

# Human Capital and Institutions on Latin American FDI (1970-2014)<sup>1</sup>

## Capital humano e instituciones en la inversión en América latina (1970-2014)

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The following thesis belongs to the literature of FDI determinants on developing countries and its main contribution is its distinction between societies that are redistributive (in the sense that they spend bigger proportions of GDP in Social Protection) and those that aren't. For this purpose, the present paper gathers information about FDI inflows and many possible determinants, among which, we will care about Human Capital and Institutional Quality, for 17 Latin and Central American countries (not including islands) between 1970 and 2014. After that, a static linear econometric model is estimated using panel data techniques and results show that both variables of interest affect FDI inflows in a positive way and that their marginal effect is bigger in those societies spending more in Social Protection. Such a positive impact is confirmed after using a dynamic model, but not the incremental effect of spending more in Social Protection.

*Keywords:* Foreign Direct Investment; Human Capital; Institutional Quality; Redistributive Societies; Panel Estimation.

### Introduction

During the last 50 years, there is a clear trend towards capital liberalization, which has permitted investors (especially firms) to diversify their portfolio by investing on different regions in the world. Among many different sources of international capital flows, Foreign Direct Investment (FDI from now onwards) has captured the attention of many scholars because of its long term nature and the positive effects generated by these kinds of flows on the industrial capacities of recipient countries (Rothgeb, 1988: 21-43). As a consequence, many politicians, especially on developing countries, rely on FDI for attaining economic development.

This recent trend, has been exploited by multinationals, which nowadays are the main issuers of FDI and they study in a very detailed way all the characteristics of potential allocations before deciding where to build new production facilities. During the last years, lots of scholars have attempted to determine which of these characteristics are more relevant in the allocation of FDI flows but there has been no general agreement.

In that sense, the main objective of this paper consists on evaluating two FDI determinants that seem to have acquired high relevance during the most recent decades; Human Capital and Institutional Quality. The present thesis is allocated on the framework of development economics and that's why it will focus on Latin and Central America. According to literature the significance of both FDI determinants on the region has evolved during the last decades: At first, multinationals looked for cheap access to natural resources and unqualified workers when investing in developing countries. Nevertheless, during

the last years, there is a trend towards looking for efficiency gains and more productive workers. That's why Human Capital, which is reflected on educational attainment of citizens in those countries and their health levels, is getting more relevant as a determinant of FDI on Latin and Central America.

On the other hand, it is believed that that the stability and certainty of investment returns are quite appreciated by investors. In that sense, the role of institutions becomes crucial for developing a stable investment framework dominated by low risk levels. In that sense, during the last years, many Latin and Central American countries are adapting their institutions to international standards and some authors agree that this is helping them to receive bigger FDI flows.

Finally, the most important addition of this paper to the literature is its aim to check whether the marginal effects of those two main FDI determinants are different in more redistributive countries. In order to determine which countries are more redistributive, the percentage of Social Protection expenses over total GDP will be employed. As explained before, the literature provides little information about this issue, but what it is believed is that Latin societies devoting bigger proportions to Social Protection will be the most institutionally developed ones and will probably have the best education and health care systems inside the region. That's why it is expected that Human Capital and Institutional Quality will positively influence the FDI inflows received by each country and that this influence will get more relevant at redistributive societies.

All in all, the paper will be structured in the following sections: Section 2 and 3 will respectively review literature about the positive or negative effects that Human Capital and Institutional Quality could have on FDI inflows to de-

<sup>1</sup> El autor desea expresar su agradecimiento a Antonio Tena Junguito, como supervisor de la elaboración de este artículo por sus siempre útiles comentarios y sugerencias; y a Raquel Carrasco por su ayuda con el modelo econométrico.

veloping countries. In section 4 there will be a presentation of the different databases employed. Section 5 will finally present the model and section 6 will present the estimation and the results. Finally, section 7 will provide two alternative models for checking the robustness of results and section 8 will conclude.

## Human capital and FDI

Nowadays, there exists an open debate on the literature about the influence of Human Capital on attracting FDI inflows to developing countries. Literature employs many different measures representing Human Capital, being educational attainments the most popular ones, although health levels are also widely employed. FDI determinants may change over time, so this section is going to review what some authors have found about the influence of Human Capital on FDI inflows to developing countries during the last 60 years.

For the case of Education as a proxy for Human Capital we find some authors arguing that this variable is getting every time more relevant as a determinant of FDI on developing countries (Pfeffermann and Madarassy, 1992). On a similar way, (Noorbakhsh et al, 2001:1593-1610) study 36 Latin, African and Asian countries between 1980 and 1994, employing three different measures of Human Capital and each of them influences significantly FDI inflows to the analyzed countries.

Nevertheless, many authors haven't found empirical evidence supporting the hypothesis that educated labor force could attract FDI inflows to developing countries, (Root and Ahmed, 1979: 751-767) and (Schneider and Frei, 1985: 161-175). However, they employ old fashioned data and maybe these variables were not still as relevant as they are today in the determination of FDI inflows to developing countries.

