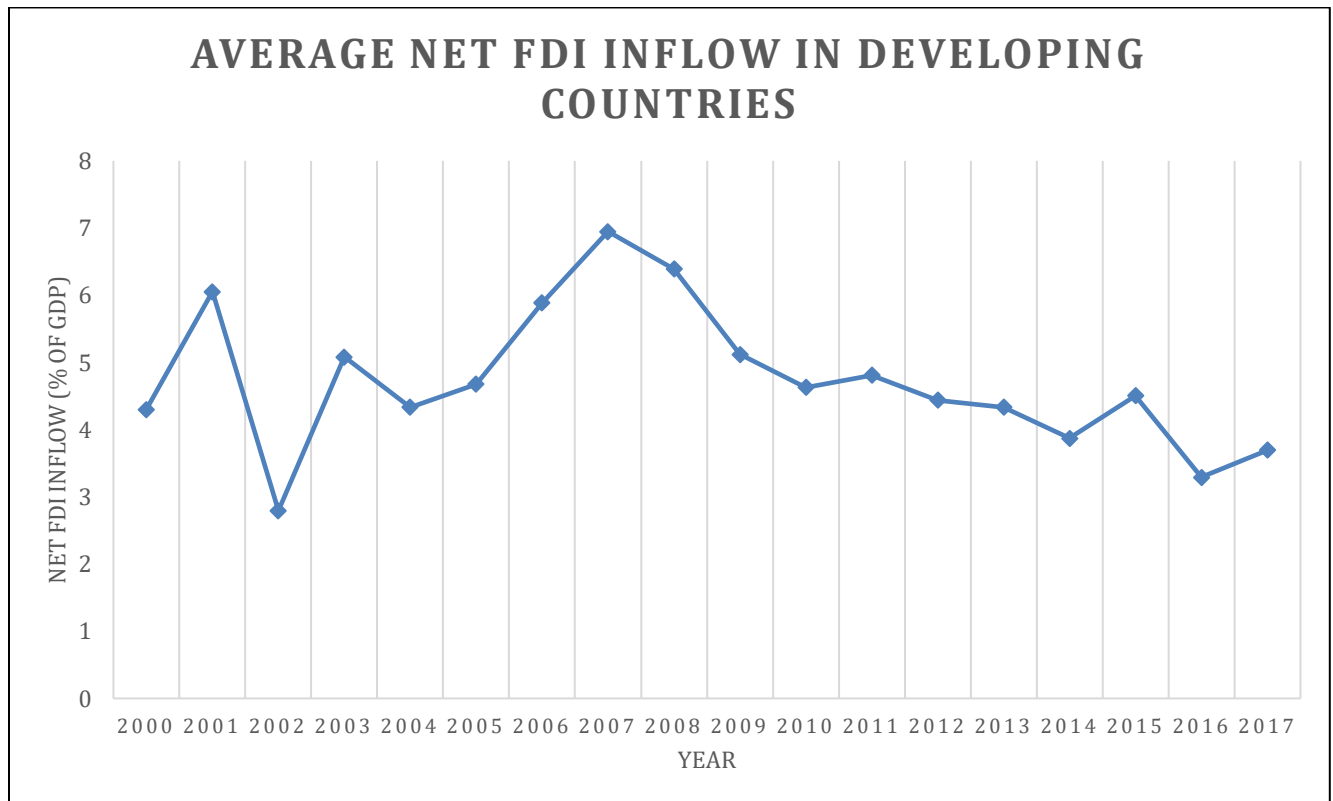
From the graph above we observe that the average net FDI inflow in the developing countries fluctuates over time around 4.73% average. From 2004 till the end of 2007 net FDI as a percentage of GDP increases and we notice a decreasing trend starting from 2007 till 2014. To check whether the 2007-2008 Global Financial Crisis has a significant effect along with above-mentioned variables crisis dummy variable was included.

