

Do institutions of economic freedom attract foreign direct investment? Evidence from panel data

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ABSTRACT

This paper analyzes the relationship between foreign direct investment and institutions of economic freedom. Drawing on literature from institutional economics, we argue that higher levels of foreign direct investments flows to countries with institutions that foster economic freedom. We test this prediction by utilizing multilevel as well as dynamic panel data estimators on a sample of cross-sectional time series data that includes 89 developing and 31 developed countries. Our analyses indicate that higher levels of foreign direct investment flow to countries with an institutional environment that promote economic freedom. In particular, we find that rule of law and trade freedom are important determinants of foreign direct investment flows.

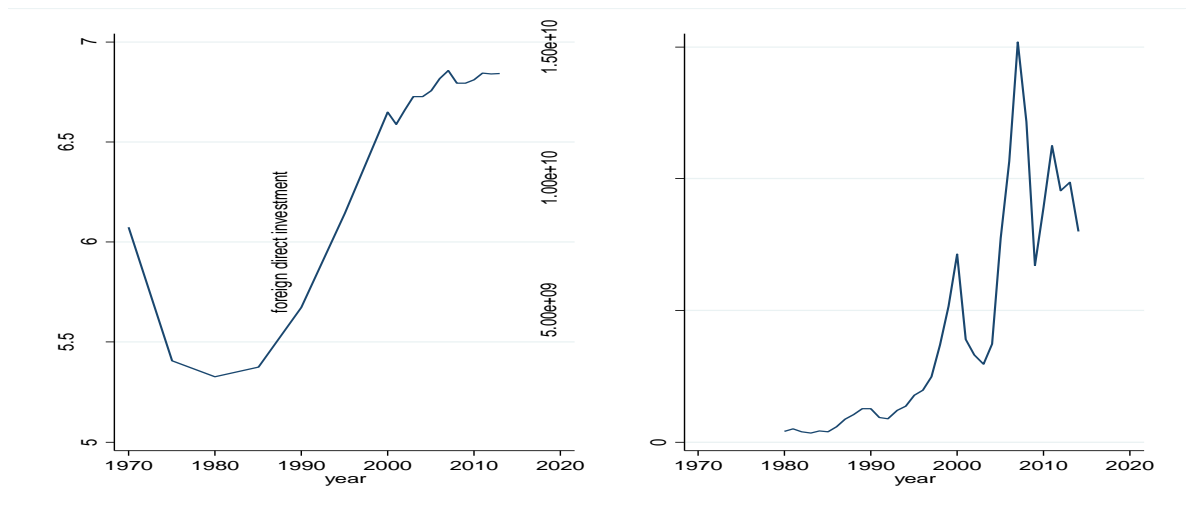
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INTRODUCTION

The average foreign direct investment (FDI) inflow into a country in 2014 was close to 8 billion. While countries like United States and China received FDI amounting to 132 and 290 billion dollars, respectively, other countries, such as Bolivia, received around 7.25 million dollars in 2014. What does explain this difference? Perhaps market size or the labor cost in the receiving country are important determinants of FDI. In addition, trade agreement, cultural and geographic proximity between the host and home country, political as well as economic risk in the home country, and natural resource endowment in the home country are likely to explain where FDI goes (Bevan and Estrin, 2004; Bütthe and Milner, 2008; Dunning, 2004; Yilmaz, et al., 2014). In recent years, there has been an increasing focus on the institutional environment in a country as an explanatory variable in studies of economic behavior at individual, firm and country level. In this paper, we attempt to analyze the relationship between institutions of economic freedom and FDI.

Economic freedom is defined as the right of a person to control what he does with his or her own property and labor (Yilmaz and Tag, 2015, p. 136). Thus, economic freedom rests on personal choice, voluntary exchange, freedom to enter a market and compete and security of personal property (Gwartney, Lawson and Hall, 2014, p. v). Institutions that nurture and sustain economic freedom are expected to provide incentives for higher level of investment and trade whether it is within borders or across borders. (Acemoglu, Johnson and Robinson, 2001; North, 1990; Sobel, 2008). In the literature on FDI, there is agreement that institutions of economic freedom encourage FDI (Azman-Saini, Baharumshah and Law, 2010; Bengoa and Sanchez-Robles, 2003; Egger and Winner, 2005; Jensen, 2008; Lee and Mansfield, 1996). In fact, in the recent 25 years there has been a rapid increase in both FDI and economic freedom around the world, as can be seen from Figure 1. However, we know little about which particular institutions of economic freedom are important determinants of FDI. In this paper we explore the relationship between five institutions of economic freedom and FDI. Drawing on the logic of institutional economics and evidence from the extant literature on FDI, we argue that rule of law, freedom to trade internationally, smaller government role in the economy, minimal and efficient market regulations, and sound monetary policy all create an institutional regime that attract more FDI into a country. Our analyses provide strong evidence that institutions of economic freedom are related to FDI.

