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"A panel data analysis of FDI and informal labor markets"

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Abstract

The objective of this paper is to examine whether informal labor markets affect the flows of Foreign Direct Investment (FDI), and also whether this effect is similar in developed and developing countries. With this aim, different public data sources, such as the World Bank (WB), and the United Nations Conference on Trade and Development (UNCTAD) are used, and panel econometric models are estimated for a sample of 65 countries over a 14 year period (1996-2009). In addition, this paper uses a dynamic model as an extension of the analysis to establish whether such an effect exists and what its indicators and significance may be. While the results shows that informal labor markets are significant and do positively affect the flow of FDI, these effects are felt up to a certain level of informality, above which the effect becomes negative. The results are similar for developed and developing countries and are robust to several checks.

JEL classification: *F16, F23, J8, M5*
Keywords: Foreign Direct Investment, Informal labor markets, Institutions

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1 Introduction

Inflows of Foreign Direct Investment (henceforth FDI) in both developed and developing countries have often been associated with immediate positive effects, such as investment in infrastructure, employment generation, and better pay. Moreover, other medium and long term benefits, such as technological spillovers, best management practices, capital formation and improvements in capital stock quality, are driven by the revenues from new investments. Imitation, skills acquisition, competence, and exports are the classic channels that are recognized as the transmitters of these benefits (Görg et al. 2005). It should also be noted that different authors have also shown possible negative effects of FDI, such as an increase in wage inequality (Hanousek, Kocenda & Maurel, 2011). Nevertheless, the proven benefits of FDI are the reason why governments may compete and strive to provide the best conditions to investors (Lipsey, 2004).

Although there is abundant literature on FDI determinants, which examine the process by which investments are made in a particular country, there is no conclusive empirical evidence as to which determinants are of the most significance and their effects on foreign investments (Agiomirgianakis et al., 2006; Blonigen, 2005). There is greater consensus about some determinants, however, in the bulk of the literature inasmuch as there is stronger evidence about the significance of some variables and their possible effects, such as market size, economic growth, and macroeconomic stability. Even so, unanimity does not exist because when it is disaggregated or other factors added, as determinants affect each country, region and time period in a different way. Among those determinants that have begun to take prominence, we can see the role of institutions in each country, although there is little consensus as to which institutions are significant and why (Bevan et al., 2004).

While institutions have been becoming increasingly relevant to economic analysis, the extent of their influence on investors' decisions is unclear, and even more uncertain when considering the informal institutions of a society. The informality of the labor market, in any of the definitions given in the bulk of the studies, has a negative connotation, although, we can find a few studies where there is an opposite effect on economic activity or on investment (Misati, 2010). The arguments about the adverse effects of informality tend to be concentrated on the economic growth of countries that is transmitted by lower taxes revenues of governments, less infrastructure, and a lower level of well-being, as result of the inclusion-exclusion policies of each government with the different economic units and individuals that formal institutions do not manage to capture. However, what it represents in a society is a topic that has been little studied, that is, the relationship with the investment and how it can influence investor decisions, as well as the companies' location or FDI (Misati, 2010). In this study, informality is taken from the point of view of the labor market and the workforce of each country, in that it will focus on the vulnerability of

workers and the level to which labor institutions are developed. In this way, this study will be able to give a general overview as to whether the conditions of the informal market have an influence on investments.

Taking the above into account, this study has the following objectives: to contribute to the literature about FDI determinants by analyzing factors not considered by previous research related to this topic; to contribute to the literature by analyzing the influence of informal labor markets and their potential role as a determinant of foreign investment flows; to produce evidence taken from a bigger set of countries and over a longer time period than those considered by previous studies, something which is also of great relevance to the literature.

Based on the foregoing, various statistical and econometric techniques will be applied to achieve this aim. As both time series and cross-section information are available for various countries, panel data analysis forms the basis of this work. One of the advantages of the panel data modeling approach is the superior analysis it permits by controlling both individual and temporary effects, and, if necessary, the incorporation of past effects and their impact on the analysis.

The proceeding section gives a review of the literature about FDI determinants, followed by a description of the methodology used for the analysis, a description of the database, and a summary of the results. The paper finishes by summarizing its main conclusions.

2 Literature overview

The increasing mobility of capital observed in the last few decades (see Figure 1), seen in both goods and capital flows for both developed and developing countries, has been the subject of economic studies seeking to examine its origin, and to identify the consequences it has on others economic agents. Understanding the factors behind these flows would enable the examination of the behavior of companies and an understanding of why some companies decide to be located in outside their home country.[1]

Regarding the possible economic consequences of capital mobility, many studies have been limited to the analysis of its immediate effects, such as the impact of investment on infrastructure, the employment directly generated in the country destination for the investment, and the impact of relocation on the company's home country. Others have also considered the possible side effects on other participants of these "contagions" (which are known as *spillovers*), such as innovation in

[1] Faeth (2009) summarizes the possible responses from the theoretical point of view; in short, the author divides these responses into the differentiation of the product, the maximization of profit, cost reduction, and political variables, among others. Cantwell (2010) uses the development of the eclectic paradigm and the OLI model (Ownership-Location - Internalization) to explain the decision made by companies to relocate.

production and organizational processes, distribution networks, technology, and salaries on local companies and competition. While there is no consensus about existence and direction of the effect, it is a topic that remains the subject of investigation (Hanousek et al., 2011; Clark et al., 2011).

FIGURE 1

According to the results of previous empirical analyses conducted on FDI determinants, the characteristics that may capture more investment for a country are varied, and depend largely on the group of countries that are considered in the sample, the time period, and the methodology used. Even so, inferences can be made from the trends identifiable in the results obtained for each of the variables involved in the studies.

This section provides a brief review of the most important FDI determinants, as described in the relevant empirical studies and literature, in order to analyze in more detail those variables that have generated further discussion in the literature. In this set of variables, I drill down to a greater extent in the analysis of institutions and, specifically, the role of informal institutions, which is an issue still rarely discussed in the literature.

Based on the literature review, and the classifications made by various authors (Parcon, 2008; Whyman, 2006; UNCTAD, 1998; World Economic Forum, 2012), the determinants are split into two large blocks referred to as *basic* and *enhancers*. The former refers to the group of determinants about which there is a growing consensus in the literature as to their effect on FDI and that they have or have had a significant statistical weight to both developed and developing countries mainly. The latter embodies determinants that may be more susceptible to develop and may be a catalyst in attracting FDI.

2.1 Basic Determinants

According to the literature on FDI determinants, there is increasing evidence and consensus about their significance. They are grouped and described below in the following order: market size and growth, trade openness, infrastructure, labor costs, and macroeconomic environment.