In the end, latest publications reconcile both theories: Until 1970, Multinationals looked for cost advantages when investing at developing countries and that's why Human Capital was found insignificant as FDI determinant. Nevertheless, the trend shifted and nowadays, investors look for specialized workers and for that reason, Human Capital is getting relevant as determinant of FDI to the studied region (Miyamoto, 2003). There are also authors suggesting a simultaneous relationship in which FDI levels could also influence education in a country (Blomström and Kokko, 2003).

Additionally, there is also an open debate among scholars about the influence of Health (as a measure of Human Capital) on Foreign Direct Investment. In this regard, many authors conclude that Health is a determinant factor positively influencing FDI inflows (Azémar and Desbordes, 2009: 667-709), (Alsan et al., 2006: 613-630).

Many other scholars employ a different approach in which they study the influence of FDI flows in population health status. (Herzer and Nunnenkamp, 2012) find that increments on FDI to GDP ratio reduce Life Expectancy in such countries for the period 1970-2009. On a similar way, (Reiter and Steensma, 2010: 1678-1691), performed a similar study and found that increasing FDI inflows could improve population health status.

All in all, what literature about Human Capital and FDI seems to suggest is a simultaneous relationship between both variables, which seems to be positive according to many scholars arguing that higher Human Capital levels

attract higher FDI inflows and that higher FDI inflows generally produce increments on Human Capital levels. Although this possibility is real, it won't be incorporated to the present study but could be taken into account for further research on that topic.

## Institutions and FDI

In a similar way as before it seems necessary to review what the literature says about the impact of Institutional Quality on FDI inflows to developing countries. As it has happened with the previously analyzed explanatory variable, literature seems to not agree on the influence of Institutions on FDI and many authors show that this influence depends on the measure chosen for representing Institutional Quality.

Regarding democratic level there are scholars arguing that democracy can hinder FDI by reducing bargaining power of Multinationals, while it can increment FDI levels by protecting property rights (Li and Resnick, 2003: 175-211). Others find a clearer effect of Institutional Quality on investment levels by showing that higher levels of democratic quality reduce investment risks, thus raising FDI received by such countries (Jensen, 2008:1040-1052).

Nevertheless, more clear conclusions can be obtained by performing the analysis on a determined country. In this case, results will also depend on the analyzed country. For the case of China, what it is found is that a higher ranking in the rule of law index attracts bigger FDI inflows, while freedom from corruption and limits on executive powers don't affect FDI inflows to China (Fan et al., 2007: 852-865). On the other hand, scholars studying Pakistan found that the ICRG index of institutional performance and the variable constraints on executives from Polity IV affect in a positive and significant way FDI inflows.

Finally, as it has happened with Human Capital, there are authors studying the possible influence of FDI inflows on countries' Institutional Quality. A good example is (Bevan et al. 2004: 43-64) who found that FDI influenced institutional development in a positive way. These results suggest a possible simultaneous relationship between FDI inflows and Institutional Quality, a phenomenon that won't be explored in this paper but could be interesting for future research.

## Data presentation

The following research, as mentioned before, focuses on a particular region of the World; Latin and Central America. For that reason, it will analyze 17 continental countries between 1970 and 2014. The many islands in the Caribbean have been excluded from the analysis because some of them have different fiscal treatment and could contaminate the true effects of the regressors on the dependent variable.

### Dependent variable

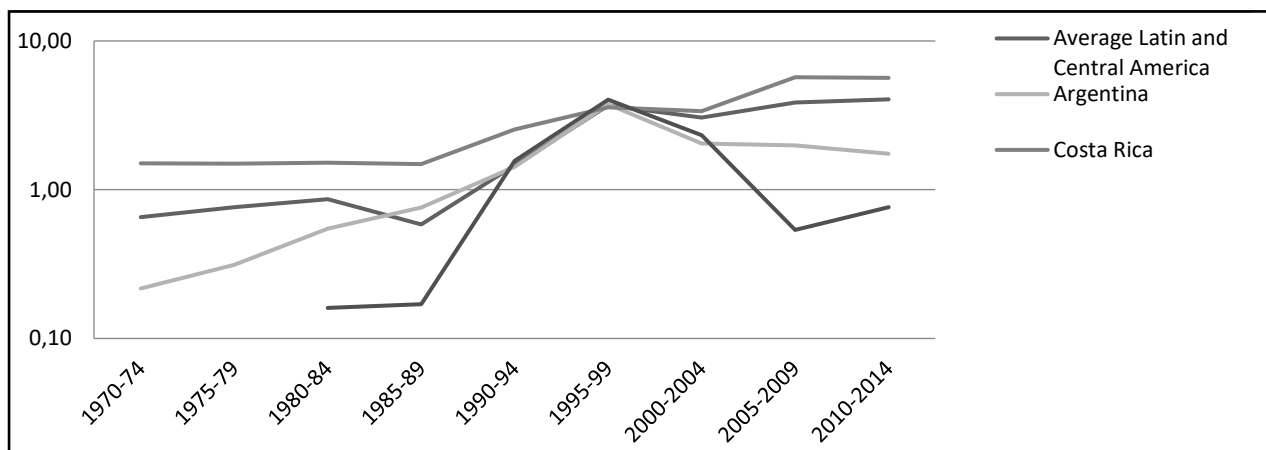
The following research will employ as a dependent variable the net FDI inflows received by each country as a percentage of its GDP in a similar way to (Noorbakhsh et

al., 2001: 1593-1610). There was another possibility to employ a measure of FDI stock but it is not adjusted to changes on inflation. The variable will be studied across time for many countries, so a panel should be constructed. Nevertheless, data about FDI inflows is very volatile and for reducing it, every time period employed will last 5 years coinciding with (Barro and Lee, 2013) dataset, also employed in the present research.

