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Institutional Quality and Foreign Direct Investment in Latin America and the Caribbean

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Abstract

The purpose of this paper is to investigate the interaction between foreign direct investment and institutional quality through a panel analysis of 19 countries in Latin America and the Caribbean. We employed a simultaneous equation approach to avoid endogeneity biases and found that foreign direct investment could improve the quality of institutions, while better institutions attract more foreign direct investment into the region. As a policy implication, our regression results indicate that during the process of reform, the relation between foreign direct investment and institutional quality warrants a certain amount of attention.

(*JEL* D72, D73, F21)

Key words: Institutional quality, Foreign Direct Investment, Latin America and the Caribbean

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I. Introduction

The drastic shift from state intervention to economic liberalization in Latin America and the Caribbean since the mid-1980s has improved macroeconomic performance by restraining inflation and promoting economic growth. Some countries in the region are now attracting global attention as emerging markets, and liberalization is believed to have played an important role in the current boom (Easterly et al., 1997; Stalling and Peres, 2000; Fernández-Arias and Montiel, 2001; Bandeira and Garcia, 2002).

A number of studies, however, have challenged these optimistic views. Papers by Loayza et al. (2004) and Escaith and Morley (2000), for example, argue that reforms have reaped benefits of only limited significance and may have even produced adverse impacts in some areas. In investigations of the impacts of reforms on inequality, poverty, and wage differentials, Morley (2000), (2001) and Behrman et al. (2000) argue that reforms may have actually increased inequality while reducing poverty. In other words, previous studies demonstrate that policy reforms have succeeded in bringing about moderate recovery of growth, while causing deterioration in employment and income distribution[1].

Recent studies reflecting back on these discussions have stressed the importance of the quality of institutions. Lora and Panizza (2002) argue, for example, that the impact of reforms on employment and inequality seems to depend on country-specific factors, especially the quality of the institutions in a given country. While Scope, Speed, and Sequence certainly determine the outcome of reforms, the quality of institutions also influences the outcome by affecting the reform process. Thus, an improvement in institutional quality is an important step in any attempt to derive the fullest possible benefits from reforms. In this

[1] Lora et al. (2003) described "reform fatigue" as a common symptom in Latin America.

context, the reform of institutions, a process often referred to as "second generation reform," is now attracting a great deal of attention in Latin America and the Caribbean. This paper addresses the same issue by seeking to identify a desirable direction for institutional reform through an empirical analysis of the determinants of institutional quality in the region.

The increasing interest in institutional and political factors in development economics has led to a number of comprehensive studies about the determinants of institutional quality, such as the work of La Porta et al. (1999). Many of the recent studies also place great emphasis on the impacts of economic openness on the quality of institutions (Ades and Di Tella, 1999; Bonaglia et al., 2001; Islam and Montenegro, 2002; Gatti, 2004; Larraín and Tavares, 2004). This paper builds on these previous studies by examining panel data for 19 Latin America and the Caribbean countries to determine whether the inflow of foreign direct investment improves the quality of institutions. We also propose that a reverse causality is probably at work in this FDI effect. Specifically, we argue that better institutions may attract more foreign direct investment, which in turn could lead to biases in the regression. Using a simultaneous equation approach and panel analysis to deal with this possibility of reverse causality, we find that the region is open to a virtuous cycle whereby the introduction of foreign direct investment improves the quality of institutions and thereby attracts the inflow of more foreign capital.

Many papers published since the Asian currency crisis of 1997 have proposed that institutional reforms should precede economic liberalization[2]. This paper takes a slightly different stance by proposing that policymakers can derive better outcomes from policy reforms in Latin America and the Caribbean by promoting economic liberalization and institutional reforms at the same time.

[2] See, for example, the discussion in Stigliz (2002).

The remainder of this paper is divided into three sections. Section 2 summarizes discussions on the role of openness in institutional reforms, section 3 empirically investigates the determinants of institutional quality in Latin America and the Caribbean, and section 4 concludes the paper.

II. Determinants of institutional quality

Building efficient institutions is an important issue in Latin America and the Caribbean, as it is in all developing countries[3]. The discussion of governance has been ongoing since the failure of structural adjustment programs in the 1980s. The point behind the latest discussion is to find ways to improve the quality of institutions in developing countries. Openness has been emphasized in many papers. This determinant of institutional quality has been analyzed in the framework of the principal-agent problem. The classic paper by Becker and Stigler (1974) analyzes a public official's incentive for corruption using a model in which corruption increases as a function of rent and decreases as the risk of detection grows. This model is based on the premise that the quality of an institution is determined by the degree of opportunistic behavior of either the governor, that is, the person responsible for building institutions and promoting reforms, or the public officials who supply public services. Within this framework we can argue that the rent originates in restrictions, or that a lack of market competition detracts from the quality of institutions by increasing the incentive for corruption. If these arguments are correct, we could reduce opportunistic behavior simply by removing government interventions. Using a model focused on the incentive structure of public officials, Bliss and Di Tella (1997) and Ades and

[3] A number of empirical studies such as Assane and Grammy (2003) found that institutional quality was important for economic development.