2.1.1 Market size and growth

These are the variables that are most highlighted in the literature or that have more statistical weight or significance. Their importance lies in the better use of scale economies, enabling lower costs and greater benefits for investors, and, moreover, greater potential demand. The significance is often ratified in both developed and developing countries (Agiomirgianakis et al., 2006; Ismail & Yussof, 2003; Bevan et al., 2004).

While the approaches to the measurement of these variables may vary, they are proxied mainly by means of Gross Domestic Product (GDP). Another common method used in their measurement has been the population size of each country, which tends to lend weight and statistical significance to investors' decisions (Caetano & Galego, 2009; Ismail & Yussof, 2003).

Growth prospects, or market potential, have been commonly found to exert a positive influence and statistically significant relationship. This variable expresses the purchasing power of the population and, thus, the demand. It is usually measured by means of GDP per capita (Agiomirgianakis et al. 2006; Ranjan, 2011). However, it is also possible to find an adverse effect, likely explained because of is capturing the rising costs (Walsh & Yu, 2010).

2.1.2 Trade openness

This variable enables the measurement of how open an economy is to global trade. This refers to the size of barriers to import and export that exist across countries, inasmuch that lower barriers would involve a reduction in costs to investors. The bulk of the empirical work has found a statistically significant and positive relationship between attracting FDI and trade openness (Agiomirgianakis et al., 2006; Bevan et al., 2004). The effect is often tested for developing countries (Caetano & Galego, 2009; Ranjan, 2011; Bengoa & Sanchez-Robles, 2003). However, this impact is not generalized in results (Walsh & Yu, 2010).

2.1.3 Infrastructure

The efficiency of the infrastructure of a country and level to which it is extended are seen as key points in the operation of any economic activity, as they reduce the distances involved in trade and integrate the various regions of the country with foreign markets, thus reducing costs to investors. Also, it is seen as a way to get closer to the prosperity of a country and or movement facilities. The sense of the effect on the empirical work has changed largely by the way to get to this point and the degree of development of the country analyzed. Although, we can find a positive effect

(Agiomirgianakis, et al. , 2006; Asiedu, 2006; Bengoa & Sanchez-Robles , 2003), this may vary as information is disaggregated inasmuch as there are often differences by economic sectors (Walsh & Yu, 2010), or maybe it can become less important respect to qualitative variables (Fung et al. , 2005). This variable is usually approximated by means of the number of kilometers of railways, roads, or number of phone lines.

2.1.4 Labor Costs

The relationship between this variable and investments is relatively clearer than other determinants because this expresses, in a direct way, the burdens that investors have by law with respect to the workers, that is, the benefits are affected directly. In the literature, the balance has leaned toward negative effects on the investments (Agiomirgianakis et al. 2006; Bevan et al. 2004). Other studies have found a positive and statistically significant effect, arguing that it may express the purchasing power of the population (Javorcik, 2005). This is usually proxied by the wages of each country or sector of the economy.

Most of the discrepancies that exist about the effects of this variable depend on which group of countries is being analyzed. For example, the investment flows to transition or developing countries have been explained largely by the advantage represented by having lower wages and salaries, which would be translated into in lower labor costs compared to developed countries (Leibrecht & Scharler, 2009; Ranjan, 2011).

2.1.5 Macroeconomic Environment

The importance of a beneficial macroeconomic environment can be seen in the uncertainty that the macroeconomic environment can create in investors through, for example, a high level of debt (Bengoa & Sanchez-Robles , 2003), uncertainty that the government can provide services efficiently or pay creditors, or a high exchange rate volatility (Trevino & Mixon, 2004). These factors, along with high inflation (Asiedu, 2006; Amal et al. 2010; Bengoa & Sanchez-Robles , 2003) and interest rates (Agiomirgianakis et al. 2006; Ismail & Yussof, 2003; Walsh & Yun, 2010) may be a reflection of economic instability and uncertainty. If we add a high level of taxation (De Mooij & Ederveen, 2003; Feld & Heckemeyer, 2011), all of these factors can be translated into costs that companies can expect.

2.2 Enhancer determinants

This category groups together the determinants that explain the reduction or increase in the gap between developed and developing countries. In this way, they are considered a catalyst in attracting FDI. The determinants are analyzed in the following order: agglomeration economies, human capital and institutions. The analysis is concentrated largely on institutions, which are split into two sub-categories: formal institutions, which includes the role of the government, intellectual property and labor regulations (labor flexibility and trade unions), and informal institutions, such as corruption and confidence-reputation.

2.2.1 Agglomeration Economies

This variable is closely related to the size and potential of an economy. The arrival of investment to, for example, a company or a particular location can attract more investment through the ties that exist between the company and other companies, groups or individuals. The country or region is then considered a much more appropriate place in which to invest, with a better business environment, and scale economies and *spillovers* to be exploited. Moreover, this variable can be explaining the absorption capacity of each country. Although this variable is not usually considered due to the limitations of databases, the coefficient is often a statistically significant and positive factor in attracting FDI (Walsh & Yu, 2010).

2.2.2 Human Capital

Human capital has been recognized in numerous studies as a means of attracting FDI, as the presence of highly skilled workers suggests a more productive society and a more desirable destination for investment. In addition, workers with better and higher levels of education are able to carry out more complex tasks and adapt to the fluctuations that take place in economies. However, some studies do not find this variable statistically significant (Agiomirgianakis et al. 2006; Walsh & Yu, 2010). The significance and direction of the coefficient depends on the sample of countries. For example, marginal increases for developed countries do not produce the same impact as on developing countries. We can even find results where human capital adversely affects investment (Ismail & Yussof, 2003).

2.2.3 Institutions

The importance of institutions has been studied with greater interest in recent years, as the role they play in the interaction between the different economic actors within a society has become increasingly recognized. In other words, they represent the rules of the game and these imply higher or lower transaction costs.

The approach to the management of institutions and their interaction with FDI has not been totally made clear in the literature, in terms of everything from definition to quantitative approach (Ali et al, 2010). This study differentiates between formal and informal institutions. The former term refers mainly to the rule of law, which can be influenced by the state directly, while the latter refers to socially shared rules fulfilled by convention (Grogan & Moers, 2001).

The empirical literature about the effects of formal institutions on FDI has opted to show that flows are directed to countries with higher institutional quality while those countries with, for example, weak governance tend to deter the arrival of these flows, as weak institutions can act as barriers through fees or taxes, and, moreover, can generate uncertainty (Buchanan et al., 2012).

2.3 What kinds of institutions are significant to investments?

The role of government is one of the topics that has already been discussed, because it can intervene either directly or by means of regulations. Government can have an important impact, through the enactment or amendment of laws, for example, and may affect investment flows. Investment in infrastructure is associated with positive effects (Caetano & Galego, 2009) but ambiguous in others (Agiomirgianakis et al., 2006). Another form of government intervention can be seen through the use of political control or political stability (Grogan & Moers, 2001; Asiedu, 2006; Naudé & Krugel, 2007), as well as the fulfillment with the rule of law and a functional financial system (Buchanan et al., 2012; Gani, 2007). The literature has also focused largely on the way governments give legal protection or legal certainty to investors, often using intellectual property rights, which has been found to have a strong positive effect on the attraction of FDI (Du et al., 2008).

