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Economic Freedom and Foreign Direct Investment in Latin America: A Panel Gravity Model Approach

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Abstract

This paper employs a panel data gravity model to examine the impact of economic freedom (EF) on foreign direct investment (FDI) in the context of Latin American countries. Our results suggest that while FDI responds to many EF measures positively, such results cannot be generalised.

1. INTRODUCTION

Dunning (2002) suggested that multinational corporations (MNCs) motives have recently shifted from market and resource seeking to efficiency seeking which implies that the institutional determinants of Foreign Direct Investment (FDI) such as governance and economic freedom (EF) have become more important (Loree and Guisinger 1995; Noorbakhsh, Paloni and Youssef 2001; Addison and Heshmati 2003, Becchetti and Hasan 2004). There is, therefore, a considerable interest and a growing literature on the institutional determinants of FDI.

There is no universal consensus, however, over the importance and impact of institutional determinants of FDI. While the majority of the literature argues for a positive link between good governance and FDI inflows, the recent empirical work by Bellos and Subasat (2011) indicates that in selected transition countries, the impact of corruption on FDI is positive. In other words, corruption does not discourage FDI, as it is often assumed, but encourages it. Bellos and Subasat (2012) also investigate the impact of good governance on FDI and found similar results. Apart from "democratic accountability", all the other three governance variables (bureaucratic quality, law and order and control of corruption) are negatively associated with FDI which implies that poor governance is not an impediment, in fact a source of attraction, for MNCs in the selected transition countries. These interesting results justify the investigation of EF as the other major institutional determinant of FDI. While Subasat and Bellos (Manuscript submitted for publication) investigated the link between EF and FDI in selected transition countries, this paper investigates the same link in Latin America.

Although there is substantial empirical literature on the link between governance and FDI (Gani 2007, Globerman and Shapiro 2002, Globerman and Shapiro 2003; Globerman, Shapiro and Tang 2004, Jensen 2003, Li 2005, Li and Filer 2004), and between EF and economic growth (Adkins, Moomaw and Savvides 2002, Weede and Kämpf 2002, De Haan and Sturm 2000), the literature on the link between EF and FDI is very limited and undeveloped. By focussing on the Latin American countries, this article advances this limited literature in two major ways. First, unlike most of the existing literature that used a single measure, this article uses 45 measures of EF which is more informative. Second, this article employs EF measures in target and source countries in order to take both push and pull factors into account. For example, the low level of taxes in target countries may be a source of attraction for the MNCs but high level of taxes in the source countries may be a source of repulsion.

2. THEORY AND LITERATURE

The conventional economic theory suggests that commitment to EF should facilitate more FDI inflows into target countries as it reduces inefficiencies, deadweight losses and uncertainties (Voyer and Beamish, 2004). The lack of EF can be symptomatic of the various ways in which a government may take away potential profits and can be an obstacle to FDI (Conklin, 2002). Restrictive trade policies, for example, may discourage MNCs by limiting their ability to import necessary inputs and increasing their transaction costs, thus lowering

1

productive efficiency (Harms and Ursprung 2002, Drabek and Payne 2001, Habib and Zurawicki 2002). Restrictions on repatriation of profits likely to repel MNCs. Extensive bank regulations can create disincentives for foreign financial firms (Beck, Levin and Loayza, 2000). State owned banks can result in poor services, high costs, and weak financing of new investments and trade (World Bank, 2003). Similarly, some EF variables in source countries such as "Financial freedom", "Trade freedom" and "Business freedom" which involve freedom to operate internationally are likely to facilitate more FDI outflows.

Because EF is a broad concept which involves various forms, its impact on FDI is difficult to generalise. While restrictive trade policies in target countries, for example, may discourage MNCs by increasing their transaction costs, tariff jumping FDI implies that trade protection can also increase inward FDI. Some EF variables such as low tax levels and the absence of minimum wage in source countries may increase the attractiveness of domestic markets and reduce FDI outflows. Therefore, the impact of various forms of EF on FDI should be considered separately.