Information about the dependent variable has been obtained on the World Bank's World Development Indicators for the period 1970 to 2014. This paper assumes that missing FDI inflows will be equal to the average inflows received on the closest decade to the empty cell (two periods). This assumption could bias the results, but it is more realistic than substituting empty observations by the average of the whole period. In addition, the obtained bias is assumed to be smaller than the one obtained by leaving empty spaces<sup>2</sup>.

The evolution of FDI in Latin America shown in figure 1 has followed an irregular trend in which investment flows stagnated until the second half of the 80s and then they lived a boom until the explosion of the Great Recession in 2009.

**Figure 1. Average FDI inflows in Latin and Central America (log scale) 1970-2014.**



Source. World Bank World Development Indicators

The chart also shows that countries like Costa Rica have enjoyed bigger FDI inflows than the average and others like Venezuela have received less, suffering huge fluctuations. Finally, countries like Argentina present FDI inflows similar to average ones, presenting lower fluctuations than Venezuela.

**Independent variables**

The purpose of this research is to find the marginal effect of two main variables on FDI inflows to a region and to test whether these effects are different between redistributive societies and conventional ones. For that reason, two independent variables are going to be analyzed. The first one is Human Capital which can be approximated by using education stock and flows and health measures. Information about education is obtained from Barro & Lee dataset included on the World Bank Database.

The variable employed for education stock (EDUSTOCK) will be the average years of total education completed by population older than 25. There was an option to include just average years of secondary education as many authors in the literature like (Root and Ahmed, 1979: 751-767). However, for the purpose of the paper it was interesting to employ a more comprehensive measure including total education received by adult population. In addition, it would be interesting to employ another variable aiming to also account for the recent increment on the relevance of Tertiary Schooling on the studied region. In this case the variable TERFLOW represents the percentage of population age +25 with completed tertiary education (Barro y Lee 2013). As a third approximation of Human Capital, this research will employ a representation of workers' health, which is going to be its Life Expectancy at birth as (Azémar and Desbordes, 2009: 667-709) and (Herzer and Nunnenkamp, 2012). Information is obtained on the World Development Indicators.

The second regressor employed in the analysis will represent each country's Institutional Quality. There are plenty of sources in which these measures can be found, being Polity IV the reference database. It includes information about many different cross-country indicators affecting quality of institutions from 1800 to 2014. From all these measures, this research will use two, following (Fan

et al. 2009: 852-865). As a first measure of Institutional Quality, this paper employs DEMOCR variable which represents a Democracy index that goes from 0 (low democratic quality), to a maximum of 10. The employed database however, has some discontinuity problems, which are solved in the same way as it is done by Polity IV when computing POLITY2 variable. The second one is called XCONST and refers to constraints on executive decisions, that is, on the limitations that individual and collective pressure groups exercise over the power of the Chief Executive of a State. The values for this variable ranks from 1 which means lack of limitations (Unlimited executive authority) to 7 which represent fully democratic societies.

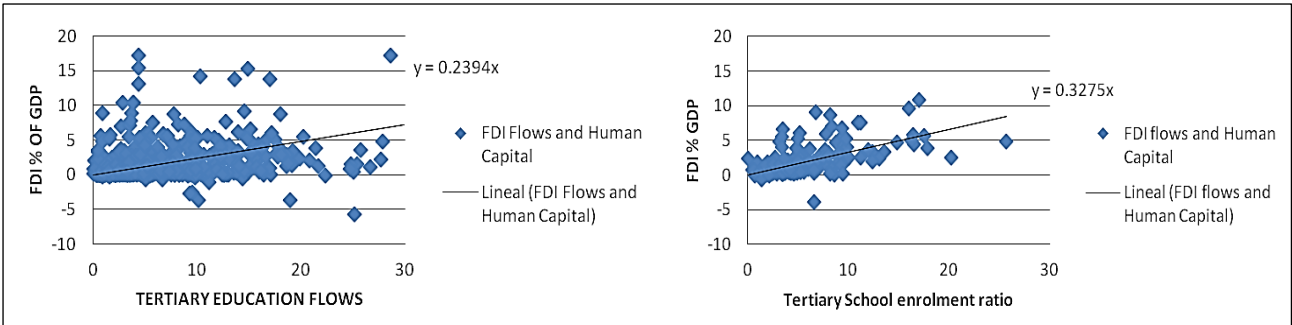
The following dispersion graph has been created by using the same data sources as the ones employed in the research and includes, in the left size, information for 53 representative developing and developed economies around the World. For getting a more homogeneous sample, all the FDI inflows superior to 20% and inferior to -20% of GDP have been eliminated. For the case of the graph in the right side, information has been obtained for

<sup>2</sup> In fact, regressions performed leaving empty spaces show no significance of any of the regressors of interest. Interactions are

neither significant if we don't substitute empty spaces by averages.

the same 17 countries in the same 9 periods employed in the paper's estimation.