Figure 1. FDI and Economic Freedom Trends



The rest of the paper is organized as follows: In the following section we provide a synopsis of the background literature. Next, we present the data and our methodology. Third, we present and discuss the results. The final section concludes the study.

BACKGROUND LITERATURE

A quick review of some literature on FDI determinants might help us to see which factors as determinants of FDI have been supported by earlier empirical studies. Bevan and Estrin (2004) aims to analyze empirically the determinants of inward FDI to the Central and Eastern European Countries by focusing on proximity, concentration advantages and factor costs. They use panel data on bilateral FDI flows from individual source to host countries between 1994 and 2000. Their explanatory variables are GDPs of both source and host countries, the distance between the two countries, trade variable (host country imports from EU as a percentage of the country's GDP), unit labor costs in the host country, interest rate differential between the source and the host countries, risk variable which captures *institutional development* and economic and political risk, and an announcement dummy variable which indicates whether the host country has EU prospect. *Random effect* estimates indicate that gravity factors, GDPs and the distance between the countries, as well as unit labor costs are significant determinants of FDI. The empirical results also show that EU announcements about potential accession have significant and positive effects on FDI flows to transition economies.

Busse and Hefeker (2005) examine the impact of political risk and institutions on FDI inflows into 83 developing countries from 1984 to 2003. The results of their panel data analysis indicate that government stability, internal and external conflicts, law and order, ethnic tensions, bureaucratic quality and, to a lesser degree, corruption and democratic accountability are important determinants of FDI. They conclude that these political risk and *institutional indicators* are the most important factors which MNEs consider when they make decisions about where to invest in *developing countries*.

While most studies of outward FDI focus on investments from developed countries, recently there have been some studies that examine FDI by *developing countries*. For instance, Buckley et al. (2007) investigate the determinants of outward FDI by Chinese multinational enterprises (MNEs) over the period 1984 to 2001. They establish theoretical explanations of the MNEs to explain FDI from China. For Chinese firms' outward FDI, the authors consider three potential arguments: capital market imperfections, special ownership advantages of Chinese MNEs and *institutional factors*. Their data set includes 49 countries hosting Chinese outward FDI. The results of their panel data analysis show that, consistent with their expectation, absolute market size, cultural proximity to China, liberalization of Chinese outward FDI in 1992, and Chinese exports to and imports from the host country are associated positively with Chinese outward FDI. On the other hand, contrary to their expectations, they found that high levels of political risk are also positively associated with Chinese outward FDI.

Bütthe and Milner (2008) argue that while government policies are important determinants of FDI, they are not sufficient to attract FDI into a country as the host country government could easily renege on its policies. Instead, international agreements that bind a host country to liberal economic policies are more credible commitment regarding present and future economic policies. Their panel data analyses on FDI inflows to 122 developing countries provide strong support for their argument even after controlling for basic factors such as GDP growth, economic development, market size, trade openness, democracy and political stability.

Walsh and Yu (2010) analyze various macroeconomic, developmental, and institutional/qualitative determinants of FDI in a sample of *emerging market* and developed economies. Using Arellano-Bond panel data estimator and data ranging from 1985 to 2008, for 27 advanced and emerging market countries, they examine the effect of variables such as openness, multilateral real exchange rate, inflation, the FDI stocks, real GDP growth and GDP per capita as well as *institutional and qualitative variables*. The paper concludes that investment decisions across industries in both advanced and emerging economies may have quite different determinants.

Differences in the importance of FDI determinants are not only observed in the context of different levels of country development. For instance, empirical determinants of bilateral FDI show substantial differences with respect to what factor is important. Given such *disagreement*, Blonigen and Piger (2011) use Bayesian statistical techniques to select the most important FDI determinants from a large set of factors. Using three measures of FDI activity (FDI stocks, cross-border M&A and affiliate sales) for the dependent variable, their analysis shows that geographic distance, cultural distance, host as well as source country GDP, human capital and regional trade agreements have high inclusion probabilities. On the other hand, *trade openness, host country business costs, infrastructure and institutions appear to have low probabilities of inclusion in the set of important FDI determinants*.