In this limited literature, most studies fail to distinguish EF from good governance. These concepts are often confused and used synonymously. The literature that investigates the empirical link between the EF and FDI tend to start with a discussion that focuses on the theoretical link between governance and FDI, and the literature they cite often concentrate on corruption, transparency and the protection of property rights.[1] While some interventionist economic policies (such as import controls) may lead to poor-governance (such as corruption), good-governance and EF are clearly distinct concepts. EF refers to the absence of state intervention in economic issues whereas governance refers to "the traditions and institutions by which the authority in a country is exercised" (Kaufman, Kraay and Zoido-Lobaton, 1999) and implies "an independent judiciary and legislation, fair and transparent laws with impartial enforcement, reliable public financial information, and high public trust" (Li, 2005). Obviously a well governed country may implement interventionist economic policies and an economically liberal country may poorly be governed. The separation of good-governance and EF is important because while the literature that focuses on good-governance (particularly corruption) is relatively large, there is a very limited literature on the link between EF and FDI.

Bengoa and Sanchez-Robles (2003) used a single aggregated index of EF (provided by the Fraser Institute) in a panel data analysis and found a positive correlation between EF and FDI in 18 Latin American countries for 1970-1999. Globerman and Shapiro (2003) focused on the U.S. FDI for the time period 1994–1997 and by using a single EF index which was obtained from the Heritage Foundation argued that EF would attract U.S FDI. Kobeissi (2005) used a single aggregated EF variable which was obtained from the Heritage Foundation and tested the relationship between EF and FDI (as well as Governance and Legal System) in the case of 12 Middle East and North Africa countries between 1990 and 2001. The EF variable was modestly significant at 10 percent level in four out of six estimations. Ferragina and Pastore (2006) used a panel gravity model to investigate the FDI diversion effect of the integration process to the EU in the case of Central and Eastern Europe and South Mediterranean countries for the period 1994-2004. Alongside the traditional gravity model variables, an

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[1] For example Kapuria-Foreman (2007) suggests that "[e]conomists believe that freely functioning markets facilitate economic growth. Corruption, by increasing transactions costs, can increase friction in an economy and slow its growth." See also Caetano and Caleiro (2009) for similar arguments that confuse EF with good governance.

2

aggregated governance variable and economic variables such as openness to trade[2] and volatility of the bilateral nominal exchange rate, they included two EF variables, current and capital account restrictions, which were negative and statistically significant. By focussing on developing countries and excluding the transition countries, Kapuria-Foreman (2007) used five broad measures of EF in a cross country study. The results suggested that while government interventions in the economy, barriers to capital flows and foreign investment, and the lack of protection of private property rights had negative impact on FDI, trade protectionism and the level of regulation had no statistically significant impact. Heriot, Theis and Campbell (2008) used the 5 major categories of the Fraser Institute measure of EF in a sample of 121 countries for the period of 2000 and 2005, and argued that apart from government size all the other categories are positively linked with FDI. This paper, however, includes no control variables and likely to suffer from excluded variables bias. By using the fuzzy logic clustering methodology, Caetano and Caleiro (2009), focused on the MENA countries and by employing the aggregated EF data provided by the Heritage Foundation argued that economic freedom and inward FDI are positively associated. While all the above studies found a positive correlation between economic freedom and FDI, they relied on a very limited number of EF measures which fails to capture the diverse nature of EF.

3. MODEL

Gravity models are often used to study trade flows between source and host economies but they are also successfully used to study FDI flows. The main components of the model are the market sizes of the source and target economies and the distance between their main economic centres. Given these variables, the potential FDI between two countries can be estimated and other variables can be added into the model to estimate their relative impact on FDI. In our analyses we use a number of control variables that are considered to be important in the relevant literature and add the EF measures to access their impacts. Panel data models provide a series of well known advantages. The larger sample size in relation to both cross-sectional and time-series analyses improves the accuracy of regression estimates. It can reduce the impact of omitted variable bias. It can also address heterogeneity problems that often complicate cross-sectional analyses as not all country-specific factors can be included in the regression estimates.