**Figure 2. Distribution of FDI inflows (% of GDP) and tertiary school enrolment in the world (left) and in Latin America (right) (1970-2014).**

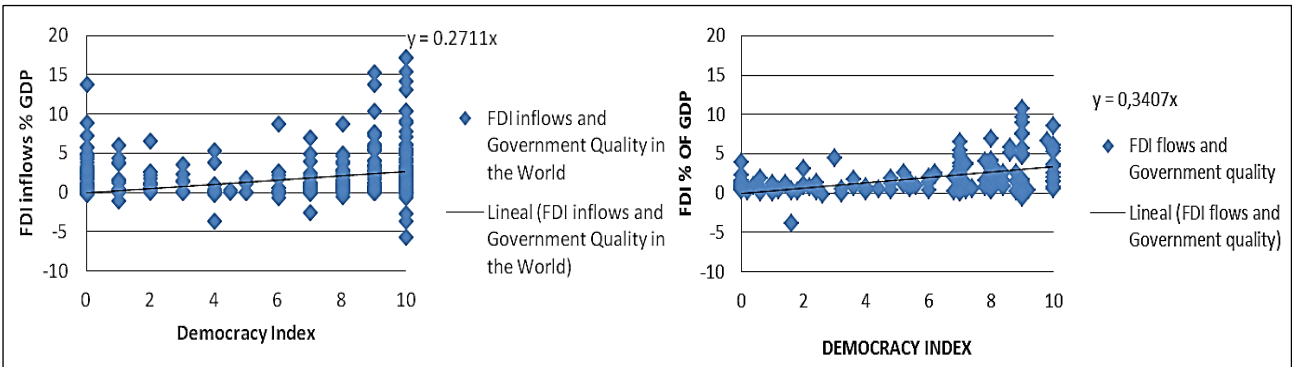


Source. World Bank World Development Indicators.

A positive trend can be appreciated, meaning that between 1970 and 2014, FDI inflows as a percentage of GDP are higher in those countries presenting higher levels of Tertiary School enrolment. In other words, there seems to be a positive relationship between education and FDI inflows in both the World and the region of study. This effect seems bigger in the chosen Latin and Central American countries.

A similar graphical analysis has been performed for DEMOCR. In both graphs there is a positive trend in which generally, countries with higher democracy score are those attracting higher percentages of FDI inflows. The positive influence of Institutional Quality on FDI inflows seems to be stronger in the countries analyzed in the present thesis.

**Figure 3. Distribution of FDI inflows (% of GDP) and government quality in the world (left) and Latin and Central America (right) (1970-2014).**



Source. World Bank World Development Indicators and Polity IV.

All in all, this first approximation to data suggests that there is a positive correlation between the variables of interest and FDI flows both in the World and in the studied region. Now it is time to test this relation statistically and see whether this positive slope is bigger in societies devoting higher percentages of GDP to Social Protection.

**Control variables**

It seems quite illogic to assume that Human Capital and Institutional Quality measures are the only variables affecting FDI inflows, so some additional variables will be

included. Most of these control variables replicate the ones employed by (Noorbakhsh et al., 2001: 1593-1610) and can be found in the World Bank's World Development Indicators Data Bank. Missing observations will be treated in the same ways as it has been done with the dependent variable.

The first variable will represent the Growth Rate of Market Size, (GRGDP) which is crucial for multinationals aiming to get closer to customers. For that purpose, percentage annual Growth rate of GDP at market prices will be employed for every 5-year period. Another important variable that should be included in the research is Macroeconomic Stability which can be approximated by using the inflation rate. The variable employed by this study for representing the inflation rate (DEFLATOR) is each country's annual percentage growth rate of the GDP deflator. Sometimes, FDI flows move in the same direction than trade flows and it is believed that those countries that are more open to trade are more likely to receive foreign investment and to invest abroad. This research will employ a common measure for Trade Openness (TRADEOPEN) which is the percentage of exports plus imports over total GDP. Trade openness could also be a proxy for investment restrictions, because generally, countries that are more open to trade are also those placing lower restrictions to investment inflows. In this case it could be interesting to

determine whether it is correlated with the FDI inflows received by studied countries.

In this case the relation between the two variables is positive but very weak, almost inexistent, for both samples. Maybe this variable is not a good approximation to investment restrictions inside countries.

Historically, many multinationals have decided to translate production facilities to developing countries in order to get rid of its abundant and cheap labor force. In this context, Labor Costs were one of the main determinants of FDI inflows to a country in the past. Anyway, in order to control for this variable, this paper incorporates to the regression, the Growth Rate of Labor force as a proxy for countries' labor costs, because it seems natural to think that the higher labor is available, the cheaper will

it be. For obtaining this variable, which is called LABOUR, this research has taken information on the evolution of the labor force from the Penn World tables and has calculated its annual growth rate for every 5-year period in the analysis. Another historical variable to take into account concerning FDI on some Latin and Central America countries has been the availability of natural resources, specially energy ones. A variable employed on this paper in order to control for this is the Net Energy Imports as a percentage of total energy use (ENERGYM). It is computed as the total energy use by each country minus its energy production.