While the role of labor legislation in each country has been discussed in the literature, the results are not conclusive and have focused on the role played by more flexible laws. These results show labor legislation having a positive effect on the ability to attract investment (Dewit et al., 2009; Gross &

Ryan, 2008; Walsh & Yu, 2010; Javorcik et al., 2005; Ham & Kleiner, 2007). However, other studies have found evidence showing a limited or diminished importance or significance (Leibrecht & Scharler, 2009), or one that may be related to the degree of flexibility (Parcon, 2008; Kucera, 2002), or the extent to which the economic sector is developed in each country (Walsh & Yu, 2010). No less controversial is the effect of the unions, although, the balance is leaned by a negative effect on the investment (Dewit et al., 2009; Ham & Kleiner, 2007).

Although the literature reveals little with regard to informal institutions and their effects on the localization and flow of FDI, these have been studied from different angles, with corruption one of the most recurrent perspectives used to study it. An inverse relationship has been found in the literature between corruption and the attraction of FDI, as it implies higher transaction costs (Bénassy-Quéré et al., 2007; Asiedu, 2006; Du et al., 2008; Gani, 2007). However, there are studies where this variable is not important (the coefficient is not statistically significant, as in Caetano & Galego, 2009). Another perspective from which informal institutions have been considered is through the analysis of trust and reputation. While there only a few studies that have examined this issue, the evidence shows that they have a positive impact on FDI (Seyoum, 2011; Grogan & Moers, 2001). It is worth mentioning that up to now the activities of the informal labor market have been rarely linked to investment. Contrary to the dominant position, they have been found to affect FDI in a positive way for certain countries (Misati, 2010).

It is notable that previous studies have not dealt with the effect of the informal labor market on investment, inasmuch as this variable can be used as an approximate measure of the degree to which the labor market is restrictive. If this sector is a part of the workforce that is excluded from formality and therefore the protection, it is exposed to uncertainty and market shocks. In other words, the informal labor market can probably be considered a better indicator of the state of the labor market and can be used to examine how the workforce is protected in each country since it is, in general, characterized by small-scale, self-employment activities, with low levels of organization and technology (Misati, 2010). As it does not generate revenues for governments, the consequences of the growth of this sector are that it would not impact substantially on infrastructure investment. Furthermore, it is taking place outside of the law and with little regulation (Loayza, 1996). However, there are studies where a positive effect is found, as it may represent the sector of business where innovation can flourish, thus encouraging investment (Schneider & Klinglmair, 2004).

If we take into account the definition of informal labor given by the International Labor Organization, by means of the labor vulnerability, then this indicator is associated with the quality of employment, the frequency of informal agreements and precarious work. It can, therefore, be taken as a better indicator than unemployment figures (Perry & William, 2007). Do, then, all these labor market characteristics have an influence on investment, and, above all, what is the effect of

the informal labor market on foreign investment? It is worth remembering that either formal or informal institutions represent higher or lower costs in any interaction between the agents.

FIGURES 4 and 5

TABLE 1

3 Data

The database used in this study is taken from the combination of different statistical sources compiled by institutions such as the United Nations Conference on Trade and Development (UNCTAD), the International Labor Organization (ILO), the World Bank (WB), the Fraser Institute and the Heritage Foundation. The databases used are described in Table 2. Due to the availability of information, the period of study is from 1996 to 2009, and the data obtained are reported annually. Table 3 shows the countries considered in the analysis, a list which varies according to the model used. In this way, the maximum number of countries is sixty-five, but in some models this is reduced to thirty due to data availability problems.

TABLES 2 and 3

The variable of interest in the research, labor informality and its effect on investment, is an area seldom discussed in the literature, and one that has been approached from different perspectives. The method used to measure it is very different across studies (Bénassy-Quéré et al., 2007; Asiedu, 2006; Du et al., 2008; Gani, 2007; Seyoum, 2011; Grogan & Moers, 2001). In accordance with the different classifications or approaches taken into account by the ILO (Perry & William, 2007), the informal labor is taken as *vulnerable employment* in this study, a variable taken from the World Bank. Taking this definition has the advantage that we can incorporate into the analysis more countries and wider time periods than those typically collected in the literature on informal institutions and FDI determinants. Moreover, most of studies tend to be cross sectional. Besides, the variable definition is considered the best option available, due to the difficulty represented by approximation or measurement, and the benefit offered to the study in terms of comparison and the number of years taken into account.

The descriptive analysis considers sixty-five countries from different continents in the time period 1996-2009. However, in some of the econometric models used, the sample is reduced by almost half depending on statistical information available for each variable.

4 Methodology

Firstly, panel data analysis is used in this study, taking into account the transversal information and the time period of fourteen years, in order to determine whether the variable of interest has an effect on FDI. This methodology has the advantage of being able to take into account the individual characteristics of each country. The basic model of the determinants of FDI, which is our dependent variable, is the following:

$$IED_{it} = \beta_0 + \beta_1 X_{it} + VE_{it} + U_{it} \quad (1)$$

Where:

IED_{it}= Foreign Direct Investment made in country "i" in the time period "t"

X_{it} = Is the vector of control variables such as GDP, GDPpc, openness, inflation, labor costs, corruption, and labor flexibility

VE_{it} = Vulnerable employment, proxy of the informality of workforce

U_{it} = Term of random disturbance

This model has a balanced panel data, in that it enables the observation of all the individual units in all the periods of time (Ti = T for all i), and it is considered short. The error term is undertaken as independent. The individual effects are incorporated into the general model in order to capture the characteristics of each country, which are assumed as fixed on the time:

$$IED_{it} = \alpha_i + X_{it}\beta + VE_{it} + \varepsilon_{it} \quad (2)$$

Where α_i = individual specific effects

At this stage of the analysis, the model is subjected to the Hausman test (Wooldridge, 2003) in order to determine the most appropriate method, out of the fixed or random effect. This test takes as a null hypothesis that if the individual effects are random, the estimators should be similar, because they are consistent. On the other hand, in the alternative hypothesis, the estimators differ.

Another way of extending the model is to allow that the intercept may change across individuals and time. This is carried out in order to incorporate possible events, such as economic shocks, that may affect the set of countries in the period of study, which results in:

$$IED_{it} = \alpha_i + \gamma_t + X_{it}\beta + VE_{it} + \varepsilon_{it} \quad (3)$$

As previously mentioned, over time, investment may attract more investment in the future. Agglomeration economies are, therefore, taken into account, with the dependent variable being lagged one year on the right side of the equation, as follows:

$$IED_{it} = \gamma_t + IED_{i,t-1} + X_{it}\beta + VE_{it} + \varepsilon_{it} \quad (4)$$

As we can see in the above equation, which is a dynamic model, it is necessary to be careful when estimations are carried out because the lagged dependent variable and the correlated errors lead to inconsistent estimates of parameters whether are estimated by Ordinary Least Squares (OLS). Therefore, the above equation is estimated by means of the best known method, that used by Arellano and Bond (1991). Initially, the control variables are treated as exogenous.