The model takes the following form:

$$FDI_{S,Ty} = \beta_0 + \beta_1 \, GDP_{Sy} + \beta_2 \, GDP_{Ty} + \beta_3 \, DISTANCE_{S,T} + \beta_4 \, EF_{Ty} + \beta_5 \, EF_{Sy} + \beta_6 \, CONTROL_{T,Sy}$$

Where

$_S$ is source, $_T$ is target and $_y$ is time.

FDI_{STy} is the bilateral FDI stock from the source to target country in current US Dollars (UNCTAD). Bénassy-Quéré, Coupet and Mayer (2007) suggest that working with FDI stock rather than flows has certain advantages. For example, stocks are more stable than flows and measure capital ownership better as it involves FDI that is financed in local capital markets.

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[2] Openness to trade is considered as a close approximate to free trade regime but Subasat (2008) argued that this may not be the case.

3

GDP_{Sy} and GDP_{Ty} are the GDPs of the source and target countries in current US Dollars (World Development Indicators). A number of alternative stipulations of the model were considered. For example, GDPs were replaced by per capita GDPs and populations but such specifications were problematical as per capita GDPs were highly correlated with some of the EF variables. We have also considered the quadratic forms of both GDPs and distance to account for possible non-linearity but this specification did not improve our results. While we do not report these estimations in this paper, we confirm that they produced very consistent results in terms of the EF variables.

$DISTANCE_{ST}$ is the geographic distance between the source and target country which is a proxy for transportation and information costs (Centre d' Etudes Prospectives et d' Informations Internationales). However, as trade cost also increases with distance, MNCs may prefer to invest rather than trade. Therefore the sign on the distance variable can be ambiguous (Guerin 2006).

EF_{Ty} and EF_{Sy} are the 45 economic freedom variables in the target and source countries which are taken from two sources. The Economic Freedom of the World Index (EFoWI) produced by the Fraser Institute provides very detailed 58 EF variables which are aggregated under five sub-headings: Size of Government, Legal System & Property Rights, Sound Money, Freedom to Trade Internationally, Regulation. We exclude "Legal System & Property Rights" and "Sound Money" variables from our analysis as they measure governance and macroeconomic policy. The "Index of Economic Freedom" (IoEF) is produced by the Heritage Foundation and the Wall Street Journal, and provides 8 measures of EF (Business Freedom, Trade Freedom, Fiscal Freedom, Government Spending, Monetary Freedom, Investment Freedom, Financial Freedom, Labor Freedom) and 2 measures of governance (Property Rights, Freedom from Corruption). The governance variables and "Labor Freedom" are excluded due to data limitation.

The EFoWI ranks countries between 0 and 10 and IoEF ranks countries between 0 and 100 where larger values represent the greatest EF. If high EF in target countries encourages FDI, a positive sign on the coefficients would be expected. Note that all the EF variables are based on subjective rankings which can be highly problematical. This is a well recognized concern for the empirical literature that uses such measures.[3] Missing values in data which can significantly influence our results is another concern. The results, therefore, should be read with care.

$CONTROL_{Ty}$ refers to the control variables that are added to reduce the risk of excluded variables bias. These variables were selected from a larger list of relevant variables that have been considered important in previous work. Many variables in the original list were excluded from the final estimations as they were either highly correlated with the EF variables or statistically insignificant. Some variables were also excluded due to gaps in data and concerns over the degree of freedom. Gaps in data imply significantly reduced degree of freedom which required striking the right balance between the need to maximize the number of control variables and concerns over lower degree of freedom. Since missing values was a real concern for the core variables (such as bilateral FDI and EF) and since the use panel data reduces the impact of omitted variable bias, our priority was to maximise the degree of

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[3] See Kaufmann, Kraay and Zoido-Lobaton (1999) for a discussion of the problems inherent in making cross-country comparisons.