Finally, an interaction variable will be employed on this thesis' regression in order to differentiate between the effects of Human Capital and Institutions in redistributive societies and in conventional ones. First, we will include a measure reflecting Social Protection expenses as a % of GDP (SOCIALPROTECT), which is expected to be higher in societies considered as redistributive. Information about this variable has been collected from the International Food Policy Research Institute's Statistics of Public Expenditure for Economic Development (SPEED). Data for the period 1970-1979 has been projected backwards by using the percentage rate of change of total public expenditure (found on the World Development Indicators) as a proxy for the percentage rate of change of Social Protection during the same period. Finally, the % of Social Protection over GDP for the period 2010-2014 will be considered to be equal to 2010 data. This variable will then interact with each of the regressors of interest by multiplying them (each interaction will be named Social Protect $X_{it}$ ).

### Econometric model

In order to examine the effects of Human Capital and Institutions on FDI inflows to Latin and Central America across different kinds of societies, this paper has built a linear econometric model which will be explained throughout this present section. FDI inflows as a percentage of GDP will act as a dependent variable and the rest of the variables are going to act as regressors as it is shown by Equation 1. The parameter of interest is  $\beta$  which will bring the effect of Human Capital (in the first version) and Institutions (in the second version) on the dependent variable.  $\gamma$  will be different for each control variable and will bring the effect of each of them on FDI inflows.  $\alpha$  is the fixed term effect (or random effect where it corresponds) and finally  $\varepsilon$  is considered to be the variable part of the error term, which is assumed in this paper to be non-correlated with any of the variables affecting the dependent variable.

$$FDI_{it} = \beta X_{it} + \gamma_1 GRGDP_{it} + \gamma_2 DEFLATOR_{it} + \gamma_3 TRADEOPEN_{it} + \gamma_4 LABOR_{it} + \gamma_5 ENERGYM_{it} + \gamma_6 SOCIALPROTECT_{it} + \gamma_7 SocialProtect * X_{it} + \alpha_i + \varepsilon_{it}$$

(Equation 1)

In order to determine whether the effect of Human Capital and Institutions on FDI is different between redistributive societies and conventional ones, an interaction variable is going to be introduced. In other words, the marginal effect of Human Capital or Institutions on  $FDI_{it}$  will be equal to  $\beta + \gamma_7 * SocialProtect$  and it is expected that it will be higher on societies devoting bigger percentages to Social Protection. This research expects both parameters to be positive. It is important to recall that Panel Data is going to be used, so for getting consistent estimators either Random or Fixed Effects will be employed. Hausman tests will be performed in order to decide which kind of method should be used.

## Results

As it has been mentioned in the previous section, this research is going to focus on the variable  $X_{it}$  which could represent either the effect of Human Capital or Institutional Quality on FDI. For that reason, the analysis of results will be divided into two subsections; the first one analyzing the effects of Human Capital on FDI flows and the other one analyzing the effects of Institutional Quality. Five independent regressions will be performed instead of a single one including all the proxies, so results are just going to show the significance of each of the variables chosen as proxies for Human Capital and Institutional Quality in an independent way<sup>3</sup>.

### Human capital and FDI

The first measure employed inside the regressor of interest  $X_{it}$  will be EDUSTOCK and will try to show the effect of Human Capital on FDI on the chosen countries. The first step will be to perform a Hausman test in order to know whether to include Fixed or Random Effects on our model. The null hypothesis tells us that there is no correlation between the fixed country specific effect and the independent variable and if we don't reject it, the model should incorporate Random Effects rather than Fixed ones. As it is shown in Annex 1, Hausman tests confirm that the null must be rejected, so for the matter of getting consistent estimators, every measure of Human Capital employed requires the use of Fixed Effects in the regression

After regressing the dependent variable on the desired independent and control variables, we could find that the variable employed for Human Capital is significant at 5% confidence level and that the coefficients are positive. This means that with this particular measure, the marginal effect of Human Capital on FDI inflows to the studied Latin and Central America countries is positive. The interaction is just significant at 10%, meaning that this positive marginal effect would be bigger in countries devoting larger proportions of their GDP to Social Protection. Nevertheless, 10% is not a reliable confidence level, so for that reason alternative measures for representing Human Capital will be explored.

<sup>3</sup>The researcher has tried to perform one single regression including all possible proxies and results are not satisfactory, in the sense that none of the Human Capital and Institutional Quality

measures is found significant in the determination of FDI inflows. That's why just independent regressions are shown on the paper, although it would be interesting to investigate why does the use of a single regression lead to such results.

The next variable representing Human Capital will be TERFLOWS. In this case, results displayed also show that the percentage of people older than 25 with completed Tertiary education positively influence FDI and that this effect is higher in societies spending bigger proportions on Social Protection. In this case the interaction is significant at 5% which in this case is a reliable confidence level. Finally, this paper will employ Life Expectancy at Birth as independent variable and we also find positive and significant effect of the regressor and the interaction.

