

New Trends in Latin America and their implications for Foreign Direct Investment

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This analysis focuses on studying whether four significant trends in Latin America may be important determinants of FDI. The trends explored are: increased financial liberalization, improvements in the quality of institutions, shifts towards leftist governments, and increased dependence on exports of natural resources. To test whether these trends can be considered as significant incentives or deterrents to FDI in the Latin American region, this empirical analysis uses a baseline model that includes a set of control variables identified in previous empirical analyses as important determinants of FDI in a panel framework. This study also addresses for endogeneity and incorporates spatial econometric techniques to account for the possibility that FDI inflows in one country may be dependent on the FDI inflows of nearby countries. The main robust findings are that financial liberalization, mineral exports and leftist politics have a significant effect on net FDI. While financial liberalization and mineral exports can be considered as incentives to FDI, the movement towards the left is a deterrent.

Very Preliminary Draft – please do not cite without permission

10/2/2009

JEL Categories: F21, O54

Key Words: Foreign Direct Investment, Latin America, Spatial Econometrics

Acknowledgement: I thank Josephine Huang and Jeffrey Brooks for excellent research assistance.

1. Introduction

Foreign direct investment (FDI) has contributed significantly to the development of Latin American countries since the early 1900s and has played a key role in a region in which capital is scarce. In fact, since the 1980s we have seen an increasing trend on FDI inflows into the Latin American region in terms of FDI per capita and FDI as a share of GDP (Figures 1 and 2). The average FDI inflow per capita between 1980 and 1984 was 11 US dollars, while the average between 2005 and 2007 was 185 US dollars. FDI as a share of GDP has also shown a significant increasing trend; the average FDI share of GDP in the period between 1980 and 1984 was 0.78 percent and in the period of 2005-2007 it was 3.92 percent.¹

Looking at data on FDI inflows per capita and as a share of GDP in Latin America supports the argument that the region has been successful in attracting FDI. However, when looking at FDI inflows into the region as a share of total FDI inflows in the world, this argument is rejected. Figure 3 shows that FDI inflows as a world share has shown a significant decrease in the 2000s. During the period between 1980 and 1985, the region experienced average FDI inflows of 47 percent of total FDI inflows. By the period between 2005 and 2007, FDI inflows as a world share decreased to 28 percent. Thus, this indicator might support the argument that the Latin American region has not been able to maintain its competitiveness as FDI host in recent years.

It is important to study what factors deter and encourage the accumulation of FDI in Latin America, so that the region continues to attract FDI. Thus, this analysis focuses on exploring whether four significant trends in the region may be important determinants of capital

¹ FDI inflows calculated from a sample that includes 21 Latin American and Caribbean countries for which data was available consistently. Countries included for these estimations are: Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Haiti, Honduras, Jamaica, Mexico, Nicaragua, Panama, Paraguay, Peru, Trinidad and Tobago, Uruguay, and Venezuela.

inflows. First, the region has experienced significant financial liberalization associated with greater financial development. Second, the Latin American region has gone through a period of democratization and improvement of institutions. Third, in several Latin American countries presidents from the left have been elected. Fourth, the region has also experienced an increase in the exports of natural resources. This paper expands on previous analysis on the determinants of FDI in Latin America by looking at these four different trends. While some research on the determinant of FDI in Latin America has looked at the impact of financial liberalization and institutions, few analyses have looked at the effect of resource dependence and the political affiliation of the president for this region. This analysis also differs from other analysis of the Latin American region by taking into consideration the spatial correlation of FDI.

The findings from this analysis suggest that while financial liberalization and the exports of natural resources, specially the minerals category, are associated with greater FDI inflows in the Latin America region, leftist government tend to have lower levels of FDI. These findings are robust to addressing for endogeneity and for the fact that FDI inflows in one country may be dependent on the FDI inflows of nearby countries (spatial correlation).

This paper is divided in five sections. Section 2 presents a literature review on the importance of FDI in the Latin American region and the new regional trends explored in this analysis as possible determinants of FDI; Section 3 provides the methodology and data; Section 4 discusses the results, and Section 5 concludes.

2. Literature Review

a. Importance of FDI Inflows in the Latin American Region

There are several theoretical reasons to explain why FDI might be a source of economic growth in the Latin America region. In the neoclassical framework, FDI has been positively associated with the sources of economic growth specified in the Solow model. It is argued that FDI has a positive effect on growth though its impact on physical capital, human capital, and productivity. The positive effect of FDI on economic growth is mainly observed in less developed countries (LDCs) due to the fact that these countries have significant capital constraints in comparison to developed countries (DCs).

It is argued that FDI contributes to growth significantly through its effect on productivity. As stated by Borensztein et al. (1998), “FDI is in fact an important vehicle for the transfer of technology, contributing to growth in larger measure than domestic investment” (p. 117). Because LDCs are “technologically backward”, having access to the new technology developed by multinational corporations (MNCs) through FDI certainly makes a difference on their productivity levels. FDI has significant “knowledge spillover” that tends to be experienced by domestic firms as well (Wang 1990).² Another channel through which FDI is associated with greater productivity, is that through FDI, MNCs are able to break domestic monopolies, allowing resources to be allocated more efficiently (Blomström and Kokko, 2003). Through its effect on technology, FDI is a good complement to human capital and domestic investment.