Using a Bayesian approach and controlling for sample selection, Eicher, Helfman and Lenkoski (2011) test several theories of FDI. Their analysis of a large set of panel data provides strong support for host country market potential and mixed or weak support for the effect of trade agreements as well as vertical, horizontal and export platform FDI theories. On the other hand, *knowledge capital* which they measure with educational attainment does not seem to exert influence on FDI.

In conclusion, FDI theory suggests numerous factors that potentially impact FDI in a country. In addition there is evidence that many of these determinants are highly contextual. That is, what host country factor attracts FDI depends on the motives for FDI, industry specific characteristics, and the function being performed by the Multinational Enterprises, (MNE), subsidiary (Dunning, 2004). Host country determinants include a broad spectrum of government policies, business facilitation practices, and economic factors. Beside, this study especially focuses on the effect of institutional quality index on FDI and afterwards, on the influence of changes on FDI on economic growth, which has a chain reaction what happens on one step also induce some changes on the other dependent variable.

METHODOLOGY

Sample and data

The sample of data that we use in our analyses is constructed by merging data from four sources, including the World Bank's World Development Indicators, World Economic Forum's Global Competitiveness Report and Fraser Institute's Economic Freedom database. We did not restrict construction of our sample to a group of countries. However, due to missing data on several variables, our analyses are based on a sample that covers data on 120 countries for the years between 2006 and 2012. Our sample consist of 89 developing and 31 developed countries. Thus, we feel that our final sample fairly represent the entire population of interest. Table 1 presents the summary statistics of our sample.

Table 1. Summary Statistics

Variable	Obs	Mean	Std.		
			Dev.	Min.	Max.
[1]. ln (FDI/population)	718	5.00	1.98	-5.54	9.52
[2]. Economic freedom	718	6.90	0.79	3.00	9.17
[3]. Government size	718	6.67	1.26	3.13	9.41
[4]. Rule of law	718	5.58	1.43	2.15	9.03
[5]. Sound money	718	8.05	1.26	0.00	9.89
[6]. Trade freedom	718	7.12	0.99	2.30	9.60
[7]. Market regulations	718	7.05	0.84	4.36	9.13
[8]. ln GDP	718	24.84	1.94	20.62	30.41
[9]. Macroecon. stability	718	4.74	0.84	1.05	7.00
[10]. Min. wage /Per capita inc.	718	-4.05	2.01	-8.95	0.00
[11]. Higher edu. quality	718	3.86	0.87	2.10	6.16

Model Specification and Estimation Technique

In this paper we employ two specifications to analyze the relationship between institutions of economic freedom and the level of foreign direct investment (FDI). Our first specification considers the multilevel nature of our data, in which observations on foreign direct investment are nested within countries. Even though our specification considers the effect of several country level factors, there could still be unobservable country specific effect on the level of foreign direct investment. Our first specification assumes that the unobservable country effect is the same for all observations within a country and that across countries the effect is a random draw from a statistical distribution that is uncorrelated with the model's overall error term and variables within the model. Thus, we first utilize multilevel linear (mixed-effect) modeling and maximum likelihood estimation technique to analyze the relationship between economic freedom and FDI. Mixed-effect models contain both fixed effects and random effects. The fixed part accounts for the effects of observed variables in our model and is comparable to the linear predictor from a standard OLS regression. The random part accounts for the random deviations other than those that are associated with the overall error term (Rabe-Hesketh and Skrondal, 2012; STATA Documentations, 2015). Our multilevel linear model is stated as follows:

$$y_{it} = +\alpha + X_{it}\beta + Z_{it}u_i + \epsilon_{it} \quad (1)$$

where, i represents country and t represents year. y represents the population adjusted net inflows of foreign direct investment; α is a constant; X , the fixed part of the model, is a vector of country level variables that includes five measures of the institutions of economic freedom (government size, efficiency of the legal system and security of property rights, access to sound money, freedom to trade internationally and regulation of credit, labor and business markets) and control variables (natural log of GDP, macroeconomic stability, human capital and labor cost). Z represents the country specific random effects part of the model and includes both random intercept and random slope for country specific effect. ϵ is the overall error term and is assumed to have i.i.d. normal distribution.