From the previous results an important conclusion can be reached; Human Capital levels have a positive and significant influence on FDI inflows to Latin and Central American countries. There is also statistical evidence for saying that this positive effect of education and health on FDI is bigger in more redistributive Latin societies. One mechanism that could explain this is that those societies devoting bigger proportions of public funds to Social Protection will also devote higher quantities to the development of public education and health systems. That's why in those countries, the levels of Human Capital will be more relevant as FDI determinants than in other ones.

### Institution quality and FDI

In order to check whether Institutional Quality is significant on the determination of FDI allocation in the studied region, two measures will be employed: XCONST and DEMOC as explained in previous sections. The procedure for determining the marginal effect of Institutional Quality on FDI inflows as a percentage of GDP will be similar to the one described before. First of all, Hausman Tests show that Random Effects must be employed in order to get consistent estimators. This could mean that institutional variables are not specific for each country but will depend on some cultural and historical framework that is common to many Latin and Central American countries

As we can see in table 1 (appendix), there is statistical evidence to say that both Institutional Quality measures have a positive influence on FDI inflows and that this influence is bigger on more redistributive societies in Latin and Central America. This could be a signal telling researchers that countries devoting bigger proportions of Social Protection are also the most developed ones, having more efficient institutions. For that reason, Institutional Quality will exercise bigger impact on FDI inflows to these kinds of economies. Finally, results also show that growth rate of GDP and trade openness have a positive and significant marginal effect on the percentage of FDI inflows over GDP received by the analyzed countries.

### Robustness checks

In the following section, additional controls will be added to the model in order to check whether previous results still hold.

### Results controlling for initial income per capita of each country

There is a possibility that the previously found relationships are explained by the fact that those countries devoting bigger proportions to Social Protection are generally

richer than the others and that's why they also receive bigger FDI inflows. In order to control this, we are going to employ the initial GDP per capita in 1970 just to determine which countries were richer in the initial situation. Since this variable is time invariant, Random Effects must be employed for every regression because Fixed Effects would lead to multi collinearity. The model employed now is depicted by equation 7.1:

$$FDI_{it} = \beta X_{it} + \gamma_1 GRGDP_{it} + \gamma_2 DEFLATOR_{it} + \gamma_3 TRADEOPEN_{it} + \gamma_4 LABOR_{it} + \gamma_5 ENERGY_{it} + \gamma_6 SOCIALPROTECT_{it} + \gamma_7 INITIALGDP_{it} + \gamma_8 SocialProtect * X_{it} + \alpha_i + \varepsilon_{it}$$

(Equation 2)

Results in table 2 (appendix) are quite similar as the ones in the previous section: Human Capital and Institutional Quality have a positive and significant impact on FDI inflows and this impact is greater at more redistributive societies. This subsection permits us to reject the idea that this greater marginal effect is explained by the fact that more redistributive societies are those richer and that's why they receive bigger FDI inflows.

### Results using a dynamic model

The models studied in previous sections were static. Nevertheless, there are many authors arguing that previous FDI decisions influence current ones. In other words, they find the presence of an adjustment process in which FDI inflows received by a country in the prior period (5 years ago in this case) will be translated into higher flows received in the current one. The literature provides many examples of authors employing dynamic models in order to infer the determinants of FDI flows between countries because they find evidence for the presence of serial autocorrelation in the residuals of the static model (Carstensen and Toubal, 2004: 3-22).

The first step that will be taken in this section is to test for the presence of an adjustment process in the allocation of FDI inflows to Latin and Central America, by developing a test for serial autocorrelation for each different independent variable. Results depicted in Annex 2 confirm the presence of a dynamic process in the allocation of FDI flows for all the regressors employed, so a dynamic model has to be employed for testing this thesis' hypothesis.

The problem in this case would be that the lag of  $FDI_{it}$ , which is a new control variable, will be correlated with the variable error term. In order to avoid endogeneity in this case there is a need to substitute the endogenous variable  $lag_1$  by an Instrumental Variable. The variable chosen as an instrument will be lag five, which is the independent variable lagged 5 periods.

$$FDI_{it} = \beta X_{it} + \gamma_1 GRGDP_{it} + \gamma_2 DEFLATOR_{it} + \gamma_3 TRADEOPEN_{it} + \gamma_4 LABOR_{it} + \gamma_5 ENERGY_{it} + \gamma_6 FDI_{it-1} + \gamma_7 SOCIALPROTECT_{it} + \gamma_8 INITIALGDP_{it} + \gamma_9 SocialProtectX_{it} + \alpha_i + \varepsilon_{it}$$

(Equation 3)

What it is found in the results of table 3 (appendix) is that Human Capital and Institutional Quality are posi-

tively correlated with FDI inflows in the analysed countries. The previous levels of FDI inflows will also affect in a positive way the current FDI inflows. However, in this case there is no evidence to say that the marginal effect of the variables of interest on FDI flows is different in more redistributive societies than in others spending lower proportions to Social Protection.

