

When FDI Flows from Rich to Poor Countries: Do democracy and economic reform matter?

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Abstract

Foreign direct investment (FDI) is an instrument of international capital flow and it also shares some features of international trade flows as it is often associated with intra-firm trade by multinational corporations. Combining features from both 'growth-type' and 'gravity-type' models, we argue that democracy and economic reform in emerging economies have a joint positive impact on FDI inflows from advanced countries. This effect of democracy and economic reform is robust even when the EU membership negotiations are taken into account. We conclude that the role of democracy and market-oriented reform is robust and widespread beyond European borders. On the other hand, our results can be interpreted as evidence that prospects of joining the EU acts as an anchor for the host country.

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WHEN FDI FLOWS FROM RICH TO POOR COUNTRIES:

DO DEMOCRACY AND ECONOMIC REFORM MATTER?

SELEN SARISOY GUERIN AND STEFANO MANZOCCHI*

1. Introduction

Among instruments of international capital transfer, foreign direct investment (FDI) raises special interest for a number of reasons. FDI is commonly identified as a more stable vehicle of cross-border investment, relative to portfolio flows, hence exposing host countries to lower capital account volatility (OECD, 2001). It is often associated with positive technology and/or human capital spillover from the source country to the host economy (see e.g. Damijan et al., 2003). Being in principle related to productive activities, FDI can contribute to enlarge and reinforce the industrial structure of recipient countries, while at the same time enhancing the competitiveness of the source economies (Barba Navaretti & Venables, 2004). As FDI is generally considered beneficial for both the source and host economies, a great deal of research as well as policy debate has recently focused both on FDI attraction by nations and regions and on the international activities of multinational firms (UNCTAD, 2005).¹

Despite ‘location tournaments’ among developing countries, FDI flows remain heavily concentrated as two-way flows between the developed countries, and only a small number of developing countries have been successful in attracting large sums of FDI. This observation lends itself to the two main puzzles in the literature on the allocation of international capital flows. The first puzzle is the ‘Lucas puzzle’ of scarce capital inflows into developing countries. Lucas (1990) has pointed out that the allocation patterns of international capital flows were not in line with what neoclassical growth models with capital mobility would have predicted. These models predict that capital should flow where it is scarce to reap the benefits of high return at a given risk level, hence promoting growth and conditional convergence between rich and poor countries. In the literature, the Lucas puzzle can be partly accounted for by considering cross-country differences in human capital and infrastructure endowments. The empirical models that are used to explain this puzzle often use growth-type variables, such as factor endowments and educational attainment (Borezstein et al., 1998, among others).

Recently an increasing number of empirical studies on international asset trade adopted the gravity model of international trade literature. The results from these studies led to the second puzzle, which recently came to be known as the ‘distance puzzle’²: the empirical literature has shown that increased distance deters FDI. Although this finding might seem intuitive, it is contradictory to the portfolio allocation theory, according to which investors should try to maximise their returns while diversifying and minimising the systemic risk in their portfolios. In other words, if portfolio diversification motives were at play in the case of FDI, we would expect to see more direct investment in more distant locations, not in nearby markets as these

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¹ See Meyer (1998) for a counter argument.

² See Loungani et al. (2002).

markets are more likely to be correlated with the home market of the investor. In general, the global allocation of FDI flows indicates that direct investors follow categorically neither high returns nor risk diversification. The distance puzzle, however, can be partly explained by information and transaction costs, and can be alleviated when the source and host countries share a common language and law. The gravity models of FDI, as of trade, are formulated to include standard variables, such as economic size, distance, and also recently bilateral telephone traffic (e.g. Loungani et al., 2002; Guerin, 2005).

This study is motivated by these two puzzles and aims to add to this literature specifically as well as to the literature on the determinants of North-South FDI. The main contribution of this paper is that we examine the role of political institutions and market-oriented reform on FDI in the framework of a hybrid model that borrows elements from both growth-type and gravity-type models. The economics of institutions has been examined by many distinguished scholars (Acemoglu et al., 2004; Acemoglu & Robinson, 2000), but the use of institutional factors in FDI literature is relatively new (Bénassy-Quéré et al., 2005; Busse, 2003; Busse & Hefeker, 2005).

The next section contains a review of selected contributions to the literature on the determinants of FDI. Section three outlines our empirical methodology, and describes our dataset. Econometric results are presented in section four, while final comments and issues for further research are discussed in section five.