In the last column of Table 1, the expected signs of coefficients are presented. Higher population, GDP, GDP per capita and GDP growth are expected to attract more FDI, as market-seeking FDI prefers countries with large markets, higher purchasing power and potential to grow. Additionally, trade openness is expected to have a positive impact on FDI inflow as for resource-seeking FDI it is important to have its production in a hosting country and to be able to export it later to other countries. For profit tax, the correlation is assumed to be negative as higher profit tax

will mean less net profit and everything else equal will be less attractive for investors. For Ease of Doing Business Indicators negative correlation is again expected as the more time-consuming is the investment and business establishment process the less likely are the countries to receive FDI everything else kept equal. Additionally, medium corrupted countries are expected to receive more FDI compared to high corrupted ones. Finally, developing countries are assumed to receive significantly less FDI after the 2008 Global Financial Crisis.

4. Methodology

As literature review indicates Khachoo and Kha (2012) in their study of *Determinants of FDI Inflows to Developing Countries* and Liargovas and Skandalis (2011) in their research of *FDI and Trade Openness* use panel regression for estimating the model. Following the example of prior research, for estimating the significance and impact of policy variables on FDI inflow, this study uses panel data analysis. Panel data analysis has a few advantages over cross-section and time series data in using more integrated information, containing higher degrees of freedom, more sample variability and as a result, giving a more accurate estimation of model parameters. Comparing the performance of the countries with each other, as well as observing their performance over time permits us to control for missing and unobserved variables that can be correlated with included explanatory variables and cause the problem of heterogeneity.

To identify the factors that influence the FDI inflows, the above-mentioned variables are incorporated in the following equation:

$$FDI_{it} = \beta_0 + \beta_1 lnGDP_{it} + \beta_2 lnGDPpc_{it} + \beta_3 GDPgr_{it} + \beta_4 Op_{it} + \beta_5 INF_{it} + \beta_6 Tax_{it} + \beta_7 CON_{it} + \beta_8 REG_{it} + \beta_9 RES_{it} + \beta_{10} ENF_{it} + \beta_{11} CPI_{it} + \beta_{12} Cr_{it} + u_{it}$$

i=1…….N, where N=number of observed countries; t=1…....T, where T is the time period, u_{it} is the error term and β's are the slope coefficients of explanatory variables

Additionally, the crisis dummy variable was included in the model to capture the difference in FDI inflow to developing countries before and after the Global Financial Crisis.

Both the correlation matrix and Variance Inflation Factor test indicate that there is no multicollinearity among our explanatory variables (See Appendix 3).

Fisher Type unit-root test based on augmented Dickey-Fuller test indicates that panels are stationary and do not contain unit root (See Appendix 4).

To identify which one out of the three most commonly used panel models is appropriate for this study we execute Breusch-Pagan Lagrange multiplier and Hausman tests. The Breusch-Pagan Lagrange multiplier test indicates that Pooled OLS is not an appropriate model for this study. Next, we execute the Hausman test to understand whether Fixed effect or Random effect model is more relevant for this study. Based on the test results we fail to reject the null hypothesis stating that difference in coefficients is not systematic, which implies that the variation across countries is assumed to be random and uncorrelated with the independent variables included in the model, therefore the random effect model is preferred. More details regarding the tests can be found in Appendix 5.

5. Empirical Results

After identifying the appropriate methodology for studying the research question, to estimate the significance and the impact of the main policy variables included in the research 4 models were estimated. These 4 models are different in terms of chosen specifications only. Empirical results for the models are presented in Table 2.