4

freedom rather than maximizing the number of control variables. Nevertheless we still have a large number of control variables:

"Oil" is the volume of oil production in thousands barrels per day (US Energy Information Administration). "Same-religion" is a measure of cultural similarity. The "Colonial-link" aims to capture historical ties (CEPII). The "Land-lock" is used as a proxy for high transportation costs. "Colonial-link" and "Land-lock" are dummy variables which take either the value one or zero. "GDP growth" is lagged growth of GDP as a measure of economic performance (World Development Indicators). The lags help avoiding potential endogeneity problems. "Inflation" is a measure of macroeconomic instability (World Development Indicators). "Ethnic Tensions" is an assessment of the degree of tension within a country attributable to racial, nationality, or language divisions. "Investment Profile" is an assessment of factors affecting the risk to investment that has 3 subcomponents: Contract viability/Expropriation, profits repatriation, external conflict. "Religion in Politics" is a measure of religious tensions. "Ethnic Tensions" and "Religion in Politics" (6) are scaled from 0 to 6, and "Investment Profile" is scaled from 0 to 12. These variables are taken from the PRS Group International Country Risk Guide and high values indicate lesser problems.

All variables are in logarithmic form. As a considerable portion of observations for some measures are zeros, working on the logarithm of FDI then imposes to drop these observations, with a potential selection bias. In order to circumvent this problem a small constant has been added to zero values.

4. PANEL DATA ANALYSIS

The data cover a period of 24 years (1985-2008). The country sample includes 24 target (Costa Rica, El Salvador, Guatemala, Argentina, Bahamas, Bolivia, Brazil, Chile, Colombia, Dominican Republic, Ecuador, Guyana, Haiti, Honduras, Jamaica, Mexico, Nicaragua, Panama, Paraguay, Peru, Suriname, Trinidad & Tobago, Uruguay, Venezuela) and 31 source countries (Australia, Austria, Belgium, Canada, China, Czech Rep, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, South Korea, Luxembourg, Mexico, Netherlands, New Zealand, Norway, Poland, Portugal, Slovakia, Spain, Sweden, Switzerland, Turkey, UK, US).

The large number of EF variables that are included in the baseline model can overcrowd the results table. Therefore we first estimate the baseline model to show its accuracy (Table 1) and then present the coefficients and t-ratios of each EF variables in Table 2. As EF variables are likely to be correlated with each other, they are not included in the same regression. In order to avoid multicollinearity problem, we estimate separate regressions for each EF variable. While we do not report the full regression details in table 2 to avoid overcrowding of the table, we report the coefficients and t-ratios of 45 separate estimations. A similar multicollinearity problem may exist for the variables in the baseline model in table 1 which may distort their coefficients but this is not a matter of concern as multicollinearity between the control variables would have no impact on the coefficients of EF variables. When the control variables were found to be collinear with the EF variables, however, they were excluded from the estimations in order to avoid multicollinearity problem.

5

The baseline model results in Table 1 validate our dataset as the core variables of the gravity model work well. Distance, GDP and all the other control variables are highly significant and have the expected signs.

The empirical model is estimated by using the Random Effects method which requires the application of the Generalized Least Square method to achieve efficient results. Potential Heteroskedasticity problems were resolved by using the Newey-West Heteroskedasticity and Autocorrelation Consistent Standard Errors. The stationarity of the variables were tested by adopting the Levin, Lee and Chu and the Philips Perron methods with a Newey West bandwidth selection. For the stationarity tests, the appropriate number of lags was selected by using the Schwarz Information Criterion. We confirm that most variables pass both tests and the remaining few pass one of the tests.

5. RESULTS AND CONCLUSION

While we do not have enough space to discuss the full implications of our results, a number of conclusions emerge. For the *target countries,* two main categories of the EFoWI (Size of Government and Freedom to Trade Internationally) have positive and significant coefficients whereas the remaining main category (Regulation) has a negative but insignificant coefficient. Out of 35 sub-categories only 12 have positive and significant, 8 have negative and significant and 15 have insignificant coefficients. Interestingly, while "Size of government" has a positive and significant coefficient, one of its major sub-categories, namely "General government consumption as share of total consumption" has a negative and significant coefficient which implies that government consumption encourages FDI. While some of them are insignificant, most sub-categories of the "Freedom to trade internationally" have positive and consistent coefficients. Noticeably, "Tariffs" has a very significant coefficient. In other words freedom to trade appears to be an important determinant of FDI. The same cannot be said for "Regulation". While "Credit market regulation" and its sub-components all have positive and highly significant coefficients, "Labor market regulations" and "Business regulations" have negative coefficients and the latter has a significant coefficient. This implies that while MNCs are not discouraged by "Labor market regulations", they are encouraged by "Business regulations". It is interesting to note that apart from "Price controls" which appears as a deterrent to FDI, other components of "Business regulations" such as "Administrative conditions/entry of new business", "Time with government bureaucracy", "Licensing restrictions" and "Tax compliance" appear to encourage FDI.