The impact of FDI on growth through its effect on physical capital is also significant. FDI increases the marginal product of private investment since it promotes the incorporation of new technology and superior managerial know how, and reduces transportation, distribution and energy costs (Ramirez, 2006). Thus, inward FDI complements private investment spending, and this leads to higher physical capital accumulation. FDI has been associated with the

² See Fan (2002) for a survey of the evidence on the technological spillovers of FDI.

development of forward and backward linkages in many cases, which consequently produces greater domestic investment (Blonigen and Wang, 2005).

FDI has also been associated with greater human capital. FDI introduces new technologies that require more skilled labor, therefore, it pushes for greater human capital accumulation. Through the impact of MNCs on the demand for skilled labor, it is expected that the stock of human capital is increased in LDCs. MNCs also help to increase the stock in human capital through its direct involvement on the education sector in LDCs. In many cases, MNCs provide scholarships and support universities (Blomström and Kokko, 2003). Thus, the demand and support effect of MNCs through FDI can be associated with significant improvements on the productivity of the labor force.

Several empirical analyses have found evidence that supports the positive effect of FDI on growth. Borensztein et al. (1998) and Blonigen and Wang (2005) have shown that FDI has a positive effect on economic growth in LDCs. Furthermore, Fernandez-Arias and Hausmann (2001) have shown that FDI can be considered as a better source of external financing than other forms of external liability. They argue that FDI makes LDCs less prone to financial crisis. More specifically to Latin America, Vadlamannati and Tamazian (2009) have found a positive, but marginal, effect of FDI on growth in the period between 1980 and 2006. Ramirez (2007) has found that FDI had a positive effect on private investment in Latin America between 1980 and 2001. Other empirical evidence supporting the positive effect of FDI is related to the standards of living. Looking at 5 Latin American countries (Argentina, Brazil, Chile, Colombia, and Mexico), Chakraborty and Rawlings (2004) find that FDI has a positive effect on life expectancy, education index, and the human development index.

While there is significant theoretical and empirical evidence supporting the argument that FDI is good for growth, several critiques have surged on this view. For example, it is argued that the positive spillover of FDI in the economy is dependent on the capacity of the country to absorb FDI, where capacity is related to domestic investment, human capital, and domestic policies. For example, in order for FDI to have a positive effect on growth, a certain threshold of human capital must be met (Blomström and Kokko, 2003). Furthermore, Agosin and Mayer (2001) and Agosin and Machado (2005) have found that FDI tends to crowd out domestic investment in Latin America. Porzecanski and Gallagher (2007) present a review on the negative view of FDI in Latin America, arguing that FDI has not been beneficial for Latin American countries.

Although there is some disagreement on the impact of FDI inflows in LDCs, it is important to consider the current environment. In the globalized world in which we live today, it is unthinkable to embrace the negative view on FDI and restrict FDI inflows. Thus, it is necessary that a friendly environment to FDI is ensured in Latin America, so that the region stays competitive. Competitiveness as FDI host is of extreme importance today because it is expected that international financing will be scarce as a result of the 2008 financial crisis.³

b. New Regional Trends and their Potential Implications for FDI inflows

There have been four trends in Latin America that might have potential implications for FDI. These trends are related to increased financial liberalization, improvements in the quality of institutions, shifts towards leftist governments, and increased dependence on exports of natural resources.

³ See Gallagher (2008) for a brief overview on the impact of financial crisis on FDI in Latin America. According to him, it is expected that FDI inflows would be diminished in the region in the coming years.

Looking at Chinn's and Ito (2007) new measure of financial liberalization, it is obvious that the Latin American region has experienced a drastic change. This measure of financial openness takes into consideration indicators related to several restrictions on cross-border financial transactions, where the higher the value, the more open the country is to cross border capital transactions. The average of the financial liberalization indicator in Latin America in the 1980s was -0.64, while in the 1990s it was 0.17 and in the 2000s it was 1.18.⁴

The channel through which financial liberalization might lead to greater FDI is financial development. There is a strong correlation between financial openness and financial development in emerging markets (Huang, 2006), and financial development is an important determinant of FDI (Hermes and Lensink, 2003). While the impact of financial liberalization on growth has been studied and it is usually associated with a positive effect (See Garita (2009) for a recent literature review), analyses on the impact of financial liberalization on FDI are scarce. Rajan and Hattari (2009) find a positive effect of financial openness on FDI inflows for emerging Asian countries. For the Latin American region, Asiedu and Lien (2004) find that capital controls had a negative effect on FDI. Although there have been significant improvements in terms of financial liberalization in Latin America, the majority of the countries in are either in the 25th or 50th percentile (Chinn and Ito, 2007). Thus, if financial liberalization proves to have a positive effect on FDI inflows in Latin America when the data is expanded to include 2000-2005, then there is room for policy action in order to ensure greater capital inflows to the region.