5 Results

Before moving on to the results of the panel data analysis for the determinants of FDI, this paper will consider some descriptive evidence. In Figure 2, we can see the dispersion of informality and FDI. This gives a general overview of the relationship between these two variables, although other variables that may influence dependent variables are not taken into account. In Figure 3, we can see the evolution of both variables between 1996 and 2009.

FIGURES 2 and 3

The descriptive statistics for the rest of the variables considered in this study can be seen in Tables 4 and 5. As shown in Table 4, the different control variables used in the study, as well as the variable of interest, have different degrees of association among them. The Variance Inflation Factor (VIF)

was used to test multicollinearity among the different independent variables and was not found among the variables. The test values of the VIF are below 4.63, which is below the accepted limit. It is worth mentioning that the variable of interest and the different institutional variables considered in the study were subjected to the exogeneity test proposed by Mackinnon (Wooldridge, 2000), meaning that it was not necessary to have instrumental variables in the panel data analysis. The results have not been included for space limitations, but are available upon request to the author.

TABLES 4 and 5

In Table 6, we can see the results of the econometric analysis carried out on the database. In order to give a better picture of the effect of the informal labor market on investments, we start with Model 1, which is the general model for the group of sixty five countries, for which, according to the Hausman test, the appropriate method is fixed effects. The coefficient associated with the variable of interest (the informal labor markets (V.E.)) has a positive sign and is statistically significant at five percent. It is important to emphasize the meaning of effect as contrary to what might be expected, and that informal labor market expressed by means of the variable of the employment vulnerability, may represent adverse conditions in labor markets for workers, but affecting in a positive way the attraction of investments by means of profits. In the following models is cleaned its effect.

TABLE 6

On the other hand, the control variables taken into account by this study have the expected effect. The level of income, or purchasing power as expressed by GDP per capita (GDPpc), of the citizens of each country has a positive effect and its coefficient is, as expected, statistically significant to the usual levels. The coefficient associated with trade openness, expressed by the variable *openness* in the different models, is statistically significant at one percent with a positive impact. Inflation, which represents macroeconomic stability, has a negative effect and the coefficient associated with it is statistically significant to the usual levels, as can be seen across the different models and as described by the various authors cited here in the literature review. However, the coefficient which is associated with GDP growth (GDPg) and which expresses potential demand has a negative sign and is statistically significant at one percent. However, it is not the sign predicted by the bulk of the literature, which is not an irregular finding, as the results for this variable may suggest that greater growth may deter investments and FDI on the grounds of the cost of doing business in a country. In

terms of material and labor capital, the higher the standard of living, the greater the cost of investment (Buchanan et al., 2012).

In Table 6, Model 2 incorporates the effect of agglomeration economies on the analysis. As previously mentioned, this variable is considered important because investments made today may have an effect on the attraction of investment in the future. For this reason, the dependent variable is lagged by one period. As mentioned above, the Generalized Method of Moments (GMM) developed by Arellano and Bond (1991) is used to work this specification. The variable added has a positive effect and its coefficient is statistically significant at the level of one percent, with the expected result agreeing with the literature review. The variable of interest retains its positive effect on investment and the statistical significance becomes stronger, rising to a level of significance of one percent.

Table 6 shows the results of estimating Model 3, namely adding to the previous model the quadratic term of the variable of interest in order to ascertain whether the effect captured occurs only up to a certain level (non-linear relationship). In fact, when incorporated, neither the variable of interest, the coefficient, nor the sign sense lose statistical significance at the usual rate. Moreover, the squared term has a negative sign and the coefficient is significant at one percent. Then, one of the first conclusions about the relationship between informal labor markets and investment is that it is positive only up to a certain level, as we can see in the model, where in the first instance, the informal labor market has a positive effect which later becomes negative.

Model 4, in Table 6, is the same model as above, but incorporates the time trend effect with the aim of taking into account the different events that are common to that set of countries at that time, and thus being able to clear the effect of the independent variables. As we can see, the effect of the variable of interest on FDI does not change. In the same way, the statistical significance of the quadratic term does not change either.

In Model 5, in order to incorporate more institutional variables and labor market variables, corruption and labor flexibility variables are added. In this way, it is possible to better capture the effect of the informal labor market on investment. As can be seen, even when we incorporate these variables, neither does the effect of variable of interest change, nor does the quadratic term, and the statistical significance of the coefficient is held at the usual levels. As this model also incorporates a time trend, it tries to clean even more the effect of the variable studied. It is worth stating that in this model the sample includes only 40 countries because of the lack of available information for some of the variables added.
In Table 7, the same analysis used previously is developed, splitting the developed from the developing countries, thus enabling the identification of differences between them in terms of the

effect on FDI of the variable of interest. In Model 2, in the results for the developed countries, the informality of labor markets maintains its positive effect and has a statistical significance of ten percent; furthermore, the control variables demonstrate the same behavior as that predicted in the literature. Furthermore, when the quadratic term is incorporated into the analysis, the preliminary findings remain valid, in that informal labor markets positively affect FDI flows up to a certain level, and then go on to act as a deterrent to FDI. Trying to clean the effect of the variable is incorporated the trend time effect in Model 4.The results have the same sense said before.

TABLE 7

The results for the developing countries are generally the same in effect and direction. While, in Model 2, the variable of interest does not have a significant coefficient, it is the same in terms of having the same impact on the investment. Furthermore, it is significant when the quadratic term is included, even when the trend time effect is added in Models 3 and 4. In this way, the results are similar between developing and developed countries, although, in Model 4, the coefficients of developing countries are stronger.

Table 8 shows the analysis for the sample group of thirty countries where the variable of labor costs is added and is considered important, as investors can choose countries where the cost of workforce is cheaper. Moreover, this variable improves accuracy with respect to the effect of the variable of interest, as it is then possible to carry out a robustness test. When, in Model 2, the labor costs variable is included, it is statistically significant and the negative effect is as expected. On the other hand, the informal labor market variable maintains the significant coefficient and the sense of the sign. The control variables included in the study maintain the results detailed above. In Model 3, the squared term coefficient is equally significant with the negative sign already explained. In Model 4, and in the successive models, the time trend effect is used, with the variable of informality maintaining its statistical significance at ten percent. In Model 5, despite the application of the robustness test, adding corruption and labor flexibility variables, the informality variable maintains both its statistical significance and its effect on the investment. While the informality variable does not appear significant after the quadratic term is added in Model 6, its importance is clear after the foregoing analysis.