2. A brief review of the literature on the determinants of North-South FDI

The empirical literature on the determinants of foreign direct investment evolved over the last two decades in line with new theoretical models. The empirical literature that deals with aggregate FDI flows in a macroeconomic framework has concentrated on variables commonly used in models of international capital flows (e.g. market size, income, exchange rates, infrastructure, real wage differentials, etc.). Although these variables explain which country characteristics might attract FDI, still the Lucas and the distance puzzles prevail.³

Wheeler and Mody (1992) and Manzocchi and Martin (1996) argue that the human capital factor plays an important role in explaining why capital does not flow from rich to poor countries, or why FDI might not promote growth and faster convergence. In an empirical study, Zebregs (1998) examines the distribution of FDI flows across developing countries and finds that standard neoclassical models can not explain the concentration of FDI flows in a few developing countries.

Although neoclassical models would have predicted that poor countries have a higher rate of return to capital given diminishing returns, the data show that FDI flows are strongly concentrated on a two-way pattern among rich countries. The development of microeconomic foundations by multinational firms, stemming from the ‘new trade theory’, provided a theoretical explanation for the evidence that FDI would take place between countries that are similar in size and in relative endowments. The gravity models of international trade, already very successful in explaining bilateral trade flows, have therefore gained popularity in explaining international investment flows as well.

Although the use of gravity models is recent in the asset trade literature, it is quickly growing in numbers (see for example: Ghosh & Wolf, 1998; Eaton & Tamura, 1994; Di Mauro, 2000; Hausman & Fernandez-Arias, 2000; Chunlai, 1997; De Menil 1999; Wei 1997; Wei, 2000; and

³ As was suggested later by Barro et al. (1995), the model can be better explained if it is augmented with human capital.

Portes & Rey, 2002). Carstensen and Toubal (2003) and Razin et al. (2005) use modified gravity models to explain bilateral FDI flows. Loungani et al. (2002) question why gravity models work for asset flows, and attempt to explain the distance puzzle. They conclude that the distance puzzle can be reduced by going beyond consideration of physical distance to concepts of transactional distance and scale economies. Since it is less probable that ‘distance’ represents transport costs in the case of FDI, contrary to the case for international trade, the negative relationship between distance and bilateral FDI flows has been interpreted as evidence of positive information costs to investment abroad. Therefore, the more recent empirical equations on the determinants of FDI have been augmented to include more direct measures of information costs, such as bilateral telephone traffic (Loungani et al., 2002; Guerin, 2005). The negative sign for the distance variable was robust to the inclusion of such direct measures of information flows between two countries, hence the puzzle remained.

Although bilateral FDI flows can be to some extent explained by gravity-type models, it is hard to accept that the geographical location of a country alone may determine its attractiveness *vis-à-vis* foreign investors, and possibly its economic fortunes. Recently, there is a new strand of literature on the determinants of FDI that correlate institutional factors with the FDI attractiveness of the host country. For example, Bénassy-Quéré et al. (2005) examine the role of the quality of institutions on FDI in a set of 52 countries. They first re-examine the role of the governance infrastructure in the host and source countries and also the effect of bilateral institutional distance. They find that institutions matter independently of GDP per capita. Overall, their results indicate that if the institutional quality of a developing host country increases, this can help the host country catch up with the source countries. Busse and Hefeker (2005) explore the linkages between political risk, institutions and FDI. Their results suggest that government stability, the absence of internal conflict and ethnic tensions, basic democratic rights and ensuring law and order are significant for FDI.

Our study aims to go further and contribute to the literature on the determinants of FDI flows between North and South countries by focusing on institutions: namely, democracy and economic reform in emerging host economies. The use of institutional factors as economic determinants is difficult due to endogeneity problems, and is subject to criticism. This paper benefits from the work of Giavazzi and Tabellini (2004) and Persson and Tabellini (2006a). They use ‘objective’ measures of democratic and economic liberalisation in their analysis of the institutions’ impact on economic performance. By using objective measures of democratic and economic reform, we aim to improve the existing literature that relates institutions to FDI.

3. Empirical methodology and data

Gravity models of trade (see for instance Egger, 2002; Antonucci & Manzonchi, 2006) and of FDI (Carstensen & Toubal, 2003; Guerin, 2005; Razin et al., 2005) are often estimated in a static or dynamic log-log format.⁴ When estimation is performed with longitudinal data (panel data), OLS (Ordinary Least Squares) produces biased results if the individual country-effects (heterogeneity) are statistically significant and are omitted from the model. In other words, whenever the intercept and/or the slopes of the ‘true’ regression are country-specific, and a linear specification is more suitable, then it is the panel fixed-effects or random-effects estimation methods that produce unbiased and efficient results. The choice between a fixed-effects and a random-effects model depends on whether country parameters and control variables are orthogonal. Another consideration in the choice between the two also depends on the shape of the panel: if the time-dimension of the panel is very large relative to the spatial

⁴ For a critique of the log-log model, see Silva and Tenreyro (2005).

dimension, then it is the fixed-effects that are consistent. However, panel datasets generally are characterised with large cross-sections observed over a short period of time, which is the case in our dataset ($n=364$ $t=13$). In this case, the fixed-effects estimator produces inconsistent results: this is known in the literature as the ‘incidental parameter’ problem (Baltagi, 2001).