Latin American countries have gone through a significant process of democratization in the last three decades. While in the 1970s and early 1980s there were some countries under military dictatorships, democracy has consolidated in the last decade. Data from the Polity IV

⁴ This average is estimated by looking at the country sample used in the empirical analysis of this paper.

database (Marshall and Jaggers, 2008) shows that the average democracy score in the region has reached 8 points in the decade of 2000s (-10 to 10 scale, the higher the stronger the democratic system is). This is a significant improvement since the highest average value of this indicator in the 1970s was 2.86. Another way to see the importance of the democratization period in the region is by looking at the fact that the minimum region average value of the democracy score was 0 up to 1988, but by 2005 the minimum value was 6. The Latin American region has also experienced an improvement on other type of institutions related to governance such as bureaucratic quality, control of corruption, and law and order. Data from the International Country Risk Guide (Political Risk Services, 2009) shows that the average of these three indicators increased in the 1990s from the 1980s level (an increase between 12 and 38 percent). There has been some variability on these institutional indicators, it is important to study how institutional quality affects FDI inflows in the region.

Improvements on democratic institutions and governance are associated with greater FDI since MNCs are more likely to do long run investment that is “bolted in” when there is an institutional set up that ensures property rights and stability. Furthermore, once MNCs have operations in LDCs, they are likely to push for institutional reforms in the host country to ensure the security of their investment. Empirical evidence has shown that democratic governments with good governance are more likely to experience higher FDI inflows. Jakobsen and de Soysa (2006) and Schneider and Frey (1985) show that democracy increases FDI inflows. More recent research has also shown support for the argument that institutions are important determinants of FDI. Hakkala et al. (2008) and Javorcik and Wei (2009), show that corruption has a negative effect on FDI, and Louie and Rousslang (2008) show that poor governance also has a negative effect on FDI inflows. Nonetheless, there is disagreement on the

role of institutions as FDI determinant. Wijeweera and Dollery (2009) find that corruption has no effect on FDI, and Yand (2007) argues that democracy does not affect FDI.⁵ Thus, it is necessary to look at the Latin American region and determine what role democracy and governance play in relation to FDI inflows.

The degree in which the government places itself in the left-right spectrum can be a potential determinant of FDI in Latin America. In the 1990s and 2000s, we have seen a several countries moving towards the left. In fact, 15 out of 21 Latin American governments were identified in the left or center-left in February of 2009 (Blanco, 2009). The left in Latin America tends to focus on equality and social improvements, which might lead to macroeconomic unorthodoxy (Castaneda, 2006). As stated by Reid (2007), some of the leftist governments in Latin America can be identified as nationalist and anti-capitalist. Thus, there might be a negative relationship between FDI and government identification with leftist ideology.

While it is expected that leftist government might be less friendly to FDI, and observe lower levels of capital inflow, Jakobsen and de Soysa (2006) find the opposite. Their finding goes against the common belief that leftist governments are more likely to affect property rights negatively due to their political rhetoric, and consequently have a negative effect on FDI. Nonetheless, the left-labor alliance might explain this contradictory finding. According to Jakobsen and de Soysa (2006), leftist governments have a strong alliance with labor and they will be less likely to implement radical reforms that affect FDI. They state that under leftist governments, MNCs feel that their investment will be more secure since less policy change is expected. It is important to note that the characteristics of leftist movements vary across regions,

⁵ Li and Resnick (2003) go beyond and argue that FDI might be deterred by democracy since democratic systems take away the possibility to come up with a deal that puts MNCs in advantage.

so it will be interesting to test whether having a leftist or rightist government in Latin America is associated with greater or less FDI inflows.

The Latin American region has always been considered a natural resource abundant region, and it is relevant to study whether the focus on the exports of natural resources that came with the neoliberal reforms of the 1980s has promoted or deterred inward FDI. Data from the UNCOMTRADE (2009) shows that the average total value of resource intensive commodities increased by 46 percent in the 1990s (from its value in the 1980s) and by 140 percent in the 2000s (from its value in the 1990s). For African countries, the effect of natural resources abundance has been vastly explored, where analyses conclude that natural resources lead to greater capital inflows (Asiedu, 2006; Jenkins and Thomas, 2002; Morrisset, 2000; Onyeiwu and Shrestha, 2004). For Latin America, the study of the impact of natural resources on FDI is almost inexistent.

In fact, the sector of the economy that focuses on the production of commodities (metal mining, extractive industries and natural-resource-based manufacturing activities) experienced the largest increases on FDI in 2007 (UNCTAD, 2008). Thus, studying whether there is a consistent empirical relation between natural resource dependence and FDI is important for policymakers in the Latin American region. Furthermore, it will be interesting to whether different types of commodities (mineral, agricultural or raw materials) have differential impacts on FDI in the region.