Our second specification considers the dynamic nature of the data and employs linear dynamic panel data estimation technique to analyze the relationship between economic freedom and FDI (Bhargava and Sargan, 1983; Hsiao, Pesaran and Tahmiscioglu, 2002). In this specification, we include the first lag of our dependent variable, the population adjusted net inflows of FDI, as another independent variable This specification is stated as follows:

$$y_{it} = +\alpha + \phi y_{i,t-1} + X_{it}\beta + u_i + \epsilon_{it} \quad (2)$$

where, $y_{i,t-1}$ is one year lagged value of our dependent variable. X is a vector of country level variables that includes five measures of economic freedom and control variables as in specification (1). u represent the country specific effect, and ϵ is the usual error term with i.i.d. normal distribution. In order to estimate this model, we utilize random (Bhargava and Sargan, 1983) as well as fixed (Hsiao, Pesaran and Tahmiscioglu, 2002) effect quasi-maximum likelihood (QML) estimators. These estimators eliminate the country specific effect by taking the first difference of all variables in the model.

Variable Measurement

The dependent variable in our study is the natural logarithm of per capita foreign direct investment net inflows in a country, obtained from the World Bank's World Development Indicators database. Before we measure per capita FDI, we deflate FDI values using GDP deflator obtained from the same database. More specifically, our dependent variable, $\ln(FDI)$, is measured as the natural logarithm of the deflated net inflows of FDI over population.

In this study we analyze the relationship between economic freedom and foreign direct investment. Thus, our key independent variables are those that measure economic freedom. The foundations of economic freedom are "personal choice, voluntary exchange, freedom to enter markets and compete, and security of the person and privately owned property" (Gwartney, Lawson and Hall, 2015, p. v). The data that we use for measuring economic freedom comes from Fraser Institute's Economic Freedom database. Fraser Institute has been measuring and publishing index of economic freedom around the world since 1996, although their data goes back to 1970. This index utilizes several sources of data and is based on 42 measures that are related to the institutional environment in a country. The 42 measures are in turn used to measure five broad pillars of economic freedom: *government size*, *legal structure and security of property rights*, *access to sound money*, *freedom to trade internationally* and *regulation of the credit, labor and business markets*.

Government size indicates the extent to which a country's reliance on the political process and government to allocate resources, goods and services is low. *Legal structure and security of property rights* (shortly, *rule of law*) measures the extent of rule of law and protection provided for private property, and the extent to which the judiciary is independent and unbiased. *Access to sound money* (shortly, *sound money*) measures the consistency of the institutions of monetary policy with long-term price stability, and the extent to which other currencies can be used in domestic or foreign bank accounts. *Freedom to trade internationally* (shortly, *trade freedom*) measures the lack of tariffs and non-tariffs based restrictions on the movement of goods, services, physical and human capital across borders. Finally, *regulation of the credit, labor and business market* (shortly, *market regulations*) measures the extent to which labor, credit and business markets are regulated by the government, the restrictions and costliness of entry to and exit from a market, and the efficiency and effectiveness of bureaucratic procedures that govern market exchange. The higher the score on each of these measures the better and more appropriate the institutions for economic freedoms. For instance, a higher score on government size indicates that the government has a lower role in the economy. Similarly, higher score on market regulations indicates that there is a minimal amount of market regulations, free entry and exit and more efficient bureaucracy.

In our analyses we control for several factors that could affect the level of FDI inflows. One factor is the size of the market in a country. Especially, there could be a relationship between the size of the market in a receiving country and market seeking FDI. Thus, we control for market size, which we measure as the natural logarithm of GDP ($\ln GDP$) in US dollars. The data that we use to calculate $\ln GDP$

comes from the World Development Indicators database. Some FDI is motivated by access to lower cost factors of production. Especially, low wages are a major motivation behind FDI in an increasingly competitive environment in the last several decades. Thus, we control for low cost labor by including the level of minimum wage in the receiving country. More specifically, low cost labor is measured by the deflated minimum wage in local currency divided by USD exchange rate, all divided by income per capita in US dollars. In our analyses we use (natural log) transformed value of this measure in order to reduce the effect of outliers in its data (*Min. wage /Per capita inc.*). The data on minimum wage and income per capita comes from ILO's Global Wage and World Development Indicators databases, respectively. Another factor that might attract FDI is the level of human capital in the receiving country, since FDI is more likely to be profitable when it employs qualified labor. Thus, we control for the level of human capital, which we measure by the quality of higher education in the receiving country (*higher education quality*). As predictable economic environment is conducive to all types of investments, we control the stability and soundness of the macroeconomic environment in a country (*macroeconomic stability*). The data for both *higher education quality* and *macroeconomic stability* comes from the World Economic Forum's Global Competitiveness Report. Finally, to control for a possible trend in our dependent variable we include our trend variable, the year, in our regression analyses. Table 2 presents the correlations between our variables.