Di Tella (1999) demonstrate that the promotion of market competition can improve the quality of institutions by reducing corruption.

In a more general argument, Islam and Montenegro (2002) suggest that the demand for institutional reform is likely to be greater in open economies. A governor, they argue, has three solid incentives for pursuing reform: (a) a country with poor institutions is placed at a competitive disadvantage in relation to a country with better institutions, (b) the possible risks and opportunities brought about by liberalization are likely undermine the effectiveness of existing rules and institutions, and (c) local firms in open economies can learn to create better institutions by following the example of foreign firms in the course of international trade and direct investment. Openness, in other words, can help to improve institutional quality by revealing the costs resulting from poor institutions, and through spillovers from the management resources of foreign firms. Rajan and Zingales (2003) indicate that the competition generated by trade and capital movements can be expected to promote the modernization of the financial institutions involved.

Results from empirical analyses support these arguments. A number of studies have concluded that trade openness is firmly associated with better institutions (Ades and Di Tella, 1999; Treisman, 2000; Bonaglia et al., 2001; Islam and Montenegro, 2002; and Gatti, 2004). Similarly, Larrain and Tavares (2004) conclude that institutional quality improves in response to openness to FDI. Still other studies demonstrate changes in institutional quality in response to (a) historical factors such as the origin of laws and social diversity, (b) political factors such as political instability and democratization, and (c) economic factors such as openness, income, education, and natural resources (La Porta et al., 1999; Lederman et al., 2001; and Adsera et al., 2003). In the next section, we empirically

investigate the determinants of institutional quality in Latin America and the Caribbean by focusing on the role of openness. Through this analysis, we seek to identify a basic policy to promote second generation reform, a process deemed to be urgent in this region.

III. Empirical Analysis

Framework

Based on the above discussions, we start our empirical analysis by investigating the determinants of institutional quality in Latin America and the Caribbean using panel data from 19 Latin America and the Caribbean countries[4] obtained over six 3-year sub-periods from 1983 to 2000. We assess institutional quality using the ICRG (International Country Risk Guide) dataset, now the most widely applied measure of institutional quality since its first use by Knack and Keefer in 1995. We use the average of three indexes in the ICRG dataset (namely, Law and Order, Bureaucratic Efficiency, and Corruption) to create an index for assessing institutional quality (INST). The basic model is as follows.

$$INST_{it} = \alpha + \beta_1 TRADE_{it}(FDI_{it}) + \beta_2 POL_{it} + \beta_3 LITERACY_{it} + \beta_4 FRAC_{it} + u_{it}$$

As proxies for openness, we employ trade to GDP (TRADE) as a measure of trade openness and the ratio of FDI inflow to GDP (FDI) as a measure of openness to FDI. Both variables can be theoretically expected to contribute positively to the quality of institutions. To assess the impact of democratization, we employ the political rights index (POL) provided by Freedom House[5]. In keeping with the

[4] The Latin America and the Caribbean countries in our dataset: Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Haiti, Honduras, Jamaica, Mexico, Paraguay, Peru, Trinidad and Tobago, Uruguay, and Venezuela.

[5] Freedom House publishes *Freedom in the World*, an annual assessment of the progress of democratization in countries around the world. Data and details on this index are available on the Freedom House website (http://www.freedomhouse.org/research/index.htm).

discussions of Lederman et al. (2001), Adsera et al. (2003), and others, we also expect democratization to improve the quality of institutions and discourage corruption among public officials by promoting general elections, free access to information, and the development of the mass media. The political fractionalization index (FRAC) is a proxy for political instability provided by the World Bank[6], based on the number of seats held by each political party[7]. A high FRAC is expected to negatively impact institutional quality, given that political instability (a) reduces the expected lifetime income of public officials and increases the incentives for misconduct, and (b) shortens the time horizon for governors and decreases the incentives for institutional reform (Svensson 1998). Further, we employ the adult literacy rate (LITERACY). Assuming that a population's overall sense of morality will grow with the spread of education, we expect the literacy rate to have a positive sign.

Regression results

Table 3 shows the regression results with fixed effects[8]. In keeping with the methodology of previous analyses of the determinants of institutional quality, regression (1) uses the ratio of trade to GDP to examine the impact of trade openness. While it has a positive sign, this ratio does not have a significant relationship with institutional quality though previous empirical studies using data from countries around the world have indicated that trade openness

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[6] The *Database of Political Institutions 2000* is downloadable from the World Bank website (http://siteresources.worldbank.org/INTRES/Resources/25467_DPI2000_distributed.zip).