The analysis in this paper expands on previous analyses on the determinants of FDI in Latin America in several ways.⁶ This analysis includes a large set of Latin American countries

⁶ There are many analyses of the determinants of FDI inflows in Latin America. For example, Tuman and Emmert (2004) look at what factors explain FDI from the US in 15 Latin American countries between 1976 and 1996. Maniam (2007) also looks at the determinants of American FDI in Latin America for 6 Latin American countries between 1975 and 2003. Other regional analysis on the determinants of FDI in Latin America that consider total

during a large period of time (20 years) that relates to current changes in the region. It also takes into consideration total FDI instead of focusing on only US or European FDI. Furthermore, it expands on previous work by taking into consideration the spatial correlation of FDI inflows, where FDI inflows in one country depend on the FDI inflows in neighboring countries. This analysis is also different since it focuses on four significant trends observed in the region in the last decades, and the impact of some of these trends has not been previously explored.⁷

3. Empirical Methodology and Data

To investigate the impact of these new trends on FDI inflows in Latin America, I estimate a model of FDI inflows using a sample of 16 Latin American countries selected on the basis of data availability. The period of analysis is from 1986 to 2005 and the countries included in the sample are Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Ecuador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Uruguay, and Venezuela.

The baseline specification is the following:

$$(1) \quad \text{Ln}(\text{FDI}_{it}) = X_{it}\beta + \alpha_1 \text{Financial Liberalization}_{i,t-1} + \alpha_2 \text{Governance}_{i,t-1} + \alpha_3 \text{Democracy}_{i,t-1} \\ + \alpha_4 \text{Ln}(\text{Natural Resources}_{i,t-1}) + \alpha_5 \text{Executive Party Ideology}_{i,t-1} + T_{it}\theta + \varepsilon_{it}$$

The dependent variable is the average of the natural logarithm of net FDI inflows in US dollars (USD, millions).⁸ FDI inflows were obtained from the United Nations Conference on

FDI inflows are the following: Al Nasser and Garza (2009, 15 countries, 1978-2003), Bengoa-Calvo and Sanchez-Robles (2002, 18 countries, 1970-1999), Biglaiser and Brown (2004, 17 countries, 1980-1995), Campos and Kinoshita (2008, 19 countries, 1989-2004), Trevino et al. (2002, 7 countries, 1988-1999). None of these analyses takes into consideration the spatial correlation of FDI and looks at the impact of natural resources and political ideology on FDI.

⁷ The data analysis in this section, which looks at regional averages, includes the countries used in this study and uses 10 year averages (observations from 1980s to 2007).

⁸ Natural log of net FDI inflows were constructed with available observations. Since taking logarithm of a non-positive number is not possible, I truncate the non-positive observations to a number very close to zero (1E-11), and then take the natural log of that value. Blonigen and Wang (2004) take the same approach in their analysis.

Trade and Development (UNCTAD) website. The control variables included in equation 1, represented in X_{it} , are those commonly included in FDI models: the initial level of real GDP per capital, total population, trade openness and country area.⁹ All these variables, but country area, are time variant and are included in the model as natural logs. The estimation also includes time dummies to account for variation across time.

The independent variables I use to account for the new trends in the Latin America region are financial liberalization, governance, democracy and natural resources. To measure for financial liberalization, I use Chinn and Ito (2008) measure of financial openness. This indicator measures the intensity of capital controls and is correlated to other restrictions on international transactions. Institutions related to governance are measured in the model by including the principal component of three indicators: bureaucratic quality, control of corruption, and law and order.¹⁰ These governance indicators were obtained from the International Country Risk Guide Dataset (Political Risk Services, 2009). Democracy is measured in the model using the Polity2 indicator provided by Marshall and Jaggers (2008). Polity2 is a composite indicator that subtracts the autocracy score from the democracy score, going from values -10 (strongly autocratic) to 10 (strongly democratic).

Natural resource dependence is measured as the natural log of the exports of natural resource intensive commodities. This indicator of natural resource dependence is constructed along the lines of Blanco and Grier (2009) and data is obtained from the UNCOMTRADE. Since the aggregate indicator of natural resource dependence is insignificant in all cases, I

⁹ The control variables included are those identified in previous empirical analyses as important determinants of FDI. See Blonigen (2005) for a comprehensive review of literature related to the determinants of FDI. I use the initial level of GDP instead of GDP growth as control variable because FDI and GDP may be simultaneously determined. See Chowdhury and Mavrotas (2006), Hansen and Rand (2006) and Sylwester (2005) for discussion on the two way causality between FDI and economic growth.

¹⁰ The creation of this governance index is similar to the approach taken in Chinn's and Ito (2006) analysis

disaggregate this indicator and include 3 natural resource variables that account for different types of commodities: minerals, agricultural commodities and raw materials. The commodities included in each category are those included by Blanco and Grier (2009).¹¹ Because the production of different categories of commodities requires different intensities of labor and capital, it is expected that these categories will have differential impacts on FDI.