FDI data, and especially North-South FDI data, present one more problem namely a large number of zero observations in the bilateral flow matrix. This can be due to a number of reasons:

- reporting problems and measurement errors (in this case, linear models may account for that: see Razin et al., 2005);
- fixed costs in establishing and implementing FDI-related initiatives and projects, for instance due to administrative and financial requirements related to different legal systems. In this case, Razin et al. (2005) suggest that a Heckman selection model might be the most appropriate to study the determinants of bilateral FDI;
- indivisibilities in FDI flows, due either to the physical or human capital nature of the investment projects, or reporting conventions (for instance, international institutions classify equity participations as FDI only if they exceed some percentage of the total company capital, say 10 or 20%).

If potential bilateral North-South flows do not always materialise due to investment indivisibilities, or are not recorded as actual FDI due to statistical conventions, it can well be that the reported entry of gross FDI inflow is zero, or even negative (e.g. in the case of large repatriated earnings from South to North country exceeding inflows of equity and intra-firm loans to emerging host countries). As we are interested in gross North-South inflows, we adopt a non-linear empirical model that allows us to estimate a log-log equation without losing the information associated with negative and zero entries in the bilateral North-South FDI matrix. In order to keep the negative and zero observations, we follow Yeyati et al. (2003) and use a transformation of the gross inflows as the dependent variable (see Appendix A for the details). We estimate our model by a random-effects tobit model that is left censored at zero (see Peracchi, 2004).⁵

Our equation is then:

$$\ln(\text{inflow}_{ijt}) = \alpha_{ij} + \mu_t + \beta_0 \ln \text{GDP}_{it} + \beta_1 \ln \text{GDP}_{jt} + \beta_2 \ln \text{GDP}_{c_{it}} + \beta_3 \ln \text{GDP}_{c_{jt}} + \beta_4 X_{ijt} + u_{ijt} \quad (1)$$

where inflow_{ijt} is bilateral gross FDI inflows from source country j to host country i at time t in constant 2000 US dollars. We use GDP of the host country at time t (GDP_{it}) and GDP of the source country at time t (GDP_{jt}), as measures of the size of the markets; and we use GDP per capita of the source country at time t ($\text{GDP}_{c_{jt}}$) and GDP per capita of the host country at time t ($\text{GDP}_{c_{it}}$) as measures of income. These variables are also in constant 2000 US dollars. The country-pair specific (random) effects, α_{ij} , captures all the time-invariant factors, such as distance, common language, common legal origin, etc., while μ is a time dummy. Other explanatory variables, X_{ijt} , are the log of bilateral trade (lagged to avoid possible endogeneity concerns), educational attainments in the host countries, continent dummies (Latin America, Asia, Africa and Europe), and a set of proxies for institutions and reform.

As for democracy and economic reform, which are at the centre of our study, we expect that *ceteris paribus* FDI flows more to South host countries where political and economic regimes are more open and more market oriented. One problem is that many measures suffer from being

⁵ Razin et al. (2005) take negative entries as evidence of previous FDI flows, and estimate the fixed cost of FDI based on that information: this looks like a rather ad hoc modeling choice.

subjective, namely they are reported as scores attributed by experts or economic agents to each country and over time. Campos and Horvath (2006) propose instead objective measures of liberalisation and reform, based on economic variables, but they provide them only for a limited number of countries over time (the transition economies of Central and Eastern Europe). Another issue is that of ‘input’ versus ‘output’ measures, the former being related to policy decisions and the latter to policy outcomes: this is relevant as output measures are more likely to be endogenous than input ones in respect to FDI flows.

In this study, we follow the approach suggested by Giavazzi and Tabellini (2004) and use their measure of *democracy* to capture the political regime liberalisation in our sample.⁶ We augment equation (1) to take account of two binary variables for institutional arrangements that are likely to be associated with FDI attractiveness in emerging economies: democracy and EU membership negotiations. These binary variables describe the condition of the individual host country each year. The democracy variable has two advantages over other measures of institutional regime. First, using a binary variable to mark the year a country adopts a permanent democratic regime should overcome the endogeneity problems that may arise when using ‘output’ measures of institutional quality. Second, when referred to a set of standard institutional arrangements as in the definition adopted by Giavazzi and Tabellini (2004), it comes rather close to an objective rather than a subjective measure of institutional regime.

Selecting an objective, input measure of economic reform is more complex, and data for many countries and years are not available. As a first approximation, we take the log of privatisation proceeds as an index of market-oriented economic reform, which has the advantage of being objective. However, being an output measure of reform, this variable could lead to endogeneity problems.