TABLE 8

6 Conclusions

The analysis of FDI determinants has been a topic studied. However, the more the topic is disaggregated, the more discussion it provokes, as is the case with the effect of institutions on investments, which remains a controversial topic. Any institution may cause the costs assumed by investors to be reduced or increased. The institutions of the labor market, and specifically the informal sector, have been little analyzed. In this study, vulnerable employment was taken as a proxy of this sector.

The purpose of this study was to answer the basic question of whether informal labor markets affect investment flows, as expressed by FDI. The analysis carried out in this study covered a total of sixty-five countries and the period between 1996 and 2009. The study's principal findings can be summarized as follows:

This study focused on informal institutions in terms of the informality of the labor market, expressed here using the term vulnerable employment, which seems to have a significant and positive effect on FDI flows. This reaffirms, therefore, that informal institutions have an important role in economic analysis, particularly when considering labor markets. When the robustness test was included in the analysis, by means of the inclusion of variables such as corruption or labor flexibility, it became clearer that the conditions of informal labor markets, proxied by vulnerable employment, may be capturing labor precariousness, such as employment quality, informal agreement, institutions development, etc., and that are attractive to investors.

This study examined the relationship between informal labor markets and investment, revealing that, while the former has a positive impact, this is only true up to a given level, becoming negative after a certain point. The same pattern can be evinced from the analysis of the developed and developing countries. Moreover, when variables such as labor cost, labor flexibility and corruption were considered as part of cleaning of informal labor market effects, the significance and sense of the coefficients do not change between the different country subgroups.

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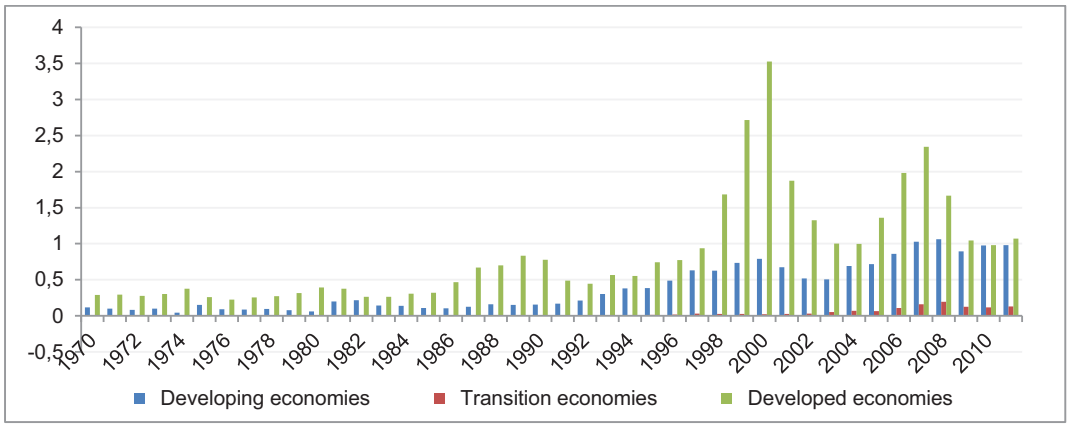
8 Tables and Figures

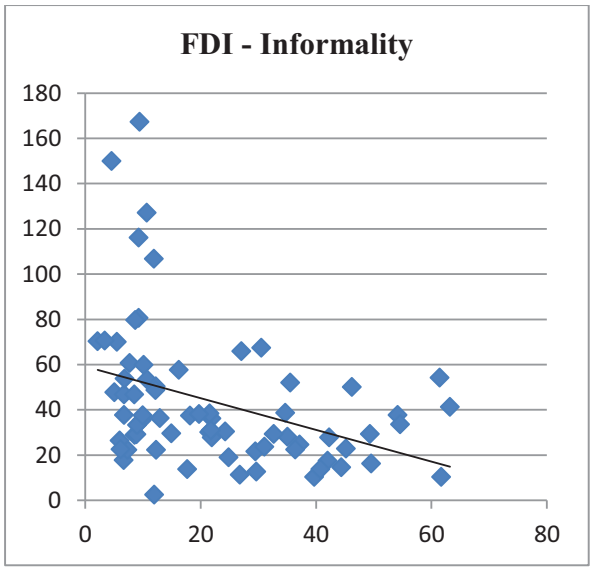
FIGURE 1

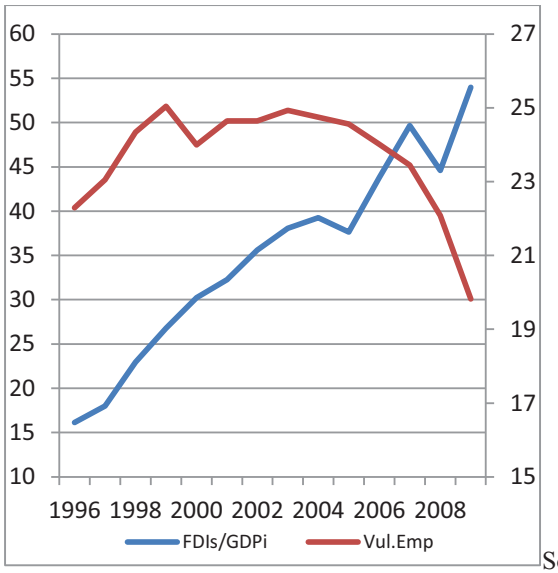
FDI Flows as a percentage of world GDP (1970-2011).



Source: United Nations Conference on Trade and Development (UNCTAD). www.unctad.org

FIGURES 2 and 3





Source: own preparation.