Executive Party ideology is constructed by using Beck's et al (2001) database. This database provides the political ideology of the party to which the executive is associated with. In this analysis, for the executive party ideology indicator, a value of 1 is given if there is a rightist government and a value of -1 if there is a leftist government. For center and other type of governments that cannot to be classified as right or left, the executive party ideology index takes a value of zero.¹²

The variables of interest, which control for new trends in the region, are entered into equation 1 as lags with the purpose to address for endogeneity. The model is first estimated using the ordinary least squares (OLS) estimator with robust standard errors. A description of the variables and their sources are presented in Table 1. Summary statistics are given in Table 2.¹³

For the purpose of robustness, two other estimators are used. I use the General Method of Moments (GMM) estimator to address for endogeneity and the Spatial Error estimator to address for spatial dependence. When using the GMM estimator, I instrument for the variables of interest by using the first and second lags of those variables. This approach is taken since it

¹¹ See Blanco and Grier (2009) for an explanation of why it is important to disaggregate the indicator of natural resource dependence in various categories.

¹² I use Beck's et al. (2001) database as baseline (which is updated up to 2006), but I fill in for missing observations or observations classified as unknown by following his approach and looking to other sources for party identification. After revising Beck's et al (2001) database, I still have observations for which the ideology of executive cannot be identified.

¹³ In few cases, missing observations for some variables (net FDI and exchange rate) were filled in with linear interpolation.

could be argued that the variables of interest might be determined by FDI. Endogeneity of institution for example can be due to the fact that a country that receives large FDI inflows is likely to have strong presence of MNCs. Significant presence of MNCs might lead to better institutions since they are likely to push for institutional reforms. In the case of commodity exports, MNCs presence might also indicate that there is significant capital investment in the commodity sector, which allows greater exports on that sector. Using the GMM estimator in a set up that allows for more instruments than what is needed to identify equation (1), allows testing for the validity of instruments.

The spatial error model addresses for the fact that FDI inflows in one country might be dependent on FDI inflows in another country.¹⁴ When there is spatial correlation across countries, then the OLS estimation is biased and provides biased standard errors.¹⁵ The error term in the spatial error model is specified as follows:

$$(2) \quad \varepsilon_{i,t} = \lambda W\varepsilon + u_{i,t}$$

where λ represents the coefficient for the spatially correlated error and W is an $N \times N$ symmetric matrix that represent proximity between country i and country j . I follow Blonigen et al. (2007) to construct the W matrix in a panel set up. W is made by $T \times T$ matrices of dimension $I \times I$ (T represents the number of periods and I the number of countries).¹⁶ The diagonal matrices are symmetric matrices of the ratio of the shortest bi-lateral distance in the sample and the bi-lateral distance from country j to country k , where the weight for the countries with the shortest

¹⁴ Blonigen et al. (2007) provide evidence of spatial interdependence on FDI. In addition, Orr (2008) finds evidence of spatial correlation of FDI for Latin American countries.

¹⁵ See Anselin (1988, 1999) and LeSage (1999) for good discussion on spatial error models. More current discussion on developments in spatial econometrics is provided by Anselin et al. (2004).

¹⁶ W is a diagonal matrix, where there are 20 matrices in the main diagonal of dimension 16×16 . Anselin et al. (2008) provide a good overview on the estimation of a spatial error model in a panel set up. Elhorst (2003) discusses fixed effects spatial error models.

distance is equal to 1.¹⁷ The other matrices that compose W are matrices of zeros of dimensions $I \times I$. The spatial error model is estimated with the maximum likelihood estimator (MLE) and W is normalized so that each row sums to unity. The Wald test determines whether errors are spatially correlated. The variables of interest that represent the new trends in Latin America are entered in this model as the lags in order to address for the issue of endogeneity.¹⁸

4. Empirical Results

a. Estimation with Ordinary Least Squares

Table 3 presents the estimates obtained using the OLS estimator.¹⁹ Column 1 shows the results obtained when all the variables that account for the new trends in Latin America are included in the model. Estimates in Column 1 show that for most of the control variables (initial GDP per capita, exchange rate, trade openness, and area) the positive sign obtained is the one expected. For population, the sign is the opposite as what is expected. All the control variables are significant at the 1 and 5 percent level. In this estimation, financial liberalization and exports of mineral and agricultural goods have a significant positive effect at the 1 percent level. The party ideology of the executive also has a positive significant effect at the 5 percent level. An increase on the index of financial liberalization of one standard deviation (0.3) must produce an increase in net FDI inflows of 3.5 percent. An increase on the exports of minerals of 1 percent leads to an increase on net FDI of 0.12 percent. Agricultural exports has the largest impact, where a 1 percent increase of the exports of this commodity leads to an increase on net FDI of

¹⁷ To construct the weighting matrix, W , I use the distance from the capital of one country to another country, using Mayer and Zignago (2006) bilateral distance. The components of the diagonal matrices are estimated as the shortest distance in the sample divided by the distance from country i to country j . In these matrices, the smaller the distance between country i and country j is, the largest the value of the matrix component (implying greater proximity).

¹⁸ In all the estimations, OLS, GMM, and spatial error estimations, robust standard errors are estimated using the white diagonal (Huber/White/sandwich) estimator of variance, which is the method commonly used in Stata.

¹⁹ Time dummy variables are not included for purpose of space.