For the *source countries* "Freedom to trade internationally" and "Regulation" have no meaningful impact on outward FDI and "Size of government" has a positive and significant impact which implies that a decline in the size of government encourages outward FDI. However, some of the sub-components of "Freedom to trade internationally" (notably "Tariffs" and "Hidden import barriers") and most of the sub-components of "Regulation" have positive and highly significant coefficients. Interestingly, all the sub-components of "Labor market regulations" have positive and significant coefficients which imply that the deregulation of the labour markets encourages FDI outflows.

For the *target countries*, 1 out of 7 IoEF indicators (Trade freedom) has positive and significant, 2 (Government spending and fiscal freedom) have negative and significant and 4

6

have insignificant coefficients. This implies that only the lack of "Trade freedom" is major concern for MNCs whereas "Government spending" and the lack of "Fiscal freedom" are in fact a source of attraction. The lack of "Investment freedom", "Monetary freedom", "Business freedom" and "Financial freedom" has no significant effect on FDI.

For the *source countries*, "Government spending", "Business freedom" and "Financial freedom" encourages outward FDI and "Monetary freedom" discourages it. "Investment-freedom", "Trade freedom" and "Fiscal freedom" have no significant effect on FDI.

The above results suggest that while EF is an important determinant of FDI, its impact cannot be generalised. This conclusion is in line with the findings of Subasat and Bellos (Manuscript submitted for publication) who investigated the link between EF and FDI in selected transition countries. The impact of free trade (both in source and target countries) is consistently positive and supported by the results of both databases. This implies that countries wish to attract more FDI need to have liberal trade regimes. However apart from trade freedom our results provide a limited support for the conventional wisdom and produced a number of surprising results. Government spending, for example, seems to be a source of attraction for MNCs rather than being a deterrent. While, the lack of "Labour market regulations" in the target countries does not discourage FDI, labour market deregulations in the source countries strongly encourage FDI outflows. This is rather surprising as we would expect "Labor market regulations" in source countries to be a source of repulsion which implies that the deregulation of the labor markets would increase the attractiveness of domestic markets and likely to reduce FDI outflows. Apart from "Price controls", business regulations in target countries are a source of attraction for MNCs and business de-regulations in the source countries encourages FDI outflows. We conclude therefore that while EF is an important FDI determinant in the selected Latin American countries, its impact cannot be generalised and our results do not provide a strong evidence for the new conventional wisdom over the institutional determinants of FDI.

7

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8

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9

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10

Table 1: Baseline Panel Data Gravity Model Estimates

Constant	-21.94* (-10.1)	Land locked (T)	0.36 (1.68)	Ethnic tensions (T)	-0.07* (-7.87)
GDP (S)	0.46* (13.9)	Land locked (S)	0.42* (2.72)	Ethnic tensions (S)	-0.37* (-5.07)
GDP (T)	0.70* (15.1)	GDP growth (T)	-0.07* (-2.59)	Investment Profile (T)	-0.080** (-1.95)
Distance	-0.19* (-2.25)	GDP growth (S)	0.18 (1.79)	Investment Profile (S)	0.04 (0.92)
Oil	0.07* (6.42)	Inflation (T)	-0.11* (-9.90)	Religion in Politics (T)	0.22 (1.78)
Same religion	0.95* (3.75)	Inflation (S)	-0.04 (-0.93)	Religion in Politics (S)	0.35* (3.17)
Colonial-link	2.19* (7.52)				
N	2362	Wald-Joint	1976.0	AR(1)	38.93
R^2	0.572	Wald-dummy	101.1	AR(2)	24.67

Notes: The independent variable is bilateral FDI stock between source and target countries. "*" is significant at 1 % level and "**" is significant at 10 % level. All the variables are in logarithmic form.