[7] This index is more precisely defined as the probability that two deputies picked at random from the legislature will be of different parties. See Beck et al. (2001) for details.

[8] Prior to starting our analysis, we first used the F-test to choose between a pooled estimation model and a fixed effects model under the null hypothesis of no country-specific effects in interception. Second, we chose between a fixed effects model and a random effects model by running the Hausman test under the null hypothesis that country specific effects are uncorrelated with independent variables. According to the results of these tests as shown in Table 3, we adopted the fixed effects model in all specifications.

improves institutional quality. On the other hand, regression (2) employs the ratio of FDI inflow to GDP to assess the impact of FDI openness. Unlike the result in regression (1), the ratio of FDI inflow to GDP has positive and significant effects.

To further assess this result, instead of these openness variables, we employed measures of liberalization policies. In regression (3) we use the ratio of import duties to the value of imports (TARIFF) as a measure of restrictions on trade, which is expected to have a negative sign. We can see that it does not have significant impact, being consistent with the result of trade openness in regression (1)[9]. Similarly, we use the capital liberalization index (REST) which captures the degree of liberalization of capital controls in the expectation of finding a positive sign in the same manner as in regression (2)[10]. Regression (4) shows that this index is positively and significantly related to institutional quality. Since previous studies like Asiedu and Lien (2004) found capital account liberalization is a crucial determinant of FDI inflow, as is discussed in next section, we interpret this result to imply that capital account liberalization impacts on institutional quality through the effect on FDI inflow.

Thus, our model suggests that openness to FDI can improve institutional quality in Latin America and the Caribbean even though trade openness fails to bring about the same effect. To interpret briefly, these results suggest two reasons why the spillover effects from FDI exceed the effects of trade in impacting on

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[9] Based on Yanikkaya (2003), as other measures of restrictions on trade, we also used the ratio of total export duties to the value of exports and the ratio of taxes on international trade to revenue. Neither variable had a significant impact on institutional quality.

[10] We thank Dr. Elizabeth Asiedu for giving us the dataset used in Asiedu and Lien (2004). The original data are available in the annual IMF publication, *Exchange Arrangements and Exchange Restrictions*. More precisely, we have three indexes, i.e., the existence of restrictions on capital accounts, the existence of multiple exchange rates, and the existence of restrictions on repatriation of export proceeds. While any of these can be used as a proxy for capital liberalization, Asiedu and Lien (2004) found that the first, the existence of restrictions on capital accounts, was most significantly related to FDI inflow. Thus, we use this index in our estimation.

institutional quality: first, (a) foreign firms make more frequent and wide ranging requests to local public officials for institutional reform; second, (b) foreign firms have more opportunities to contact firms, people, and officials locally, whereas trade basically involves only the international transaction of goods. We note further that in most of the countries in the region, natural resource exports represent a large share of the economy. This condition is unlikely to be correlated with an improvement in institutional quality, and it provides some context for the insignificant effect of the ratio of exports to GDP.

Turning to the impacts of the other variables, we find that the political rights index and adult literacy rate have positive and significant effects under all specifications. This corroborates the results of previous empirical studies and thus confirms the importance of democratization and education in improving institutional quality in the region. The impacts of political instability are less clear. While the political fractionalization index (FRAC) has a negative and significant effect in regressions (2) and (4), its insignificant influence in the other two regressions prevent us from concluding that political instability has a negative effect on the quality of institutions.

In conclusion, the above regressions suggest that the most effective type of reform to improve institutions in Latin America and the Caribbean is not promotion of trade, but the introduction of foreign direct investment. In reporting this, however, we add that there may be a reverse causality at work between foreign direct investment and institutional quality. In other words, our results may be due to the effects of superior institutions in attracting more FDI inflow, in addition to the effects of FDI inflow in improving the quality of institutions. Thus, we must account for the simultaneity bias that may arise from such a reverse causality before we can reach any conclusion on the effects of FDI inflow on

institutional quality.