0.46 percent. Governments affiliated with the left are expected to get less FDI inflows. If the government of a country goes from being ideologically on the center or non-identified to the left, net FDI must decrease by 16 percent. Thus, the impact of financial liberalization, commodity exports, and party ideology have an effect on net FDI of significant magnitude.

The variables related to institutional quality (democracy and the governance index) are not significant, which is unexpected. The reason why this might be the case is because there is a strong significant correlation between the institutional quality variables and the export commodity variables. In specific, the correlation between the governance index and mineral and agricultural exports is 0.37 and 0.49 respectively. In Table 3, estimates shown in column 2 are those obtained when the resource intensive commodity variables are excluded. In this estimation, the governance index has a significant positive effect at the 5 percent level, but democracy shows no significant effect. Financial liberalization maintains its significance at the 1 percent level, while the government ideology becomes significant at the 10 percent. Estimates shown in column 3 are those obtained when I exclude the institutional quality variables. Mineral and agricultural commodities are significant at the 1 percent and the size of their coefficients has increased. In this estimation, financial liberalization and government ideology are significant at the 5 and 10 percent level.

b. Estimation with General Method of Moments

Since it could be argued that the new trends in Latin America tested in this analysis can be driven by FDI, the GMM estimator is used for the purpose of robustness. Table 4 shows the estimates obtained when I instrument for the indicators of interest with their first and second lags. Column 1 includes all the variables that account for the four new trends, column 2

excludes the resource intensive commodity variables, and column 3 excludes the institutional quality variables. Almost all the control variables are significant at the 1 percent level and the over-identification test (J-statistic) shows that the instruments used are valid in all cases.

Financial liberalization, mineral and agricultural exports, and executive ideology have a robust positive significant effect at the 1 and 5 percent level in all three estimations. In addition, the coefficients are of greater magnitude than those obtained through the OLS estimator almost in all cases.

c. Estimation with Spatial Correlation

Estimates from the spatial error model are shown in Table 5. Results in Table 5 seem robust, where column 1 includes all variables of interest, column 2 excludes export commodities, and column 3 excludes democracy and the governance index. There is evidence of spatial correlation in the error term through the Wald statistic. The hypothesis that the error term is not spatially correlated is rejected at the 1 percent level in all cases. The control variables, such as initial GDP per capita, population, and exchange rate, are significant at the 1 percent level in these three estimations. Trade openness and the country area are no longer significant. Financial liberalization has a significant positive effect at the 5 and 1 percent level. In the case of commodities, only mineral exports have a positive significant effect. The ideology of the executive has a positive significant effect at the 1 percent level. The magnitude of coefficients is stable across the different estimations shown in Table 5. Interestingly, the institutional variables are not significant in these estimations.

Estimates on column 1, Table 5, show that financial liberalization, mineral exports, and executive ideology have an effect on net FDI of significant magnitude. An increase on the index

of financial liberalization of one standard deviation (0.3) increases net FDI inflows by 3.3 percent. An increase on the exports of minerals of 1 percent leads to an increase on net FDI of 0.19 percent. If the government of a country goes from being ideologically on the center or non-identified to the left, net FDI must decrease by 26 percent. From the spatial error estimation, it could be concluded that financial liberalization, mineral exports, and executive ideology have a robust significant effect on FDI.

5. Conclusion

Since it is expected that FDI inflows to LDCs would be reduced due to the financial crisis of 2008, it is important to study what factors can be considered as determinants of FDI in the Latin American region in the last decades. Understanding this will allow policymakers to come up with a plan to ensure the competitiveness of the region as FDI host in the future.

From this empirical analysis, continuing the process of financial liberalization in the region should be a priority in order to attract FDI. This finding goes along the lines of Asiedu's and Lien (2004) and Campos' and Kinoshita (2008) findings for the Latin American region. If FDI plays a key on the development strategy on Latin American countries, then it is necessary to continue the process of financial liberalization. Furthermore, this analysis shows that exports of resource intensive commodities, especially minerals, affect FDI significantly. This finding provides evidence that promoting the development of the minerals, petroleum, gas, and other fuels industries might be beneficial in terms of attract FDI inflows to the Latin American region.

This analysis here also provides evidence that political ideology significantly affects FDI. While the previous findings related to the impact of financial liberalization and resource dependence on FDI might provide some policy implications, it is not clear how the finding on

government ideology can do that since presidents are determined through the democratic processes. The significance of the impact of political ideology on FDI might be used to understand what countries in the region will be able to attract more FDI and look more competitive to MNCs. Another implication of this finding might be that countries with leftist governments will be more sensitive to the global reduction on capital flows.

For further research, it will interesting to explore how these determinants affect FDI by sectors. For example, it might be worth to evaluate in which sector or industry does financial liberalization had a greater impact on FDI. It will be also interesting to evaluate whether there could be some interaction between financial liberalization and commodity exports with institutions. Perhaps those countries that are natural resource abundant and have better institutions might be able to attract more FDI.