FIGURE 4

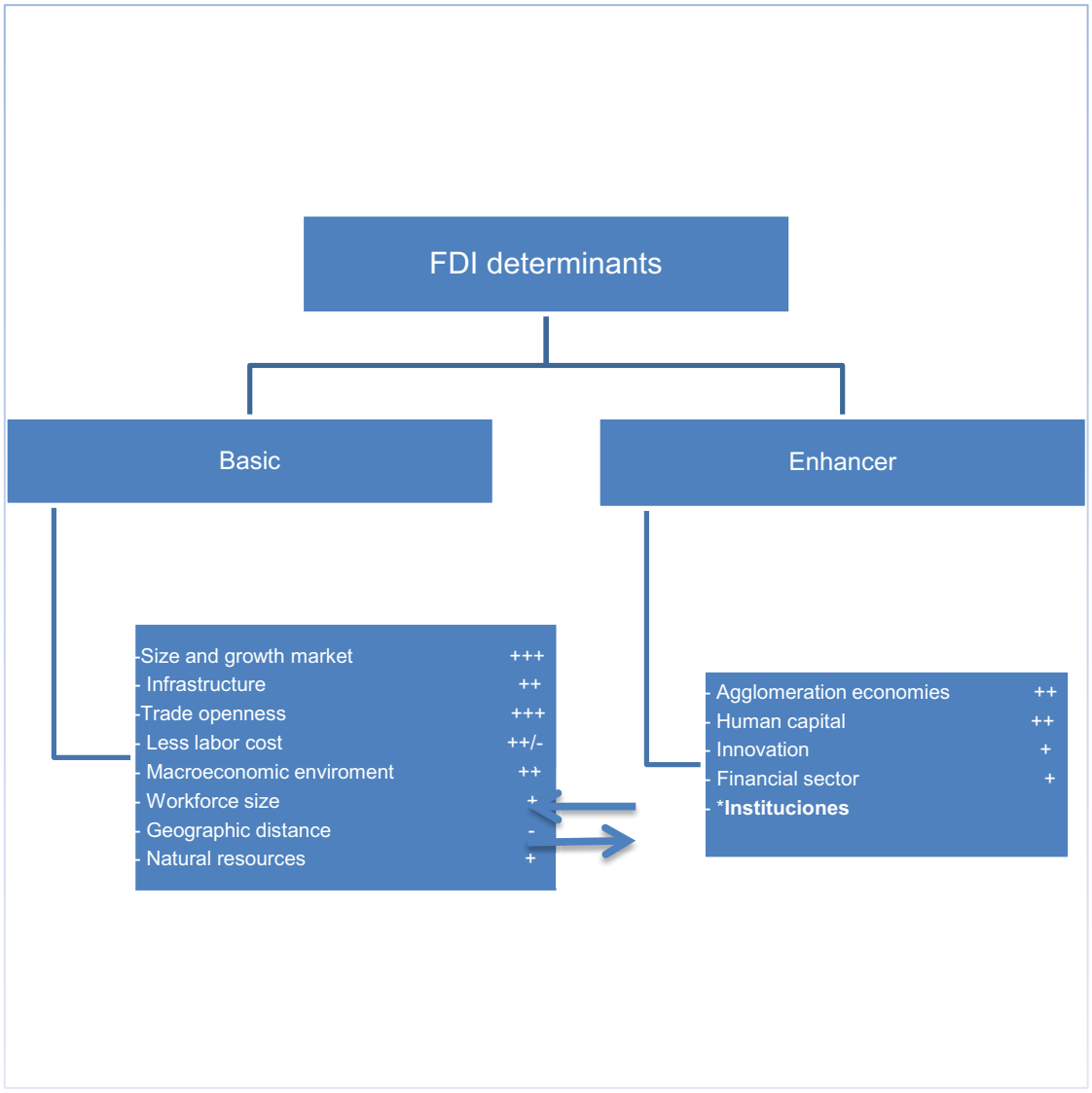
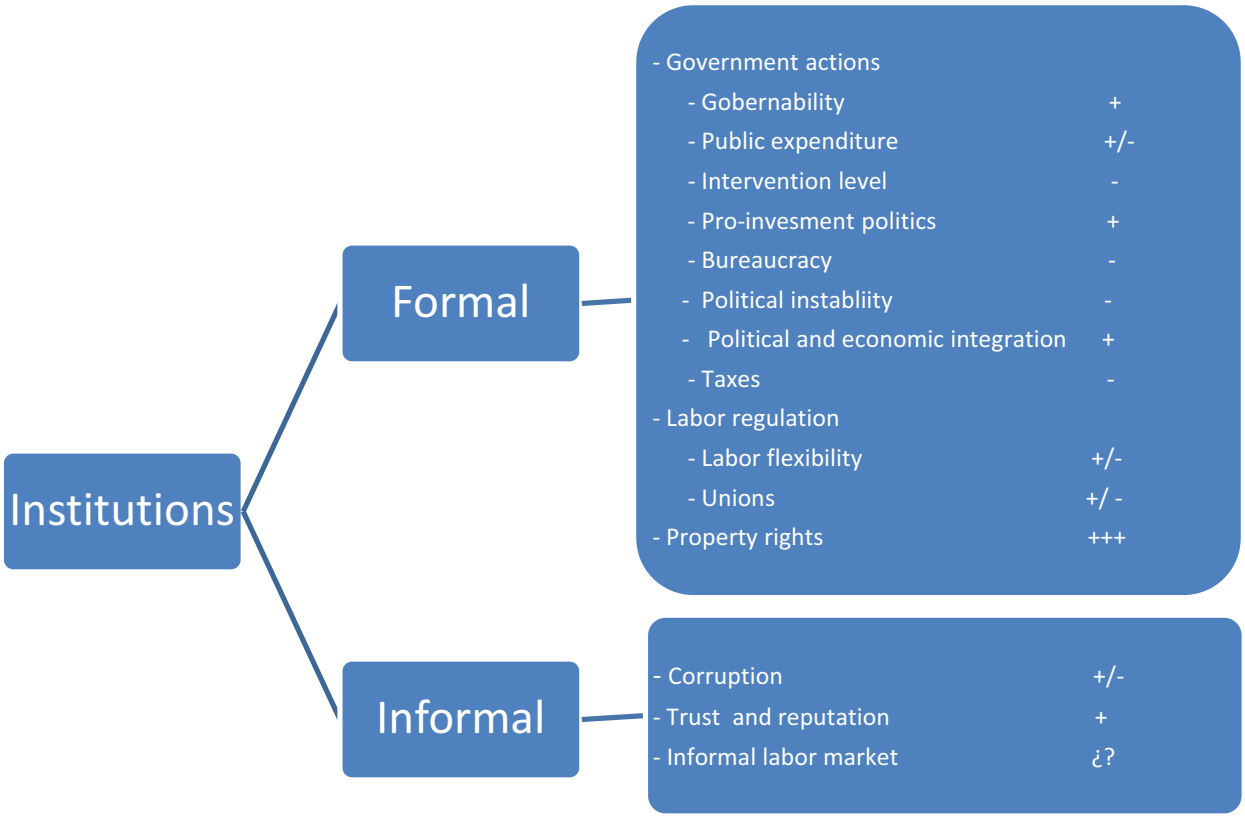

FDI determinants
Basic
Enhancer
-Size and growth market +++
- Infrastructure ++
-Trade openness +++
- Less labor cost ++/-
- Macroeconomic enviroment ++
- Workforce size +
- Geographic distance -
- Natural resources +
- Agglomeration economies ++
- Human capital ++
- Innovation +
- Financial sector +
- *Instituciones

FIGURE 5



Source: own elaboration

TABLE 1: FDI Determinants. Developed and developing countries (1/2)