Table 2 Regression Results of Panel Data Analysis

		1	2	3	4
Dependent variable: Net Foreign Direct Investment (% of GDP)					
Total Population				-0.547***	-0.610***
				(0.185)	(0.183)
GDP		-0.554***	-0.481***		
		(0.194)	(0.187)		
GDP per capita		0.680			
		(5310)			
GDP growth		0.257***			
		(0.049)			
GDP growth of previous year			0.223***	0.229***	0.158***
			(0.048)	(0.048)	(0.045)
Trade Openness		0.025***	0.030***	0.030***	0.033***
		(0.009)	(0.009)	(0.009)	(0.009)
Inflation		0.091***	0.069**	0.030**	0.063**
		(0.029)	(0.029)	(0.029)	(0.027)
Profit Tax		-0.053	-0.055	-0.050	-0.062*
		0.038	(0.038)	(0.037)	-0.036
Construction Permits: Time(days)		0.005**	0.005*	0.005*	0.005*
		(0.003)	(0.003)	(0.003)	(0.003)
Registering Property: Time(days)		-0.010*	-0.011**	-0.011**	-0.01**
		(0.006)	(0.006)	(0.006)	(0.004)
Resolving insolvency: Time(years)		-0.26	-0.329	-0.304	
		(0.259)	(0.255)	(0.252)	
Enforcing contracts: Time(days)		-0.002*	-0.002**	-0.002**	
		(0.001)	(0.001)	(0.001)	
Corruption Perception Index		-0.772	-0.862*	-0.968**	-0.845*
		(0.475)	(0.466)	(0.462)	(0.444)
Crisis		-0.809*	-0.914**	-0.903**	-0.658
		(0.456)	(0.455)	(0.452)	(0.425)
constant		12.112*	16.364***	13.313***	12.291***
		(5.907)	(4.751)	(3.285)	(3.277)
R-squared	within	0.125	0.113	0.077	0.074
	between	0.417	0.415	0.402	0.404
	overall	0.232	0.228	0.207	0.202
Notes: Standard errors in brackets, * significant at 10%, **significant at 5%, ***Significant at 1%					

For the analysis of results of the research, Model 3 will be considered the main model and if not specified otherwise the results of Model 3 will be discussed.

For the economic variables included in the model as the empirical results suggest GDP and GDP growth are significant determinants of FDI inflow in developing countries. Even though GDP per capita is positively correlated with FDI, the empirical results imply that it is not a relevant determinant of FDI in developing countries.

As the results of empirical study suggest GDP and population have a negative correlation with FDI. Even though our initial assumption was that GDP and population will have positive impact on FDI, the possible explanation of the actual results might be the fact that the majority of developing countries are receivers of resource-seeking rather than market-seeking FDI.

In Model 3 and 4, the logarithm of the population is included in the model as an alternative proxy of market size. Results indicate that the population is a significant variable, however, similar to GDP for developing the study suggests that increasing the size of the hosting country affects FDI negatively.

The results of Model 1 imply that current GDP growth is a positively correlated and significant determinant of FDI. FDI of current year contribute to country's GDP, therefore, it also contributes to the GDP growth of the current year. This can lead to endogeneity issues in the model. To deal with this issue further in the research the GDP growth of the previous period is considered in the model as a determinant of FDI inflow. As the results of Model 2,3,4 estimates, the GDP growth of the previous year is a significant explanatory variable of FDI. Model 2 estimates that 1% increase in GDP growth is predicted to increase the FDI inflow of next year by 0.223%.

For policy variables, the empirical results overall suggest that inflation, time to register property, time to enforce contracts, time to obtain construction permit and trade openness are significant determinants of FDI.

Trade openness, the sum of export and import as a percentage of GDP, is estimated to have a positive impact on FDI. According to empirical results, 1% increase in trade openness is predicted to increase FDI by 0.03% on average. The trade openness is especially important for *resource-seeking FDI* as investors choose to invest in developing countries, which have lower production cost and later export to more developed countries where prices and earned profits are higher.

As indicated in Table 2 Model 3 inflation is a relevant explanatory variable, which is positively correlated with FDI. Increasing inflation by 1% is predicted to increase the net FDI inflow by 0.03%.

The empirical results further imply that for the FDI inflow profit tax is not a significant determinant. A possible reason behind this can be the fact that taxes are something that despite the location of the investment should be paid and when making an investment decisions investor are more concerned with other dimensions of the location advantages. Additionally, this study considers only profit tax as a determinant of FDI and while profit tax is estimated to be insignificant other types of taxes and tax benefits might offer significant attraction to investors.