As a conclusion, we must say that the positive effect of Human Capital and Institutional Quality on FDI flows allocation is reinforced in this dynamic model because in this case every of these regressors is significant at 1%. However, the fact that this positive marginal effect is bigger in more redistributive societies is not robust to the employment of a dynamic one. For the case of Human Capital, it seems that what multinationals search when deciding whether to allocate their FDI is qualified workers trained to use the companies' technologies and this is only ensured at countries with high Human Capital and which have received huge FDI inflows in the past.

A final finding is that the incorporation of dynamics to the model makes the Growth Rate of GDP insignificant in the determination of FDI inflows, while previous FDI inflows significantly affect current ones. It could suggest that multinationals are not really worried about market size, but about previous investment levels, which are generally larger when GDP growth is bigger.

## Conclusions

This paper has attempted at revising which factors motivate foreign investors to allocate FDI in Latin and Central America. Amongst the many possible internal factors attracting foreign investment to Latin and Central America, this article wanted to focus on Human Capital and Institutional Quality. In order to test empirically the different theories employed by scholars about FDI determinants and the influence of Human Capital and Institutional Quality, this article has analyzed the evolution of FDI inflows as a percentage of GDP in 17 Latin and Central American countries from 1970 to 2014 in periods of 5 years. This study has been performed thanks to the development of a linear static econometric model relating this dependent variable with each of the variables of interest (independently) and many other control variables.

After performing this statistical analysis, many conclusions have been reached: First of all, we have obtained evidence saying that Human Capital levels are correlated with each country fixed specific characteristics. Nevertheless, there is no evidence on this correlation for Institutional Quality, suggesting that the institutional framework of the analyzed countries is not country specific. Secondly, data available have provided evidence of a positive influence of both, Human Capital and Institutional Quality on FDI inflows to the studied countries. This evidence is also robust after creating a dynamic model, which also provides evidence of investors basing current FDI allocation on previous investment decisions.

This study has also proof that these marginal effects are higher at more redistributive societies. Such evidence is maintained after controlling for initial GDP per capita levels, but not when we build a dynamic model. This fact suggests that the initial hypothesis telling that more redistributive societies have better institutions and Human Capital and that's why these variables are more relevant

as FDI determinants at those countries is not robust and what Multinationals really look are the previous FDI levels. Finally, regarding future research on this subject, it could be interesting to try to analyze the possible simultaneity in the relationship between the regressors employed and Foreign Direct Investment.

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Fecha de recepción: 17 de diciembre de 2018  
 Fecha de aceptación (provisional): 7 de noviembre de 2019  
 Fecha de aceptación (definitiva): 29 de noviembre de 2019



## Appendix 1

Table 1. Results of the original model (panel estimation, FE and RE)

VARIABLES	1) Stock of Education	2) Tertiaryflow of Education	3) Health	4) Constraints on Executives	5) Democracy index
EDUCSTOCKit	<b>0.505***</b> (0.162)				
TERFLOWit		<b>0.191***</b> (0.0692)			
HEALTHit			<b>0.170***</b> (0.0400)		
XCONSTit				<b>0.276**</b> (0.112)	
DEMOCRit					<b>0.169***</b> (0.0656)
GRGDPit	0.173*** (0.0586)	0.113** (0.0558)	0.157*** (0.0565)	0.190*** (0.0591)	0.168*** (0.0585)
DEFLATORit	-0.000275 (0.000336)	-0.000531* (0.000311)	-0.000257 (0.000324)	-0.000344 (0.000328)	-0.000316 (0.000327)
TRADEOPENit	0.0265** (0.0132)	0.0418*** (0.0110)	0.0160 (0.0132)	0.0238*** (0.00533)	0.0236*** (0.00548)
LABOURit	5.981 (10.61)	3.041 (9.898)	1.795 (10.06)	-15.24 (10.22)	-13.59 (10.15)
ENERGYMit	0.000996 (0.00232)	0.00321 (0.00221)	0.000989 (0.00224)	0.00194 (0.00151)	0.00212 (0.00153)
SOCIALPROTECTit	-0.425* (0.248)	-0.195 (0.119)	-1.600*** (0.608)	-0.0954 (0.110)	-0.0377 (0.0872)
SocialProtectedustock	<b>0.0644*</b> (0.0386)				
SocialProtectterflow		<b>0.0356**</b> (0.0165)			
SocialProtecthealth			<b>0.0219**</b> (0.00881)		
SocialProtectxconst				<b>0.0459**</b> (0.0214)	
SocialProtectDemocr					<b>0.0278**</b> (0.0130)
Constant	-2.883*** (1.015)	-1.929** (0.784)	-10.69*** (2.455)	-1.355* (0.727)	-0.914 (0.613)
Observations	153	153	153	153	153
Number of country1	17	17	17	17	17
R-squared	0.476	0.530	0.511		

Note: Standard errors in parentheses

\*\*\*  $p < 0.01$ ,

\*\*  $p < 0.05$ ,

\*  $p < 0.1$

Source. Compiled by author.