Table 2. Correlations

Variable	[1].	[2].	[3].	[4].	[5].	[6].	[7].	[8].	[9].	[10].	[11].
[1]. ln (FDI/population)	1.00										
[2]. Economic freedom	0.64	1.00									
[3]. Government size	-0.02	0.34	1.00								
[4]. Rule of law	0.66	0.72	-0.18	1.00							
[5]. Sound money	0.51	0.80	0.10	0.47	1.00						
[6]. Trade freedom	0.62	0.86	0.17	0.56	0.70	1.00					
[7]. Market regulations	0.43	0.74	0.04	0.61	0.47	0.59	1.00				
[8]. ln GDP	0.35	0.25	-0.06	0.43	0.22	0.16	0.00	1.00			
[9]. Macroecon. stability	0.50	0.36	-0.17	0.50	0.27	0.31	0.34	0.42	1.00		
[10]. Min. wage /Per capita inc.	-0.16	-0.12	-0.13	-0.14	0.00	-0.02	-0.12	-0.06	-0.24	1.00	
[11]. Higher edu. quality	0.61	0.62	-0.10	0.78	0.42	0.51	0.50	0.54	0.44	-0.23	1.00

RESULTS and DISCUSSION

Table 3 presents the results of our analyses. Model 1 presents the heteroscedasticity robust Huber/White/sandwich estimate of specification (1) using the control variables as predictors. Note that the estimate consists of two main components. The fixed effect part of the estimate, which is analogous to an OLS estimate, provides the estimated coefficients on the control variables in our specification. From this estimate it appears that there is a positive and statistically significant relationship between FDI and FDI, macroeconomic stability, and quality of higher education. In our specification, the random part of the estimate breaks down the deviation of an individual observation from the fixed effect into three parts: country random slope, country random intercept and residuals. These random parameters each has a mean zero and a standard deviation or variance. The estimate in Model 1 provides the estimated variances for each parameter.

Table 3. Relationship Between Economic Freedom and FDI

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
ln GDP	0.247** (0.08)	0.211** (0.07)	0.075 (0.05)	1.499*** (0.31)	0.223** (0.07)	0.0867† (0.05)
Macroecon. stability	0.387*** (0.09)	0.334*** (0.09)	0.301*** (0.08)	0.197* (0.09)	0.355*** (0.09)	0.324*** (0.07)
Min. wage /Per capita inc.	-0.010 (0.12)	-0.011 (0.10)	-0.059† (0.03)	-0.062 (0.08)	0.001 (0.11)	-0.043 (0.03)
Higher edu. quality	0.465*** (0.11)	0.266* (0.12)	0.0868 (0.10)	0.119 (0.13)	0.426*** (0.11)	0.228* (0.09)
Government size		0.116† (0.07)	0.080 (0.06)	0.120 (0.08)		
Rule of law		0.290** (0.09)	0.259*** (0.08)	0.202 (0.13)		
Sound money		-0.063 (0.07)	0.027 (0.06)	-0.119 (0.07)		
Trade freedom		0.415* (0.21)	0.404** (0.13)	0.176 (0.15)		
Market regulations		0.090 (0.16)	-0.024 (0.10)	0.178 (0.16)		
Laged ln (FDI/population)			0.355*** (0.09)	0.245** (0.07)		0.364*** (0.09)
Overall economic freedom					0.656*** (0.14)	0.632*** (0.12)
Year	-0.021 (0.02)	0.008 (0.02)	-0.004 (0.02)	-0.114*** (0.03)	-0.009 (0.02)	-0.0263† (0.02)
Constant	37.34 (44.61)	-25.14 (49.10)	1.964 (34.16)	190.6*** (47.69)	9.884 (44.52)	46.87 (30.07)
<i>Random effect parameters</i>						
Var (country random slope)	3.20E-13	3.31E-12			-17.05	
Var (country random intercept)	2.13	1.46			0.236*	
Var (residuals)	0.42	0.45			-0.395***	
log likelihood	-975.9	-907.7	-718.3	-553	-917.3	-733.3
Chi square	66.13	126.8			109.7	
Number of countries	124	120	102	101	120	102
N	744	718	643	545	718	643