In all 4 models, the time to obtain construction permit is a significant variable, however, interestingly, its coefficient is positive, which means that increasing the time it takes to obtain the construction permit is predicted to increase the FDI inflow. This contradicts with the expected results as the easier to do business the higher investments are expected. Nevertheless, a possible reason behind this result can be the fact that some developing countries in an attempt to attract

more FDI have reduced the construction permit time, but because other criteria were not satisfied for the investment to happen, they did not receive FDI.

The next policy variable that we considered is the time it takes to register a property. Empirical results from Table 2 indicate that this variable is a relevant determinant of FDI. The coefficient is negative, which implies that prolonging the process of property registration for one more day is predicted to decrease FDI by 0.011%.

According to the results, the time it takes to enforce a contract is a significant determinant of FDI inflow in developing countries. The coefficient of this variable is negative this implies that increasing the efficiency of the judiciary system and by this decreasing by one day the time it takes to enforce a contract is predicted to increase the FDI by 0.002%.

Corruption perception index is overall estimated to be a relevant variable in 5 and 10% confidence levels. As developing countries were dividing into 2 categories; high corrupted and medium corrupted, the base category is considered to be high corrupted countries. Interestingly, when developing countries move from high corruption to medium corruption the FDI inflow is expected to decrease by 0.968% as estimated in Model 3. The possible explanation of this can be the fact that certain types of investments in certain industries either prefer corrupted countries or themselves create corruption. Similar results were found by Eger and Winner (2005) in their study of *Evidence on Corruption as an Incentive for Foreign Direct Investment,* by analyzing 73 developed and developing countries for time period 1995-1999 found a clear positive relationship between corruption and FDI and concluded that corruption serves as a stimulus for FDI.

The empirical results in 3 out of 4 models suggest that crisis is a relevant variable in 5 and 10% confidence levels. This finding suggests that the annual FDI net inflow as a percentage of GDP that developing countries were receiving has decreased by 0.9% from 2009-2017.

Additionally, to check the accuracy of our results, we took the 3-year-period average of 18 years of observations that we had and reduced T = 6. Descriptive Statistics of the new panel can be found in Appendix 6. Then, we run the random effect panel regression on the new shorter panel data. The results of the regression are presented in Table 3 below.

Table 3 Regression Results of Three-Year-Period-Averaged Panel Data Analysis

Regression results of panel data analysis Dependent variable: Net Foreign Direct Investment (% of GDP)		
	Model 4: Yearly Observations	**Model 4: 3-year-period**
Total Population	-0.610***	-0.617***
	(0.183)	(0.181)
GDP growth of previous period	0.158***	0.179**
	(0.045)	(0.075)
Trade Openness	0.033***	0.031***
	(0.009)	(0.010)
Inflation	0.063**	0.061
	(0.027)	(0.051)
Profit Tax	-0.062*	-0.073**
	-0.036	(0.038)
Construction Permits: Time(days)	0.005*	0.003
	(0.003)	(0.003)
Registering Property: Time(days)	-0.01**	-0.015***
	(0.004)	(0.005)
Corruption Perception Index	-0.845*	-0.421
	(0.444)	(0.538)
Crisis	-0.658	-1.216**
	(0.425)	(0.561)
constant	12.291***	13.179***
	(3.277)	(3.491)
R-squared within	0.074	0.116
between	0.404	0.416
overall	0.202	0.289
Notes: Standard errors in brackets, * significant at 10%, **significant at 5%, ***Significant at 1%		

As the results from the Table 3 indicate when the model is run on 3-year-period averaged data, core results are mainly similar. Population, GDP growth and trade openness remained significant

with the same sign of coefficients and similar values. In the case of inflation, however, even though the sign of the coefficients is the same, in the latter model inflation is an insignificant variable with a 10% confidence level. The policy variables profit tax and time to register property remained significant. For time to obtain construction permit and CPI dummy variables, on the other hand, the picture is different. While being significant with a 10% confidence level on first dataset, they are estimated to be insignificant on the second dataset. A possible expiation of this can be the fact that these variables were significant on a higher confidence level and slight increase in the p-value would result in their insignificance.