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Figure 1. FDI inflow per capita, US dollars

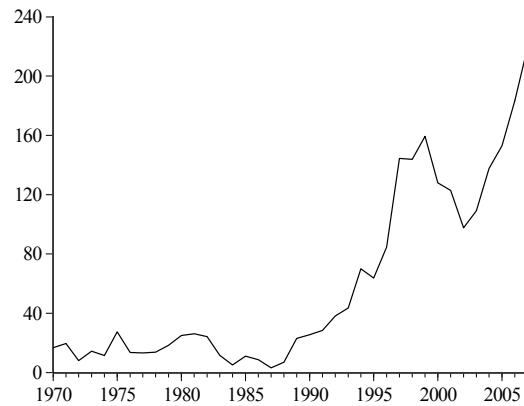


Figure 2. FDI inflow as a share of GDP, percentage

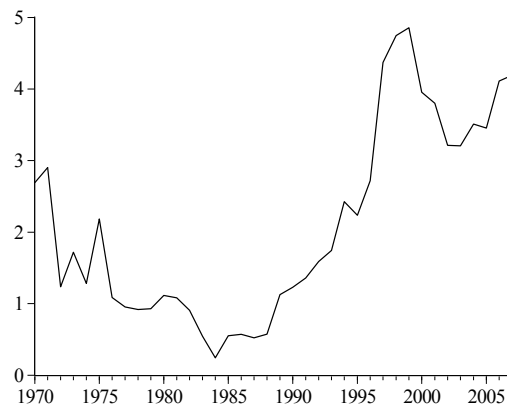


Figure 3. FDI inflow as a share total FDI inflow in the world, percentage

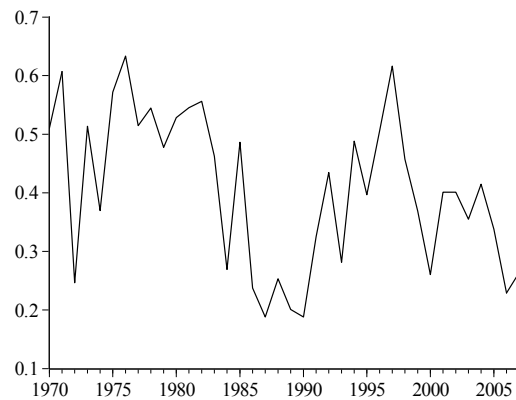


Table 1. Variables Description

	Description and Source
Ln(Net FDI inflows)	Natural log of net FDI inflows (FDI inflows minus FDI outflows) in US dollars. Variable is truncated for non-positive values in order to take natural log (I assign a value of 1E-11 for non-positive values). Series filled in with linear interpolation for missing observations. Source: UNCTAD (2009).
Ln(GDP initial)	Natural log of the initial level of GDP per capita (in constant US dollars) in a 5 year period. Ln(GDP initial) is time variant, where value is the same for a five year period 1985-89, 1990-94, etc... Source: World Bank (2009)
Ln(Population)	Natural log of total population. Source: World Bank (2009).
Ln(Exchange rate)	Natural log of official exchange rate (local currency units per US dollar) Source: World Bank (2009).
Ln(Openness)	Natural log of trade openness (exports plus imports) as share of GDP Source: World Bank (2009).
Ln(Area)	Natural log of the area of a country, time invariant. Source: Mayer and Zignago (2006).
Financial liberalization	Indicator of capital account openness, measures the intensity on capital controls. Source: Chinn and Ito (2008).
Governance	Principal component of three institutional indicators: bureaucratic quality, control of corruption, and law and order. Source: Political Risk Services (2009).
Democracy	Polity2 score (addition of democracy and autocracy score). Source: Marshall and Jaggers (2008).
Exec. Party Ideology	Identifies the political ideology of the party to which the president is associated with. Equal to -1 if president is associated with the left, equal to 1 if associated with right, and equal to zero if it is a centrist or unknown. Source: Beck et al. (2001).
Ln(Mineral Exports)	Natural log of the total exports of minerals (SITC codes 32, 33, 34, 35, and 68). Source: UNCOMTRADE (2009).
Ln(Agricultural Exports)	Natural log of the total exports of minerals (SITC codes 1-9, 11, 12, 41-43, and 94). Source: UNCOMTRADE (2009).
Ln(Material Exports)	Natural log of the total exports of minerals (SITC codes 21-29, 63 and 64). Source: UNCOMTRADE (2009).

Table 2. Summary Statistics

	Mean	Max.	Min.	Std. Dev.
Ln(Net FDI inflow usd)	6.011	10.325	-3.280	1.985
Ln(GDP initial)	7.790	8.999	6.493	0.681
Ln(Population)	16.357	19.046	14.614	1.184
Ln(Exchange rate)	2.259	8.768	-19.121	3.990
Ln(Trade openness)	3.935	5.292	2.621	0.557
Ln(Area)	13.067	15.957	10.841	1.419
Financial liberalization	0.301	2.541	-1.808	1.516
Governance	0.117	3.037	-3.126	1.290
Democracy	6.884	10.000	-8.000	3.444
Exec. Party Ideology	0.441	1.000	-1.000	0.782
Ln(Mineral Exports)	19.215	24.610	8.929	3.272
Ln(Agricultural Exports)	20.879	23.944	17.668	1.313
Ln(Material Exports)	19.798	23.800	15.652	1.627

All variables have 320 observations (Period 1986-2005, 20 obs. per country).