Author	Period and Countries	Economic Variables	Effect	Institutional Variables	Effect
Naudé & Krugell (2007)	1970-1990 / 42 countries	Macroeconomic instability Human Capital	- +	Corruption Governance	- +
Dewit et al. (2009)	1986-1995 / 59 countries	Market Size Labor Costs	+ -	Labor Flexibility Union density	- -
Agiomirgianakis et al. (2006)	1975-1997 / 20 Countries-OCDE	Size and growth market Workforce Size Human Capital Agglomeration Economies Labor Costs Infrastructure Trade openness	+ + + + /- - + +	Economic –policy integration	+
Ismail & Yussof (2003)	1985-1999 / 3 countries	Labor costs * Work force size Market size * Human Capital * Innovation * Macroeconomic Stability * Trade openness *	+ /- + + - - /NS - + /S.		
Kucera (2002)	1993-1999 / 170 countries	Labor Costs Workforce size Trade openness Growth market Human Capital	- + + + +	Labor Flexibility	+ /
Gross & Ryan (2008)	Late 80's and 90's / 15 countries	Workforce size Labor Costs Agglomeration Economies Human Capital	+ -, NS + + ,S.	Employment protection legislation Economic -policy integration Trade Unions *	- + + / -, NS
Bénassy-Quéré et al. (2007)	2000 / 52 countries - OCDE.	Market Size Agglomeration Economies Geographical distance Growth market	+ + - +	Labor Flexibility Corruption Banking Sector Bureaucracy Governance	- - + - +
Caetano (2009)	1995/1997-2003/2005 / 25 countries	Growth market Trade openness Pro-investment politics*	+ + + /-	Government size Property rights * Corruption	- + /S. - ,S.
Bevan et al. (2004)	1994 And 1998 / 14 countries	Market size Geographical distance Labor cost advantages	+ - +	Financial System Trade openness Governance	+ + +
Grogan & Moers (2001)	1990-1998 / 25 countries	Macroeconomic stability Trade openness	- +	Governance Pro-investment politics Property rights Informal institutions: rules and trust	+ + + +
Treviño & Mixon (2004)	1988-1999 / 7 countries (L.A.)	Macroeconomic stability	+	Governance	-
Asiedu (2006)	1984-2000 1984-2000 1984-2000 1984-2000 1984-2000 / 22 African countries	Macroeconomic Stability Infrastructure Natural Resources Trade openness Human Capital	+ + + + +	Informal institutions: corruption Governance Political instability	- + -

Source: own preparation. * The direction of the effect depends on the group of countries and the sector is analyzed; NS = Not significant
Note: The variables of each work were homogenized for a better comparability.

TABLE 1: FDI determinants. Developed and developing countries (2/2)

Author	Period and Countries	Economic Variables	Effect	Institutional Variables	Effect
Gani (2007)	1996, 1998, 2000 and 2002 / 17 countries	Growth market Market Size Trade openness	+ - +	Governance Corruption control Political instability	+ + -
Du et al. (2008)	2001 / China	Agglomeration economies Labor Costs Infrastructure Human Capital	+ - + +	Government intervention * Intellectual property rights Corruption *	- + - /NS
Fung et al. (2005)	1990-2002 / China - (USA, Japan, Hong Kong, Taiwan, Korea)	Market Size Labor costs * Infrastructure Agglomeration economies Human Capital *	+ + / -, NS + / -, NS + +, NS	Government intervention	-
Leibrecht & Scharler (2009)	1995-2004 / 14 countries	Market Size Geographical distance Taxes Labor costs Pro-investment politics	+ - - - +	Labor Flexibility	-
Fathi et al. (2010)	1981-2005 / 69 countries	Growth market Trade openness Taxes Infrastructure Macroeconomic stability	+ + - NS NS	Intellectual property rights	+
Parcon (2008)	1990-2005 / 150 countries-165 countries	Labor costs * Growth market Taxes Human Capital Macroeconomic Stability Trade openness	+ /- + -, NS - ,S. + ,NS. + +	Labor flexibility Corruption *	+ /- + /-
Seyoum (2011)	2003-2005 / 107 countries	Market size Growth market Trade openness Workforce size Human Capital Macroeconomic Stability	+ + /S. + + ,S. + + ,S.	Informal institutions: trust and reputation	+
Amal et al. (2010)	1996 And 2008 / 8 countries (A. L.)	Macroeconomic Stability * Market Size Human Capital	- + +	Trade openness Corruption	+ NS
Bengoa & Sanchez-Robles (2003)	1970-2009 / 18 countries	Market size Macroeconomic Stability Infrastructure	+ - + ,S.	Trade openness	+
Ranjan (2011)	1975-2009 / 4 countries (BRIC)	Market size Trade openness Labor Costs Infrastructure Macroeconomic stability	+ + - + -		

Source: own preparation. * The direction of the effect depends on the group of countries and the sector is analyzed; NS = Not significant
Note: The variables of each job were homogenized for a better comparability.

TABLE 2

Abbreviation	Variable	Source
FDI	Foreign Direct Investment (stock as % of GDP)	United Nations Conference on Trade and Development
GDP	Gross Domestic Product (constant prices 2005)	United Nations Conference on Trade and Development
GDPpc	Gross Domestic Product per capita (constant prices 2005)	United Nations Conference on Trade and Development
GDPg	Growth rate of GDP	United Nations Conference on Trade and Development
Openness	Openness to trade (I + E as % GDP)	United Nations Conference on Trade and Development
Inflation	Inflation percentage	United Nations Conference on Trade and Development
L. Cost	Labor costs (costs of compensation for hours of employees in the manufacturing industry)	International Work Organization - Key Indicators of the Labor Market
V. E.	Workforce informality (vulnerable employment as a % of total employment)	World Bank - World Development Indicators
Corruption	Corruption (Freedom from corruption)	Heritage Foundation
L. Flex	Labor Flexibility	Fraser Institute - Economic freedom of the world data

TABLE 3

Argentina	Cyprus	Germany	Japan	Netherlands	Portugal	Thailand
Australia	Czech Republic	Greece	Korea (Rep.	New Zealand	Romania	Turkey
Austria	Denmark	Honduras	Latvia	Nicaragua	Russian Federation	United Kingdom
Belgium	Ecuador	Hungary	Lithuania	Norway	Singapore	Uruguay
Bolivia	Egypt	Iceland	Macedonia, FYR	Pakistan	Slovak Republic	Venezuela, RB
Brazil	El Salvador	Indonesia	Malaysia	Panama	Slovenia	
Chile	Estonia	Ireland	Malta	Paraguay	Spain	
Colombia	Finland	Israel	Mexico	Peru	Sri Lanka	
Costa Rica	France	Italy	Moldova	Philippines	Sweden	
Croatia	Georgia	Jamaica	Morocco	Poland	Switzerland	

The highlighted countries correspond to the sample of thirty countries.