Overall, we can state that the differences between these two models are not significant. Because of low value of time dimension (T = 6), we made an assumption that 3-year-period panel does not contain unit root. Further, as the results of the two models discussed above are similar, we can state that our assumption of stationarity regarding the first dataset containing yearly observations is appropriate.

6. Limitations and Further Research

In the scope of this research, for 103 developing countries for time-period 2000-2017, we aimed to determine the significance and the impact of certain policy variables. However, there were several limitations that the research faced, therefore, there are possible improvements that can further enhance this research. As discussed in the literature there are 4 types of FDI. These types differ in their structure and decision criteria. This research mainly concentrates on market-seeking FDI and some dimensions of resource-seeking FDI. Taking into account variables, which will explain efficiency and capability-seeking FDI, will add significant value to this research. Additionally, this research can be further improved by identifying the types of FDI that developing countries are receiving. Moreover, the determinants of location advantage can be further discussed

for specific types of FDI. In particular, different types of taxes and tax advantages that the foreign investors receive can be included in the model for more accurate discussion on the relevance and impact of taxes on FDI.

Additionally, further improvements can be made in more formal treatments for checking the stationarity of the panel data. Another improvement that can be made to this research is identifying the sectors of the economy that FDI goes to in developing countries and construct the model by including explanatory variables specific to those industries.

7.Conclusion

Given the importance of FDI in generating and accelerating economic growth in developing countries, the core objective of this study was to determine the relevance and impact of policy decisions on FDI net inflow in developing countries. To address this research question panel data analysis was conducted for 103 developing countries for period 2000-2017. From the literature review, we identified the main types of FDI and based on earlier studies conducted on this topic, the main economic and policy explanatory variables were included in the model. By using random effect panel regression model, we estimated the model and the results revealed some key findings regarding the research question. Registering property time and Enforcing contracts time were the main relevant Ease of Doing Business indicators for attracting FDI in developing countries.

Corruption, which is widely discussed and fought against in developing countries, according to this research does not attract more FDI, moreover, more corrupted developing countries are estimated to receive more FDI than less corrupted ones. Thus, in a process of fighting corruption, the policymakers of developing countries should not expect increasing FDI inflows as this research suggests. Instead, it will be more effective for developing countries to concentrate on

increasing their international trade. As by doing so their trade openness will increase and as this study suggests with the increase of trade openness developing countries will become more interesting for foreign investors.

To conclude, instead of copying the practice of other countries developing countries should determine the unique location advantages they can offer to the foreign investors and emphasize those advantages to attract more FDI.

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APPENDIX 1

	Country Name	Country Code		Country Name	Country Code
1	Albania	ALB	53	Lebanon	LBN
2	Algeria	DZA	54	Lesotho	LSO
3	American Samoa	ASM	55	Libya	LBY
4	Angola	AGO	56	Malaysia	MYS
5	Armenia	ARM	57	Maldives	MDV
6	Azerbaijan	AZE	58	Marshall Islands	MHL
7	Bangladesh	BGD	59	Mauritania	MRT
8	Belarus	BLR	60	Mauritius	MUS
9	Belize	BLZ	61	Mexico	MEX
10	Bhutan	BTN	62	Micronesia, Fed. Sts.	FSM
11	Bolivia	BOL	63	Moldova	MDA
12	Bosnia and Herzegovina	BIH	64	Mongolia	MNG
13	Botswana	BWA	65	Montenegro	MNE
14	Brazil	BRA	66	Morocco	MAR
15	Bulgaria	BGR	67	Myanmar	MMR
16	Cabo Verde	CPV	68	Namibia	NAM
17	Cambodia	KHM	69	Nauru	NRU
18	Cameroon	CMR	70	Nicaragua	NIC
19	China	CHN	71	Nigeria	NGA
20	Colombia	COL	72	North Macedonia	MKD
21	Congo, Rep.	COG	73	Pakistan	PAK
22	Costa Rica	CRI	74	Papua New Guinea	PNG
23	Cote d'Ivoire	CIV	75	Paraguay	PRY
24	Cuba	CUB	76	Peru	PER
25	Djibouti	DJI	77	Philippines	PHL
26	Dominica	DMA	78	Romania	ROU
27	Dominican Republic	DOM	79	Russian Federation	RUS
28	Ecuador	ECU	80	Samoa	WSM
29	Egypt, Arab Rep.	EGY	81	Sao Tome and Principe	STP
30	El Salvador	SLV	82	Serbia	SRB
31	Equatorial Guinea	GNQ	83	Solomon Islands	SLB
32	Eswatini	SWZ	84	South Africa	ZAF
33	Fiji	FJI	85	Sri Lanka	LKA
34	Gabon	GAB	86	St. Lucia	LCA
35	Georgia	GEO	87	St. Vincent and the Grenadines	VCT
36	Ghana	GHA	88	Sudan	SDN
37	Grenada	GRD	89	Suriname	SUR
38	Guatemala	GTM	90	Thailand	THA
39	Guyana	GUY	91	Timor-Leste	TLS