FDI data are obtained from the OECD’s International Direct Investment Database (2006), which provides data on bilateral inflows and outflows of FDI. Each OECD member country reports bilateral ‘outflows to’ and ‘inflows from’ other member and a number of partner countries. All values were originally expressed in the reporting countries’ own national currency units, which were then converted into constant 2000 US dollars using OECD’s yearly average exchange rates and US GDP deflator. There are 14 developed and 24 emerging developing countries in our sample (see Appendix B for list of countries in the sample). Other data on the explanatory variables come from various sources (see Appendix C). The time range for our sample is from 1992 to 2004. Both the cross-country and the time dimension on our panel were chosen to maximise data points and avoid missing observations.

4. Econometric findings

We start with a simple model that includes the basic gravity-type variables (i.e. GDPs of both source and host country) plus the random-effects that capture all country-pair specific time-invariant variables (a proxy for geographical and cultural distance) and growth-type variables (i.e. GDP per capita of both source and host countries). The results from random-effects tobit regression for our benchmark equation are reported in Table 1. Since the random-effects estimator uses Gauss-Hermite quadrature to compute the log likelihood and its derivatives, we checked all our results in this table and the ones that follow for quadrature sensitivity. All

⁶ Giavazzi and Tabellini (2006) also suggest a binary measure of economic liberalisation. However, this measure is likely to be more ‘subjective’ than the political one, and anyway it does not display enough variability in our dataset to allow a test of its effect on FDI inflows.

results reported are stable hence the results can be confidently interpreted.⁷ The gravity-type determinants of FDI as the GDP of source and host country have a significant positive impact on bilateral FDI inflows from developed countries to emerging markets. Both country-pair time-invariant effects and the time-dummies are significant (the likelihood-ratio test (χ^2) reported in the last row of each table is a test of the significance of the random-effects).⁸ A different picture emerges for the growth-type variables: while per capita GDP in the source country is a significant and positive determinant of bilateral FDI flows, per capita GDP in the host country is not a robust determinant when continent dummies are included. This indicates that while richer countries do invest more FDI in the emerging markets, there is no evidence that the poorer among host countries are the ones that attract most of these flows (a partial restatement of the Lucas puzzle).

Table 1. Benchmark Estimation Model

Dependent variable: Inflows	I	II
GDP of source	2.29 (0.21)***	2.31 (0.20)***
GDP of host	1.19 (0.22)***	1.79 (0.26)***
GDP per capita of source	3.07 (0.82)***	3.20 (0.81)***
GDP per capita host	0.48 (0.28)*	0.29 (0.28)
Time dummy variables	Yes	Yes
Continent dummies	No	Yes
N (uncensored, censored)	3780 (2925, 855)	3780 (2925, 855)
Log-likelihood	-11404.23	-11394.48
Likelihood-ratio test : χ^2 (probability)	288.13 (0.00)	261.23 (0.00)

Standard errors in parentheses. * significant at 10%, ** significant at 5% and *** significant at 1%.

In Table 2, the basic model is augmented by the log of trade flows between country pairs. In order to avoid an endogeneity bias, this variable is lagged one-period. An increasing amount of bilateral trade is intra-industry, and most of the intra-industry trade is carried out by multinationals. This suggests FDI and trade can be complements. Alternatively, trade and FDI can be substitutes, which would imply a negative relationship between the two variables. This can be the case if there are high trade costs between two countries, and FDI is carried out to replace exports (an extended version of the so-called ‘tariff-jumping’ argument). Our findings indicate that the nature of the relationship is complementary. FDI inflows into emerging markets are positively correlated with trade flows: country-pairs that trade more also exchange larger FDI flows. An interpretation of this is that trade flows facilitate investment abroad resulting in

⁷ STATA recommends that the results from the model estimated by 12 quadratures (default) points be compared to results from 16 quadrature points. If the relative difference in the estimated coefficients is larger than 1%, then the coefficients are not stable. If this is the case, it may be that the random-effects estimator is the wrong model.

⁸ The time dummies are jointly significant. The test results are not reported.

reduced transaction costs as business relations are already in place. Not surprisingly, gravity-type variables such as the size of the host countries are not robust to the inclusion of lagged trade, while the economic significance of the source country size is reduced but statistically significant. Per capita GDP in the source country has the only significant coefficient at the 1% level, with or without continent dummies, but compared to Table 1 its economic significance is also reduced.