TABLE 4

	GDPpc	GDPg	Openness	Inflation	Corruption	V. E.
GDPpc	1					
GDPg	-0.1616	1				
Openness	0.1204	0.1326	1			
Inflation	-0.2964	-0.0892	-0.1304	1		
Corruption	0.8337	-0.1419	0.1774	-0.3357	1	
V. E.	-0.8119	0.0956	-0.2334	0.2468	-0.692	1

TABLE 5

	Media	Median	Minimum	Maximum	St. Dev.
GDPpc	15408.25	7271.36	498.74	67467.50	15816.97
GDPg	3.26	3.65	-17.73	18.29	3.68
Openness	87.96	75.85	1412	446.98	53.82
Inflation	6.90	3.60	Y -1.71	154.76	1150
V. E.	23.77	1940	2.20	66.10	16.64

TABLE 6

65 Countries (1996-2009)

VARIABLES	Model 1	Model 2	Model 3	Model 4	Model 5
FDI (Lag)		0,750 ***	0,755 ***	0,722 ***	0,806 ***
		(0.00165)	(0.00333)	(0.00272)	(0.0107)
GDPpc (log)	56.66 ***	15.95 ***	1642 ***	-3.568	5,390
	(5,427)	(0,541)	(0,727)	(2,300)	(3,743)
GDPg	-1.160 ***	-0.602 ***	-0.601 ***	-0.444 ***	-0.493 ***
	(0,172)	(0.00821)	(0.00860)	(0.0144)	(0.0313)
Openness	0,417 ***	0.0393 ***	0.0410 ***	0.0180 ***	0.0281 **
	(0.0563)	(0.00339)	(0.00520)	(0.00414)	(0.0117)
Inflation	0.00423	-0.0433 ***	-0.0393 ***	-0.00827	0.00855
	(0.0701)	(0.00347)	(0.00815)	(0.00537)	(0.00785)
V. E.	0,489 **	0.242 ***	1,014 ***	0,780 ***	1,556 ***
	(0,239)	(0.0320)	(0.0633)	(0.0927)	(0,322)
V. E. 2			-0.0114 ***	-0.00854 ***	-0.0171 ***
			(0.000801)	(0.00128)	(0.00450)
Corruption					-0.00146
					(0.0287)
L. Flex.					-0.145
					(0,180)
Fixed Effects	Yes	-	-	-	-
Time Trend	No	No	No	Yes	Yes
Constant	-520.9 ***	-140.7 ***	-154.7 ***	26.52	-66.65 *
	(48.94)	(5,095)	(6,956)	(20.77)	(34.68)
Observations	847	721	721	721	473
Number of countries	65	65	65	65	41

Standard Errors in parentheses. *** P<0.01 , ** p<0.05 , * 1p<0.1 . In the model 5 the sample corresponds to 41 countries, it includes institutional variables: informality, Corruption" work flexibility.

TABLE 7

Developed and developing countries (1996-2009)

	Developed Countries			Developing Countries		
VARIABLES	Model 2	Model 3	Model 4	Model 2	Model 3	Model 4
FDI (Lag)	0,815 ***	0,817 ***	0,816 ***	0,761 ***	0,736 ***	0,639 ***
	(0.00661)	(0.0120)	(0.0132)	(0.0145)	(0.0175)	(0.0257)
GDPpc (log)	21.03 ***	20.66 ***	14.19 *	2,179	5,795 ***	18.30 ***
	(2,999)	(3,161)	(8,214)	(1,927)	(2,010)	(3,116)
GDPg	-0.575 ***	-0.598 ***	-0.514 ***	-0.478 ***	-0.492 ***	-0.390 ***
	(0.0386)	(0.0438)	(0.0679)	(0.0215)	(0.0252)	(0.0291)
Openness	0,101 ***	0,109 ***	0.0846 ***	0.00407	-0.00578	-0.00434
	(0.00827)	(0.00966)	(0.0101)	(0.0107)	(0.00970)	(0.0109)
Inflation	-0.0885 **	-0.115 ***	-0.0825 *	0.0398 ***	0.0193	0.0330 ***
	(0.0406)	(0.0378)	(0.0422)	(0.00865)	(0.0118)	(0.00532)
V. E.	0,619 *	1,841 ***	1,452 **	0.0436	1,448 ***	0,788 ***
	(0,370)	(0,459)	(0,629)	(0.0565)	(0,262)	(0,240)
V. E. 2		-0.0283 ***	-0.0212 *		-0.0167 ***	-0.0102 ***
		(0.00855)	(0.0114)		(0.00315)	(0.00267)
Time Trend			Yes			Yes
Constant	-215.6 ***	-221.9 ***	-153.5 *	-9.437	-61.54 ***	140.0 ***
	(33.71)	(34.68)	(85.15)	(15.94)	(16.63)	(26.48)
Observations	377	377	377	344	344	344
Number of countries	32	32	32	33	33	33

Standard Errors in parentheses. *** P<0.01 , ** p<0.05 , * 1p<0.1

TABLE 8

1996-2009

VARIABLES	Model 2	Model 3	Model 4	Model 5	Model 6
FDI (lag)	0,821 ***	0,810 ***	0,721 ***	0,755 ***	0,706 ***
	(0.00989)	(0.0143)	(0.0223)	(0.0123)	(0.0267)
GDPpc	24.89 ***	29.65 ***	-30.66 **	-28.99 ***	-38.78 ***
	(3,753)	(6,483)	(15.02)	(9,167)	(10.07)
GDPg	-0.989 ***	-1.006 ***	-0.258 **	-0.322 ***	-0.236 ***
	(0.0410)	(0.0465)	(0,119)	(0.0875)	(0.0908)
Openness	0.0768 ***	0.0690 ***	0.0143	0.0357 **	0.0470 ***
	(0.0131)	(0.0147)	(0.0137)	(0.0148)	(0.0159)
Inflation	-0.752 ***	-0.719 ***	-0.409 ***	-0.405 ***	-0.306 *
	(0,116)	(0,150)	(0,136)	(0,149)	(0,156)
L. Cost	-7.320 ***	-7.758 ***	-14.65 ***	-0.527 ***	-0.579 ***
	(0,584)	(1,299)	(0,990)	(0.0852)	(0.0954)
V. E.	0,735 ***	1,543 ***	1,519 **	1,268 ***	1,193
	(0,153)	(0,353)	(0,629)	(0,214)	(0,904)
V. E. 2		-0.0150 ***	-0.0206		-0.00771
		(0.00576)	(0.0132)		(0.0191)
Corruption				0.0254	0.0123
				(0.0536)	(0.0568)
L. Flex.				0,478	0,575
				(0,673)	(0,835)
Time Trend			Yes	Yes	Yes
Constant	-232.1 ***	-284.7 ***	315.7 **	-112.0 **	366.8 ***
	(36.66)	(64.57)	(147.4)	(45.40)	(98.39)
Observations	348	348	348	348	348
Number of countries	30	30	30	30	30

Standard Errors in parentheses. *** P<0.01 , ** p<0.05 , * 1p<0.1

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