40	Honduras	HND		92	Tonga	TON	
41	India	IND		93	Tunisia	TUN	
42	Indonesia	IDN		94	Turkey	TUR	
43	Iran, Islamic Rep.	IRN		95	Turkmenistan	TKM	
44	Iraq	IRQ		96	Tuvalu	TUV	
45	Jamaica	JAM		97	Ukraine	UKR	
46	Jordan	JOR		98	Uzbekistan	UZB	
47	Kazakhstan	KAZ		99	Vanuatu	VUT	
48	Kenya	KEN		100	Venezuela, RB	VEN	
49	Kiribati	KIR		101	Vietnam	VNM	
50	Kosovo	XKX		102	West Bank and Gaza	PSE	
51	Kyrgyz Republic	KGZ		103	Zambia	ZMB	
52	Lao PDR	LAO					

APPENDIX 2

Data Description

*The description of the data source is provided.

FDI: Foreign Direct Investment

Foreign Direct Investment. The net inflows of investment to acquire a lasting management interest in an enterprise operating in an economy other than that of the investor. It is the sum of equity capital, reinvestment of earnings, other long-term capital, and short-term capital as shown in the balance of payments. This series shows net inflows (new investment inflows less disinvestment) in the reporting economy from foreign investors and is divided by GDP.

GDP: Gross Domestic Product

GDP at purchaser's prices is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources. Data are in current U.S. dollars. Dollar figures for GDP are converted from domestic currencies using single year official exchange rates. For a few countries where the official exchange rate does not reflect the rate effectively applied to actual foreign exchange transactions, an alternative conversion factor is used.

GDPpc: GDP per capita

GDP per capita is gross domestic product divided by midyear population. GDP is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources. Data are in current U.S. dollars.

Inf: Inflation

Inflation, as measured by the consumer price index, reflects the annual percentage change in the cost to the average consumer of acquiring a basket of goods and services that may be fixed or changed at specified intervals, such as yearly. The Laspeyres formula is generally used.

Op: Trade Openness

The sum of Export and Import as a percentage of GDP is taken as a measure of trade openness. This variable measure how much international trade is the economy of the specific country involved in.

CPI: Corruption Perception Index

The CPI focuses on the public sector and evaluates the degree of corruption among public officials and politicians. Corruption is defined as an abuse of public position for private gain, which in practice usually means bribe-taking. CPI is based on surveys of domestic and international business executives, financial journalists, and risk analysts.

BUS: Ease of Doing Business Indicators

Dealing with Construction Permits, Registering Property, Resolving Insolvency, Enforcing Contracts and Profit Tax are included in the model as independent variables.