Table 2. The effect of bilateral trade on FDI inflows

Dependent variable: Inflows	I	II
GDP of source	0.47 (0.27)*	0.46 (0.27)*
GDP of host	-0.04 (0.23)	0.35 (0.27)
GDP per capita of source	2.81 (0.74)***	2.92 (0.73)***
GDP per capita host	0.56 (0.26)**	0.21 (0.28)
Trade (-1)	2.12 (0.23)***	2.14 (0.24)***
Time dummy variables	Yes	Yes
Continent dummies	No	Yes
N (uncensored, censored)	3565 (2765, 800)	3565 (2765, 800)
Log-likelihood	-10721.219	-10714.463
Likelihood-ratio test : χ^2 (probability)	145.39 (0.00)	127.98 (0.00)

Standard errors in parentheses. * significant at 10%, ** significant at 5% and *** significant at 1%.

In Table 3, we augment the benchmark equation by an index of human-capital endowment in the host economies (education as proxied by average years of schooling in the total population of 25 and over). This is in line with theoretical and empirical research pointing to the role of human capital in enhancing productivity, and in raising the rate of return on physical capital given per capita income. Since our variable is only available for intervals of five years (see Barro & Lee, 2000), the sample size is considerably smaller and the dependent variable is averaged over sub-periods.⁹ Our previous results are robust to the inclusion of human capital endowments in the host countries. The GDP of both the source and host countries and the per capita GDP in the source country are significant. Average education in the emerging economies is positively and significantly correlated with FDI inflows, but this result is not robust to the inclusion of continent dummies (as if there were a regional bias in education standards). Interestingly, the coefficient of per capita GDP in the host country now shows a negative coefficient (though not significant) as predicted by the neoclassical model with human capital.

⁹ The sub-periods are 1992-1994, 1995-1999, and 2000-2004. The data points for years of schooling are 1990, 1995 and 2000.

Table 3. The effect of human capital on FDI inflows

Dependent variable: Average Inflows	I	II
GDP of source	2.35 (0.21)***	2.35 (0.21)***
GDP of host	0.96 (0.26)***	1.47 (0.29)***
GDP per capita of source	3.25 (0.86)***	3.31 (0.85)***
GDP per capita host	-0.41 (0.32)	-0.33 (0.34)
Education	0.37 (0.15)***	0.02 (0.16)
<i>Time dummy variables</i>	<i>Yes</i>	<i>Yes</i>
<i>Continent dummies</i>	<i>No</i>	<i>Yes</i>
<i>N (uncensored, censored)</i>	928 (801, 127)	928 (801, 127)
<i>Log-likelihood</i>	-2841.81	-2835.37
<i>Likelihood-ratio test : χ^2 (probability)</i>	15.49 (0.00)	13.41 (0.00)

Standard errors in parentheses. * significant at 10%, ** significant at 5% and *** significant at 1%.

Table 4 introduces privatisation proceeds as a control variable measuring market-oriented reform in emerging economies. Privatisation proceeds are positively and significantly correlated with the FDI inflows as expected, and controlling for privatisation all GDP and per capita income variables are statistically significant. However, per capita GDP in the host country has a positive sign, contrary to what was predicted by the growth-type approach: this suggests that once economic reform is taken into account, richer and not poorer emerging economies attract more FDI. Privatisation proceeds are an output measure of economic reform, which has the drawback of possibly leading to endogeneity problems.¹⁰ In order to cope with that, we include the lagged value of the proceeds in column 2, which however turns out to be not significant. In column 3, to check the robustness of the results, we control for lagged trade as well as for contemporaneous privatisation proceeds. Privatisation is positively and significantly correlated with FDI, however, the size of the host and source countries are not robust when trade is controlled for, similar to the results in Table 2.

In Table 5, we introduce the democracy binary variable. We follow Giavazzi and Tabellini (2004) who use a similar democracy dummy variable based on the index variable Polity2 from the POLITY IV Project. Polity2 is a composite index (ranging from -10 to 10) that measures the quality of the democracy in a country.¹¹ Our dummy variable takes the value of 1 when the host country makes a permanent (i.e. with no reversals of policy during the observed period) transition to democracy. For the date of transition to democracy, we, like Giavazzi and Tabellini (2004), take the point when Polity2 index takes values greater than zero.

¹⁰ Carstensen and Toubal (2003) suggest an input measure of privatization method in Central Eastern European countries, but based on subjective evaluations.

¹¹ The Polity2 index is a composite index of the following underlying variables: competitiveness of executive recruitment, openness of executive recruitment, constraint on the chief executive, regulation of participation and competitiveness of political participation.