Table 3. Ordinary Least Squares Estimates

	(1)	(2)	(3)
Ln(initial GDP per capita)	0.365*** (0.084)	0.646*** (0.078)	0.376*** (0.084)
Ln(Population)	0.460*** (0.141)	1.132*** (0.110)	0.405*** (0.125)
Ln(Exchange rate)	0.085*** (0.018)	0.094*** (0.016)	0.081*** (0.019)
Ln(Trade openness)	0.502*** (0.191)	0.321 (0.204)	0.475*** (0.182)
Ln(Area)	0.266** (0.116)	0.059 (0.086)	0.279** (0.118)
Financial liberalization	0.115*** (0.041)	0.115*** (0.041)	0.102** (0.042)
Governance	-0.007 (0.062)	0.130** (0.053)	
Democracy	0.020 (0.019)	0.037 (0.023)	
Ln(Mineral Exports)	0.119*** (0.038)		0.130*** (0.036)
Ln(Agricultural Exports)	0.457*** (0.092)		0.463*** (0.077)
Ln(Material Exports)	-0.010 (0.059)		-0.022 (0.061)
Exec. Party Ideology	0.157** (0.079)	0.151* (0.080)	0.159* (0.082)
Constant	-21.818	-20.138	-21.008
R-squared	0.835	0.809	0.834

Robust standard errors are in parenthesis. *, **, and *** indicate significance at 10, 5 and 1 percent level, respectively. The dependent variable is net FDI inflows in US dollars. All estimations include 320 observations (16 countries, 20 observations per country).

Table 4. General Method of Moments Estimates (N=320)¹

	(1)	(2)	(3)
Ln(initial GDP per capita)	0.351*** (0.086)	0.629*** (0.078)	0.365*** (0.085)
Ln(Population)	0.408*** (0.152)	1.157*** (0.115)	0.344*** (0.130)
Ln(Exchange rate)	0.079*** (0.019)	0.093*** (0.016)	0.073*** (0.019)
Ln(Trade openness)	0.534*** (0.186)	0.352* (0.201)	0.511*** (0.181)
Ln(Area)	0.310*** (0.118)	0.071 (0.087)	0.324*** (0.121)
Financial liberalization	0.118** (0.050)	0.141*** (0.047)	0.099** (0.051)
Governance	-0.011 (0.070)	0.143** (0.059)	
Democracy	0.024 (0.023)	0.049* (0.029)	
Ln(Mineral Exports)	0.142*** (0.044)		0.156*** (0.041)
Ln(Agricultural Exports)	0.502*** (0.098)		0.507*** (0.080)
Ln(Material Exports)	-0.060 (0.064)		-0.075 (0.067)
Exec. Party Ideology	0.211** (0.096)	0.184** (0.095)	0.218** (0.102)
Constant	-22.045	-20.833	-21.082
J statistic	6.503	1.652	7.932
Probability	0.482	0.799	0.160
R-squared	0.840	0.812	0.839

Robust standard errors are in parenthesis. *, **, and *** indicate significance at 10, 5 and 1 percent level, respectively. The dependent variable is net FDI inflows in US dollars. All estimations include 320 observations (16 countries, 20 observations per country).

Table 5. Spatial Error Estimates

	(1)	(2)	(3)
Ln(initial GDP per capita)	0.347*** (0.116)	0.577*** (0.088)	0.356*** (0.115)
Ln(Population)	0.685*** (0.216)	1.220*** (0.160)	0.667*** (0.218)
Ln(Exchange rate)	0.090*** (0.021)	0.123*** (0.020)	0.084*** (0.021)
Ln(Trade openness)	0.152 (0.301)	0.182 (0.291)	0.149 (0.294)
Ln(Area)	-0.085 (0.254)	-0.017 (0.143)	-0.062 (0.240)
Financial liberalization	0.111** (0.046)	0.154*** (0.046)	0.103** (0.045)
Governance	-0.035 (0.071)	0.086 (0.062)	
Democracy	0.021 (0.021)	0.026 (0.022)	
Ln(Mineral Exports)	0.193*** (0.062)		0.192*** (0.052)
Ln(Agricultural Exports)	0.219 (0.137)		0.213 (0.135)
Ln(Material Exports)	0.061 (0.081)		0.046 (0.083)
Exec. Party Ideology	0.261*** (0.087)	0.229*** (0.080)	0.265*** (0.092)
Constant	-18.296	-20.469	-17.835
Lambda ($\lambda W\varepsilon$)	0.519	0.503	0.509
Wald statistic (Chi-square)	14.341	33.414	15.643
Probability	0.000	0.000	0.000
Log-likelihood	-372.350	-389.188	-373.207

Robust standard errors are in parenthesis. *, **, and *** indicate significance at 10, 5 and 1 percent level, respectively. The dependent variable is net FDI inflows in US dollars. All estimations include 320 observations (16 countries, 20 observations per country).