Variance Inflation Factor

Variable	VIF	1/VIF
crisis	1.34	0.747473
lngdppc	1.29	0.773848
lngdp	1.27	0.784770
cpi_d	1.27	0.786833
registerin~s	1.27	0.787367
open	1.26	0.791012
tax	1.22	0.820001
constructi~e	1.21	0.825028
resolvingi~s	1.18	0.848987
gdpgr	1.17	0.858050
inf	1.12	0.890604
enforcingc~s	1.10	0.909726
Mean VIF	1.23	

Correlation Matrix

	lnpop	lngdp	lngdppc	gdpgr	open	inf	tax	constr~e	regist~s	resolv~s	enforc~s	cpi_d	crisis
lnpop	1.0000												
lngdp	0.9237	1.0000											
lngdppc	-0.1522	0.2381	1.0000										
gdpgr	0.1050	0.0315	-0.1859	1.0000									
open	-0.2729	-0.3094	-0.1060	0.0709	1.0000								
inf	0.0600	0.0134	-0.1161	0.0289	0.0811	1.0000							
tax	0.1507	0.1072	-0.1065	0.0360	-0.2336	-0.0043	1.0000						
constructi~e	0.0332	-0.0287	-0.1584	0.0700	0.1096	0.0854	-0.0618	1.0000					
registerin~s	-0.0610	-0.1523	-0.2386	0.0448	-0.1371	0.0805	0.1864	0.2434	1.0000				
resolvingi~s	0.0845	0.0168	-0.1708	0.0658	0.0187	-0.0080	0.2501	0.2264	0.1132	1.0000			
enforcingc~s	0.1373	0.1508	0.0412	0.0692	-0.0614	-0.0187	0.0314	-0.0444	-0.0279	-0.0199	1.0000		
cpi_d	-0.0675	0.0631	0.3329	-0.1551	0.0302	-0.1621	-0.1383	-0.2371	-0.1912	-0.2184	0.1281	1.0000	
crisis	0.0796	0.1147	0.0942	-0.2958	-0.1072	-0.2543	-0.1078	-0.1401	-0.2226	-0.0451	-0.1788	0.1276	1.0000

Fisher Type unit-root test based on augmented Dickey-Fuller test

```
. xtunitroot fisher fdi, dfuller lags(1)
(68 missing values generated)

Fisher-type unit-root test for fdi
Based on augmented Dickey-Fuller tests
───────────────────────────────────────
Ho: All panels contain unit roots          Number of panels      =     101
Ha: At least one panel is stationary        Avg. number of periods =  17.68

AR parameter: Panel-specific                Asymptotics: T -> Infinity
Panel means:  Included
Time trend:   Not included
Drift term:   Not included                  ADF regressions: 1 lag
────────────────────────────────────────────────────────────────────────
                             Statistic      p-value
────────────────────────────────────────────────────────────────────────
 Inverse chi-squared(202)  P       533.8598        0.0000
 Inverse normal            Z        -9.6842        0.0000
 Inverse logit t(509)      L*      -12.0804        0.0000
 Modified inv. chi-squared Pm       16.5106        0.0000
────────────────────────────────────────────────────────────────────────
 P statistic requires number of panels to be finite.
 Other statistics are suitable for finite or infinite number of panels.
────────────────────────────────────────────────────────────────────────
```

Breusch-Pagan Lagrange Multiplier Test

```
Breusch and Pagan Lagrangian multiplier test for random effects

        fdi[code,t] = Xb + u[code] + e[code,t]

        Estimated results:
                              Var      sd = sqrt(Var)
                    ---------------------------------------
                  fdi |    27.0295         5.19899
                    e |   15.19693        3.898324
                    u |   5.361403         2.31547

        Test:   Var(u) = 0
                            chibar2(01) =   180.94
                        Prob > chibar2 =    0.0000
```