Table 4. The effect of privatisation proceeds on FDI inflows

Dependent variable: Inflows	I	II	III
GDP of source	2.18 (0.21)***	2.28 (0.21)***	0.37 (0.27)
GDP of host	0.94 (0.24)***	1.56 (0.28)***	-0.29 (0.28)
GDP per capita of source	2.31 (0.84)***	2.34 (0.84)***	2.08 (0.74)***
GDP per capita host	0.59 (0.31)*	1.28 (0.40)***	0.20 (0.36)
Privatisation proceeds	0.34 (0.11)***		0.35 (0.11)***
Privatisation proceeds (-1)		0.14 (0.11)	
Trade (-1)			2.22 (0.24)***
Time dummy variables	Yes	Yes	Yes
Continent dummies	No	Yes	Yes
N (uncensored, censored)	2665 (2130,535)	2710 (2149, 561)	2599 (2079, 520)
Log-likelihood	-8086.99	-8223.82	-7845.89
Likelihood-ratio test : χ^2 (probability)	1841.20 (0.00)	163.35 (0.00)	83.51 (0.00)

Standard errors in parentheses. * significant at 10%, ** significant at 5% and *** significant at 1%.

A priori, we would expect to see a positive surge in FDI inflows to emerging markets for a few years after transition and a levelling off in the years to follow as new investment projects are exploited. In order to capture the diminishing effect of transition to democracy, we created dummy variables (*democracy_1*, *democracy_2*, *democracy_3*, *democracy_4*) that take the value 1, if the transition was made more than one year ago (two years ago, three years ago and four years ago respectively), and zero for the years before.

One would expect that democracy leads to larger FDI flows once gravity and growth-type variables are controlled for, but columns 1 and 2 show that the democracy variable is not significant when included in the baseline equation. These results suggest that although transition to democracy does seem to have a positive impact on FDI, on the year of transition and two years into it, these results are not statistically significant. It may be that risk-averse foreign investors watch for the new institutions to take root.¹² However, we see that the impact of transition translates into a significant surge in FDI after two years (column 3, Table 5) and has a diminished but positive effect in the years to follow. The transition to democracy has two effects on FDI inflows to emerging markets: (i) it induces a surge in FDI inflows to those emerging markets who were already recipients of FDI, and (ii) it is associated with an increased probability of receiving FDI inflows for those countries that were prior non-recipients.

¹² Most emerging host countries in our sample have undergone economic liberalisation before democratic liberalisation. Hence the statistical insignificance of the democracy dummy is not attributable to a lack of economic liberalisation.

Table 5. The effect of democracy on FDI inflows

<i>Dependent variable: Inflows</i>	I	II	III	IV	V
GDP of source	2.27 (0.20)***	2.27 (0.20)***	2.28 (0.20)***	2.28 (0.20)***	2.27 (0.20)***
GDP of host	1.84 (0.26)***	1.84 (0.26)***	1.89 (0.26)***	1.85 (0.26)***	1.80 (0.26)***
GDP per capita of source	1.84 (0.26)***	3.11 (0.82)***	3.12 (0.82)***	3.12 (0.82)***	3.10 (0.82)***
GDP per capita host	0.45 (0.33)	0.41 (0.33)	0.20 (0.33)	0.23 (0.33)***	0.44 (0.33)
Democracy	0.84 (0.68)				
Democracy_1		0.92 (0.59)			
Democracy_2			1.98 (0.56)***		
Democracy_3				1.72 (0.52)***	
Democracy_4					0.69 (0.49)
<i>Time dummy variables</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>
<i>Continent dummies</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>
<i>N (uncensored, censored)</i>	3637(2819,818)	3637(2819,818)	3637(2819,818)	3637(2819,818)	3637(2819,818)
<i>Log-likelihood</i>	-10970.162	-10969.71	-10964.63	-10965.43	-10969.94
<i>Likelihood-ratio test : χ^2 (probability)</i>	248.63 (0.00)	247.92 (0.00)	248.81 (0.00)	249.64 (0.00)	248.95 (0.00)

Standard errors in parentheses. * significant at 10%, ** significant at 5% and *** significant at 1%.

In Table 6, we jointly model the institutional and economic reform side of FDI flows from North to South countries. In column 1, democracy and privatisation proceeds turns out to be both positively and significantly associated to larger FDI flows in emerging economies, while the results concerning GDPs and per capita incomes are in line with those in the previous tables. As shown in column 2, the positive joint role of democracy and market-oriented reform is not confirmed when we include lagged privatisation proceeds as a proxy for reform. In the last column, we introduce the lagged trade variable to check the robustness of results from column 1. Both democratic liberalisation and economic reform are robust and positively correlated with FDI inflows when trade is controlled for.