Standard errors in parantheses

† p<0.10, * p<0.05, ** p<0.01, *** p<0.001

Model 2 presents the heteroscedasticity robust H/W/sandwich estimate of specification (1). This model as well controls for country effects by including country specific random slope as well as random intercept to the estimate. According to this estimate, there is a significant and positive relationship between FDI and both rule of law and trade freedom, after controlling for country specific effects. Thus, it appears that foreign direct investment increases in countries where there are institutions that protect

property rights and ensure judicial independence and impartiality. More specifically, one point increase in rule of law appears to be associated with 0.3 units increase in the logarithm of per capita FDI. Moreover, Model 2 results provide evidence that restrictions on international trade appear to discourage foreign direct investment. It seems that one point increase in trade freedom is associated with 0.42 units increase in the logarithm of per capita FDI. These relationships appear to be economically important as well considering that the mean level of our dependent variable is 5. There is also marginal evidence (p -value < 0.10) that foreign direct investment flows increases in countries where the government has a lower control on the resource allocation process.

On the other hand, to our surprise, there appears to be no relationship between market regulations and foreign direct investment flows into a country. One possible explanation for this results might have to do with the multicollinearity problem that is created by high correlations among our dependent variables. Finally, the estimate provided by Model 2 indicates that, after controlling for the other factors in our model, there is no relationship between sound money and foreign direct investment flows into a country. Overall, Model 2 estimate provides evidence that there is a strong relationship between some institutions of economic freedom and foreign direct investment.

Model 3 and Model 4 present the random and fixed effect estimates, respectively, of our second specification. The random effect estimate appears to be qualitatively very similar to our estimate of Model 2, even after controlling for the effect of the lagged value of our dependent variable. These results provide additional evidence that the relationship between economic freedoms and foreign direct investment flows into a country hold under alternative modeling and estimation techniques. However, the fixed effect estimate provided by Model 4 is not consistent with our results so far. The estimate of Model 4 indicates that there is no significant relationship between institutions of economic freedom and foreign direct investment flows into a country. One possible explanation for this result is that there is very little within variation in our measures of the institutions of economic freedom. In fact, after inspecting our panel data more closely, we saw that a significant portion of the variation in our institutions data is between countries rather than within countries. That is, our sample's time span (six years) is not long enough to capture the evolution of institutions and thus the effect of this evolution on foreign direct investment flows¹.

Finally, we present two more estimates that analyze the relationship between foreign direct investment flows into a country and overall economic freedom, rather than the individual pillars of economic freedom. Model 5 and Model 6 provide the estimates of our first and second specifications, respectively, when overall economic freedom is in the model². Both estimates are rather very consistent and provide strong evidence that foreign direct investment flows to countries with higher economic freedom.

CONCLUSION and FURTHER STUDIES

In this paper we attempt to analyze the relationship between foreign direct investment flow into a country and economic freedom. We argued that the expected return on foreign direct investment is higher in environments with an institutional regime that generate and sustain economic freedoms. A large body of literature support this propositions. Our analyses suggest that higher levels of foreign direct investment

¹ After dropping two variables (Macroeconomic and Higher education quality) that limit our sample's time span from specification (2), we found that the heteroscedasticity robust fixed effect estimate of specification (2) is largely consistent with the random effect estimate of the same specification. Results are available upon request.

² We use the random effect estimator to estimate Model 6.

flow into countries with institutions that ensure economic freedom for investors. We especially find evidence that foreign direct investment flows into countries with institutions that ensure rule of law and freedom to trade internationally. Although it appears that there is a strong link between economic freedom and foreign direct investment, our analyses do not provide any evidence on how evolution in the institutional environment is related to changes in foreign direct investment flow.

As longer panels presumably contain more information on the evolution of institutions within a country, we conclude that future studies could explore the impact of changes in the institutional environment on foreign direct investment using data with longer panels. In addition, it would be interesting to explore multinational firms' behavior under various institutional environments. For instance, there could be an interaction between multinational firms' foreign market entry strategies and the characteristics of the institutions of economic freedom in a host country. Another interesting avenue for further research in this area is that one can compare the effect of economic freedom on FDI to that on portfolio equity investments in developing countries. Since FDI involves sunk cost investment compared to portfolio equity investments, there should be economically or statistically more significant relationship between economic freedoms and FDI than that between economic freedom and portfolio equity investments. Finally, it is possible that institutionalization of economic freedoms is more important in terms of attracting more FDI and aiding economic growth (i.e., creating catching up effect) in developing countries than in developed countries.

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