Hausman Test

```
                  —— Coefficients ——
                 (b)          (B)          (b-B)      sqrt(diag(V_b-V_B))
                 fe           re        Difference          S.E.
     ---------------------------------------------------------------------
        lngdp    1.564885    -.5538406     2.118725        4.306567
      lngdppc   -2.722878     .6796565    -3.402534        5.087372
        gdpgr    .2573065     .2569198      .0003867         .016653
         open    .0070135     .0248713     -.0178578        .0098282
          inf    .1134037     .0907031      .0227006         .010747
          tax   -.0499546    -.0534775      .0035229         .047988
 constructi~e    .0043537     .0053139     -.0009602        .0027921
 registerin~s   -.0040891    -.0100691        .00598        .0034361
 resolvingi~s   -.0310085     -.267621      .2366125        .4173627
 enforcingc~s   -.0016485    -.0016271     -.0000213        .0008043
        cpi_d    -.780621    -.7715301     -.0090909        .2473011
        crisis  -.7345877    -.8089443      .0743567        .5568804
     ---------------------------------------------------------------------
                          b = consistent under Ho and Ha; obtained from xtreg
               B = inconsistent under Ha, efficient under Ho; obtained from xtreg

        Test:  Ho:  difference in coefficients not systematic

                     chi2(10) = (b-B)'[(V_b-V_B)^(-1)](b-B)
                              =        13.94
                     Prob>chi2 =     0.1759
                     (V_b-V_B is not positive definite)
```

Variable	Description		Mean	Std. Dev.	Min	Max	Observations
FDI	Net Foreign Direct Investment (% of GDP)	overall	4.71	6.21	-8.52	91.61	N = 601
		between		3.98	-1.99	23.77	n = 101
		within		4.77	-20.55	72.55	
ln Pop	Total Population	overall	15.45	2.38	9.16	21.04	N = 618
		between		2.39	9.24	21.01	n = 103
		within		0.09	15.12	15.77	
ln GDP	Gross Domestic Product (constant 2010 US$)	overall	23.58	2.37	17.22	29.89	N = 610
		between		2.39	17.31	29.24	n = 103
		within		0.25	22.67	24.25	
ln GDPpc	GDP per capita (constant 2010 US$)	overall	8.10	0.75	5.95	9.81	N = 610
		between		0.73	6.58	9.54	n = 103
		within		0.19	7.29	8.70	
GDPgr	GDP growth (annual %)	overall	4.50	4.29	-19.28	34.42	N = 610
		between		2.54	-1.35	19.61	n = 103
		within		3.58	-19.70	29.34	
GDPgr_prior	GDP growth (annual %) of previous year	overall	4.66	5.13	-19.28	66.47	N = 604
		between		3.41	-1.13	24.22	n = 103
		within		4.08	-19.52	48.16	
OP	Trade Openness	overall	79.75	39.47	0.00	230.65	N = 618
		between		33.63	0.00	172.54	n = 103
		within		20.89	-22.71	185.56	
INF	Inflation, consumer prices (annual %)	overall	6.92	7.56	-7.17	61.87	N = 546
		between		5.59	1.45	34.21	n = 94
		within		5.62	-7.94	52.05	
Tax	Profit tax (% of points)	overall	15.63	9.33	0.00	37.60	N = 380
		between		8.46	0.00	33.30	n = 95
		within		3.99	1.31	36.15	
CON	Construction Permits: Time(days)	overall	168.50	101.66	0.00	672.67	N = 380
		between		88.14	0.00	657.17	n = 95
		within		51.26	-99.67	457.83	
REG	Registering Property: Time(days)	overall	55.28	68.26	1.00	513.00	N = 409
		between		59.71	5.33	513.00	n = 91
		within		29.87	-92.19	227.55	
RES	Resolving insolvency: Time(days)	overall	2.82	1.19	1.00	6.00	N = 370
		between		1.17	1.00	6.00	n = 82
		within		0.32	0.62	4.23	
ENF	Enforcing contracts: Time(days)	overall	529.23	167.25	150.00	772.00	N = 515
		between		10.86	492.20	547.40	n = 103
		within		166.90	187.03	753.83	
CPI	Corruption Perception Index	overall	0.46	0.50	0.00	1.00	N = 418
		between		0.37	0.00	1.00	n = 81
		within		0.33	-0.37	1.30	
Cr	Crisis Dummy Variable		0.5	0.5	0	1	N=618