Table 6. The effect of democracy and economic reform on FDI inflows

<i>Dependent variable: Inflows</i>	I	II	III
GDP of source	2.19 (0.21)***	2.28 (0.21)***	0.34 (0.27)
GDP of host	1.24 (0.28)***	1.59 (0.28)***	-0.20 (0.28)
GDP per capita of source	2.31 (0.83)***	2.33 (0.84)***	2.04 (0.73)***
GDP per capita host	0.29 (0.40)	1.18 (0.42)***	-0.16 (0.37)
Democracy	1.53 (0.67)**	0.55 (0.72)	1.81 (0.61)***
Privatisation proceeds	0.35 (0.11)***		0.38 (0.11)***
Privatisation proceeds (-1)		0.14 (0.11)	
Trade (-1)			2.26 (0.24)***
<i>Time dummy variables</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>
<i>Continent dummies</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>
<i>N</i> <i>(uncensored, censored)</i>	2665 (2130, 535)	2710 (2149, 561)	2599 (2079, 520)
<i>Log-likelihood</i>	-8083.43	-8223.53	-7841.58
<i>Likelihood-ratio test : χ^2 (probability)</i>	172.11 (0.00)	161.21 (0.00)	77.22 (0.00)

Standard errors in parentheses. * significant at 10%, ** significant at 5% and *** significant at 1%.

A general robustness test of these results is in Table 7, where we introduce a EU binary variable to evaluate the impact of the start of EU membership negotiations. The European Commission and Council allow the start of official accession negotiations with an applicant emerging country only after this country has complied with three sets of so-called Copenhagen criteria, which require a number of reforms leading to democracy and civil rights, the establishment of a sound market economy, and macroeconomic stabilisation. Hence, the EU dummy can be viewed as a comprehensive indicator of political and economic reform, which however has the disadvantage of being useful only for European countries.

Table 7. The effect of EU membership negotiations

Dependent variable: Inflows	I	II	III	IV	V
GDP of source	2.31 (0.20)***	2.27 (0.20)***	2.19 (0.21)***	2.20 (0.21)***	0.36 (0.27)
GDP of host	1.85 (0.26)***	1.90 (0.26)***	1.19 (0.28)***	1.29 (0.28)***	-0.14 (0.28)
GDP per capita of source	3.21 (0.79)***	3.11 (0.81)***	2.33 (0.83)***	2.31 (0.82)***	2.02 (0.72)***
GDP per capita host	0.04 (0.29)	0.16 (0.34)	0.37 (0.40)	0.13 (0.41)	-0.29 (0.38)
EU dummy	1.95 (0.59)***	1.85 (0.60)***	1.11 (0.66)*	1.09 (0.66)*	0.87 (0.66)
Democracy		0.76 (0.66)		1.51 (0.66)**	1.79 (0.61)***
Privatisation proceeds			0.30 (0.11)***	0.33 (0.11)***	0.36 (0.11)***
Trade (-1)					2.24 (0.24)***
<i>Time dummy variables</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>
<i>Continent dummies</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>
<i>N</i> <i>(uncensored, censored)</i>	3780 (2925, 855)	3637 (2819, 818)	2665 (2130, 535)	2665 (2130, 535)	2599 (2079, 520)
<i>Log-likelihood</i>	-11389.08	-10965.5	-8084.66	-8082.07	-7840.72
<i>Likelihood-ratio test : χ^2 (probability)</i>	237.68 (0.00)	228.33 (0.00)	166.24 (0.00)	163.62 (0.00)	70.78 (0.00)

Standard errors in parentheses. * significant at 10%, ** significant at 5% and *** significant at 1%.

As shown in column 1, the EU variable alone is significant and has a strong positive impact on FDI inflows: once emerging countries have started membership negotiations with the EU, they have been receiving larger amounts of FDI from the source countries. This is true even when continent dummies are included, although once regional dummies are plugged in the regression the EU dummy is likely to capture part of the effect of the EU membership. The EU dummy is robust to the inclusion of the democracy and privatisation proceeds separately in columns 2 and 3. In column 4, when both democracy and privatisation are taken into account, their coefficients are significant while that of the EU dummy is statistically significant at 10%: we interpret this as evidence that the role of democracy and market-oriented reform is rather robust and widespread beyond European borders. Also, the start of membership negotiations for joining the EU has a significant positive impact on FDI inflows in candidate countries even when democratic and economic reform is controlled for directly. This residual effect of the EU dummy beyond institutional and market reform is not robust when bilateral trade is controlled for in column 5 in Table 7. This suggests that the EU dummy may have been a proxy for the level of economic integration between candidate countries and the EU.

Overall, we find that our hybrid model of FDI inflows from rich countries to the emerging markets works rather well, although the Lucas puzzle of why poor countries do not get most of the net capital flows is left partly unexplained even when educational attainments are taken into account. When controlled for bilateral trade, much of the economic significance in our hybrid model is reduced (also wiped out), most probably because gravity-type variables, such as GDPs and distance affect trade as well as FDI. Democracy and privatisation proceeds, taken as a measure of economic reform, turn out to be both positively and significantly associated to larger FDI flows in emerging economies. Our results also indicate that democracy alone is significant and has an impact only two years after democratisation has taken place, while it is immediately significant when associated with privatisation proceeds. This suggests that democratisation and economic reform mutually reinforce one another. This finding is robust to the inclusion of an EU dummy that captures the start of EU accession negotiations that is in turn related to a broad menu of political and economic reforms.