11

Table 2: Panel Data Gravity Model Estimates for EF variables

	Target Coefficient	Target t-ratio	Source Coefficient	Source t-ratio
EFoWI Variables				
1. Size of Government	0.35	2.13*	0.24	2.10*
1A. General government consumption as share of total consumption	-0.24	-2.15*	0.08	1.05
1B. Transfers and subsidies as a share of GDP	-0.20	-1.29	0.06	0.91
1C. Government enterprises and investment as a share of gross investment	0.01	1.87*	0.152	5.47*
1D. Top marginal tax rate	0.03	1.47	0.01	0.72
1Di. Top Marginal Income Tax Rate	0.05	2.26*	0.02	1.08
1Dii. Top Marginal Income and Payroll Tax Rate	0.11	2.30*	0.175	3.23*
4. Freedom to Trade Internationally	0.33	4.01*	0.42	1.44
4A. Tariffs	0.45	5.01*	0.36	2.65*
4Ai. International trade tax revenues *(% of trade sector)*	0.32	2.94*	2.67	4.40*
4Aii. Mean tariff rate	0.02	1.31	0.33	1.02
4B. Regulatory Trade Barriers	0.09	0.86	0.08	0.35
4Bi. Hidden import barriers	0.22	2.43*	0.04	5.09*
4Bii. Costs of importing	0.08	1.05	-0.02	-1.99*
4C. Actual vs. expected size of trade sector	-0.01	-0.74	0.00	0.01
4E. International Capital Market Controls	0.01	1.23	0.16	1.71
4Ei. Access of Citizens to foreign capital markets & foreign access to domestic capital markets	-0.03	-0.36	0.06	0.38
4Eii. Restrictions in Foreign Capital Market Exchange & Index of capital controls among 13 IMF categories	0.00	0.61	0.05	3.4*
5. Regulation	-0.05	-0.54	0.07	0.31
5A. Credit Market Regulation	0.07	2.16*	0.21	1.14
5Ai. Ownership of banks	0.10	6.54*	0.00	0.25
5Aii. Competition in domestic banking	0.30	3.62*	0.06	8.26*
5Aiii. Extension of credit	0.33	4.89*	-0.25	-2.64*
5Aiv. Interest rate controls	0.03	4.22*	0.24	0.62
5B. Labor Market Regulations	-0.15	-1.36	0.42	3.80*
5Bi. Impact of minimum wage	-0.01	-0.91	0.05	5.91*
5Bii. Hiring and firing practices	-0.07	-1.15	0.04	4.83*
5Biii. Labor force share with wages set by centralized collective bargaining	-0.22	-2.02*	0.14	3.68*
5Biv. Unemployment insurance (Mandated hiring costs)	-0.26	-2.54*	0.13	3.65*
5Bv. Mandated dismissal costs	0.01	1.93*	0.01	4.10*
5Bvi. Use of conscripts	0.00	0.19	0.16	6.48*
5C. Business Regulations	-0.39	-3.50*	0.15	0.93
5Ci. Price controls	0.02	3.37*	0.02	2.03*
5Cii. Administrative Conditions/Entry of New Business	-0.10	-2.29*	0.19	3.11*
5Ciii. Time with government bureaucracy	-0.17	-3.12*	-0.01	-1.06
5Civ. Starting a new business	-0.02	-0.41	0.08	2.31*
5Cvi. Licensing restrictions	-0.29	-2.20*	0.01	2.89*
5Cvii. Tax compliance	-0.07	-3.07*	0.01	2.93*
IoEF Variables				
Government Spending	-0.43	-3.13*	0.01	2.16*
Investment Freedom	0.05	0.88	0.03	0.52
Trade Freedom	0.23	2.26*	0.14	0.62
Fiscal Freedom	-0.56	-3.86*	-0.00	-0.14
Monetary Freedom	0.08	0.78	-0.63	-2.04*
Business Freedom	-0.02	-0.20	0.43	4.24*
Financial Freedom	-0.01	-0.31	0.16	2.32*

Notes: The independent variable is bilateral FDI stock between source and target countries. "*" is significant at 1 % level and "**" is significant at 10 % level. All the variables are in logarithmic form.

12