## Appendix 2

Table 2. Results adding initial GDP in 1970 (panel estimation, FE and RE)

VARIABLES	(1) Stock of Education	2) Flow of Education	3) Health	4) Constrains on Exe- cutives	5) Democracy Index
EDUCSTOCKit	<b>0.403***</b> (0.138)				
TERFLOWit		<b>0.168***</b> (0.0615)			
HEALTHit			<b>0.130***</b> (0.0352)		
XCONSTit				<b>0.271**</b> (0.113)	
DEMOCRit					<b>0.167**</b> (0.0661)
GRGDPit	0.162*** (0.0589)	0.129** (0.0554)	0.158*** (0.0569)	0.188*** (0.0592)	0.167*** (0.0586)
DEFLATORit	-0.000177 (0.000338)	-0.000607** (0.000308)	-6.96e-05 (0.000326)	-0.000331 (0.000329)	-0.000311 (0.000328)
TRADEOPENit	0.0222*** (0.00660)	0.0199*** (0.00605)	0.0122* (0.00708)	0.0247*** (0.00553)	0.0243*** (0.00571)
LABOURit	2.994 (10.81)	-3.081 (9.832)	-2.083 (10.17)	-14.37 (10.30)	-13.14 (10.23)
ENERGYMit	0.000879 (0.00171)	0.00223 (0.00160)	0.000916 (0.00170)	0.00216 (0.00157)	0.00224 (0.00160)
SOCIALPROTECTit	-0.354 (0.218)	-0.177 (0.110)	-1.767*** (0.608)	-0.116 (0.114)	-0.0499 (0.0910)
INITIALGDPit	-0.000889 (0.000816)	0.00101 (0.000754)	-0.00144* (0.000857)	0.000452 (0.000668)	0.000275 (0.000692)
SocialProtectedustock	<b>0.0638*</b> (0.0346)				
SocialProtectterflow		<b>0.0380**</b> (0.0156)			
SocialProtecthealth			<b>0.0259***</b> (0.00877)		
SocialProtectxconst				<b>0.0469**</b> (0.0215)	
SocialProtectDemocr					<b>0.0282**</b> (0.0131)
Constant	-1.712* (0.966)	-1.137 (0.726)	-7.272*** (2.277)	-1.592** (0.810)	-1.067 (0.718)
Observations	153	153	153	153	153
Number of country <sub>1</sub>	17	17	17	17	17

Note: Standard errors in pa-  
renthesis

\*\*\*  $p < 0.01$ ,

\*\*  $p < 0.05$ ,

\*  $p < 0.1$

Source. Compiled by author.

## Appendix 3

Table 3. Results using a dynamic model

VARIABLES	(1) Stock of Education	2) Flow of Education	3) Health	4) Constraints on Executives	5) Democracy Index
<b>lag1</b>	<b>0.443***</b> (0.168)	<b>0.494***</b> (0.169)	<b>0.524***</b> (0.179)	<b>0.513***</b> (0.167)	<b>0.533***</b> (0.173)
<b>EDUCSTOCKit</b>	<b>0.412***</b> (0.157)				
<b>TERFLOWit</b>		<b>0.188***</b> (0.0696)			
<b>HEALTHit</b>			<b>0.125***</b> (0.0435)		
<b>XCONSTit</b>				<b>0.358***</b> (0.124)	
<b>DEMOCRit</b>					<b>0.190***</b> (0.0720)
GRGDPit	0.0912 (0.0677)	0.0317 (0.0651)	0.0577 (0.0701)	0.0840 (0.0675)	0.0596 (0.0687)
DEFLATORit	-7.59e-05 (0.000334)	-0.000258 (0.000327)	-4.27e-05 (0.000343)	-0.000213 (0.000338)	-0.000185 (0.000343)
TRADEOPENit	0.0246** (0.0115)	0.0379*** (0.0112)	0.0202 (0.0132)	0.0381*** (0.0103)	0.0402*** (0.0112)
LABOURit	14.06 (10.94)	14.11 (10.77)	12.22 (11.14)	0.942 (11.27)	2.872 (11.46)
ENERGYMit	0.00265 (0.00226)	0.00486** (0.00229)	0.00316 (0.00239)	0.00375 (0.00228)	0.00401* (0.00238)
SOCIALPROTECTit	-0.411 (0.250)	-0.144 (0.123)	-1.294** (0.643)	-0.0535 (0.127)	-0.0561 (0.104)
INITIALGDPit	-0.000597 (0.00267)	0.00200 (0.0171)	-0.000412 (0.00443)	0.00119 (0.00217)	0.00112 (0.00360)
<b>SocialProtectedustock</b>	<b>0.0604</b> (0.0402)				
<b>SocialProtectterflow</b>		<b>0.0194</b> (0.0177)			
<b>SocialProtecthealth</b>			<b>0.0174*</b> (0.00935)		
<b>SocialProtectxconst</b>				<b>0.00875</b> (0.0256)	
<b>SocialProtectDemocr</b>					<b>0.00867</b> (0.0151)
Constant	-2.720 (1.970)	-3.586 (11.01)	-8.566** (3.725)	-3.817** (1.670)	-3.264 (2.467)
Observations	148	148	148	148	148
Number of country1	17	17	17	17	17

Note: Standard errors in parenthesis

\*\*\*  $p < 0.01$ ,

\*\*  $p < 0.05$ ,

\*  $p < 0.1$

Source. Compiled by author.