5. Final remarks

The literature on the economic effects of institutions and reform is growing rapidly. Hence, there is also new interest in explaining FDI flows by institutional factors. Nevertheless, the impact of democracy on FDI has been examined by only a few authors. Trying to explain FDI by institutional factors is challenging in many ways. First, there is a need for objective rather than subjective measures of institutional quality and reform. Second, there is a serious problem of potential endogeneity as institutional factors are usually highly correlated with economic performance.

We studied the role of democracy and market-oriented reform in fostering FDI inflows from advanced to emerging countries in the context of a hybrid model combining gravity with growth determinants of international capital flows. We employed a binary variable for democracy, and privatisation proceeds (in US dollars) for economic reform, trying to overcome the 'subjectiveness bias'. At the same time, we are aware that more research is needed to cope with endogeneity and to move onto more comprehensive measures of institutions and reform.

There are three important conclusions we can draw from our results. First, we find that the size of both the source and the host countries, and per capita income of the source country are important determinants of FDI flows, whereas there is no evidence that per capita income in the host country matters. This points out that the Lucas puzzle is still to be explained, and has interesting implications in the case of FDI: rich source countries invest in large emerging markets, but there is no indication that this is to exploit cheap labour. Second, democracy alone

is significant and has an impact only two years after democratisation has taken place. Our key result is that democracy and privatisation turn out to be jointly associated with not only larger FDI inflows to emerging economies, but also with an increased probability of receiving positive flows. This suggests that democratisation and economic reform mutually reinforce one another. Third, these findings are robust even when the start of EU accession negotiations (which is related to a broad menu of political and economic reform) is taken into account. This indicates that the role of democracy and market-oriented reform are robust determinants of North-South FDI flows. In addition, our results can be interpreted as evidence that the prospect of joining the EU can act as an anchor for the host country. Above and beyond other emerging host countries, the ones that started EU membership negotiations are likely looked upon by direct investors as irreversibly anchored in democracy and market-oriented reforms.

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Appendix A

In order to avoid the loss of valuable information, the dependent variable is transformed. For large values of $inflw_{it}$, $\ln(inflw_{it} + 1) \approx \ln(inflw_{it})$. For small values $\ln(inflw_{it} + 1) \approx inflw_{it}$, this transformation is more like a semi-log tobit relationship. Different versions of this transformation were used by Eichengreen and Irwin (1996), Eaton and Tamura (1994) and Wei (2000). This transformation takes care of zero observations, leaving out negative observations of direct investment. Yeyati et al. (2003) offer a solution to this problem by the following transformation:

$$inflw_{it} = \ln(|inflw_{it}| + 1) \cdot \text{sign}(inflw_{it})$$

By this transformation, negative values are retained, and the coefficients from an OLS regression can still be interpreted as elasticities for large values of the dependent variable. For this transformation, we measure FDI inflows in dollars (not millions) and hence adding 1 is equivalent to adding one dollar to gross inflows.

Appendix B

Our dataset includes 14 North source countries and 24 South host countries over 1992-2004 (336 cross-sections by 13 years).

List of countries in sample:

Source countries

Austria, Denmark, Finland, France, Germany, Italy, Japan, Netherlands, Portugal, Spain, Sweden, Switzerland, UK and US

Host Countries (year of permanent democratisation)

Argentina (1983), Bulgaria (1990), Brazil (1985), Chile (1989), China (-), Colombia (1957), Czech Republic (1990), Egypt (-), Hungary (1989), Indonesia (1999), India (1950), South Korea (1987), Mexico (1994), Malaysia (1957), Morocco (-), Philippines (1986), Poland (1989), Russia (1992), Romania (1990), South Africa (, Slovakia (1993), Slovenia (1991), Thailand (1992) and Turkey (1983).

Appendix C

Data definition and sources

Gross FDI inflows: Foreign Direct Investment inflows from source country to host country in constant 2000 US dollars (OECD International Investment Statistics Yearbook, 2006).

GDP: Gross domestic product in constant 2000 US dollars USD (World Economic Outlook Database, IMF).

GDP per capita: Gross domestic per capita in constant 2000 US dollars (World Economic Outlook, IMF).

Bilateral trade: Bilateral exports from source country to host country in constant 2000 US dollars USD (Direction of Trade Statistics, IMF).

Education: Average years of schooling of the total population age 25 and over, (Barro-Lee, 2000).

Privatisation proceeds: Privatisation proceeds in constant 2000 US dollars (World Bank).

Democracy dummy: dummy variable takes the value '1' when political regime changes into permanent democracy, zero otherwise.

EU dummy: dummy equals '1' for the year that the emerging country starts EU membership negotiations and onwards (zero for the period before).

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