IV. Simultaneous equation analysis

Framework

We use a simultaneous equation approach to deal with the simultaneity between institutional quality and FDI. Our system of equations is as follows.

$$INST_{it} = \alpha + \beta_1 FDI_{it} + \beta_2 POL_{it} + \beta_3 LITERACY_{it} + \beta_4 FRAC_{it} + u_{it} \ldots \text{(I)}$$

$$FDI_{it} = \gamma + \delta_1 INST_{it} + \delta_2 REST_{it} + \delta_3 INFLATION_{it} + \delta_4 EXPORT_{it} + \delta_5 GDP_{it} + v_{it} \ldots \text{(F)}$$

Equation (I) analyzes the determinants of institutional quality by employing the ratio of FDI inflow to GDP as a proxy for openness. Equation (F) is an additional specification to investigate the determinants of foreign direct investment by capturing the reverse causality effect. Economic factors such as the income level, spread of education, wage differentials with developed countries, institutional quality, capital restrictions, and the degree of financial deepening have all been reported to have some influence on the level of FDI inflow in empirical analyses to identify FDI determinants. Based on these studies, we chose the explanatory variables in equation (F), as follows.

First, we employ the institutional quality index to control for the effect of the quality of institutions on FDI inflow. Wei (2000) and Hausmann and Fernández-Arias (2000) concluded that corruption can hamper FDI inflow. We also expect a positive sign for the institutional quality index. The capital liberalization index (REST) is expected to have a positive influence on foreign direct investment in line with the reasoning of Gastanaga et al. (1998), Asiedu (2002), and Asiedu and Lien (2004).

We also use the standard deviation of the GDP deflator (INFLATION) to control for the effects of macro economic instability, in the expectation of finding a

negative relation. Further, we use the ratio of exports to GDP (EXPORT) to capture the impact of trade openness on FDI inflow, in the expectation of finding a positive relation. The GDP per capita (GDP) variable is basically a proxy for a host country's market power. Here, however, the increasing costs of production offset the effect of market expansion captured by increases in GDP per capita, hence it is difficult to predict the sign of this variable. We address this problem by allowing the variable to have an indeterminate sign.

Our system of equations has two endogenous variables, i.e., FDI and INST, and eight other exogenous variables. If both endogenous variables are statistically significant, the FDI and institutional quality are likely to interact with each other. We can conclude that the capital liberalization index confers the greatest importance on institutional quality among the exogenous variables, given that the abolition of capital controls is the most important measure to attract foreign direct investment.

We begin our analysis by investigating the determinants of FDI using specification (F) in order to confirm the results of previous studies. We then estimate the parameters of the simultaneous equation model.

Regression results

As a preliminary step, we analyze the determinants of foreign direct investment in the region. Table 4 shows the regression results obtained using a random effects model. A glance at regression (1) reveals that the coefficient of the institutional quality index is positive and significant. This tells us that institutional quality is at least a partial determinant of FDI inflow, or rather, that some degree of simultaneity exists between foreign direct investment and

institutional quality[11]. We also find that the effect of the capital liberalization index is positive and highly significant, indicating that an easing of capital controls can increase FDI inflow. As for other variables, the ratio of exports to GDP has significant effects on FDI inflow with the expected sign, which is consistent with the results of the previous studies, while the standard deviation of the GDP deflator and the coefficient of GDP per capita are not significant.

Table 5 presents the parameters of the simultaneous equation model estimated using two-stage least squares with fixed effects (FE2SLS). Our results here confirm that the ratio of FDI inflow to GDP in regression (I) and the institutional quality index in regression (F) both have positive and significant effects even after taking endogeneity into consideration. In other words, we confirm that institutional quality and FDI interact with each other. We can reasonably argue, on this basis, that a virtuous cycle can be set in motion in this region: the introduction of foreign direct investment can be expected to improve the quality of institutions, which in turn can be expected to attract more inflow of foreign capital.

We should also note that the capital liberalization index in regression (F) is positively and significantly correlated with FDI inflow. This means that we can increase FDI inflow and institutional quality at the same time by easing capital controls. Capital liberalization is thus confirmed to be a feasible impetus for the virtuous cycle between institutional quality and FDI inflow in Latin America and the Caribbean. In this regression result, capital liberalization was followed by an 0.173 point improvement in institutional quality and a 1.34 percentage point

[11] As a robustness check, we also used Panel Granger Causality test (lag=1). Since both the null hypothesizes, "INST does not Granger Cause FDI" and "FDI does not Granger Cause INST", are rejected with p-values of 0.09 (F-value = 2.77) and 0.08 (F-value = 3.01) respectively, it is suggested that the causality between FDI and institutional quality is bi-directional.

increase in FDI inflow[12]. The mean of the institutional quality index and the ratio of FDI inflow to GDP in our sample, 2.69 and 2.03 percentage points, respectively, reasonably support the expectation that capital liberalization will have a certain impact.

Regarding the impacts of the other variables, i.e., the political rights index, the adult literacy rate, the political fractionalization index, the ratio of exports to GDP, and the standard deviation of inflation, we find that almost all of them have statistically significant effects with the expected signs.

V. Concluding remarks

The objective of this paper is to seek a direction for second generation reform by analyzing the determinants of institutional quality in Latin America and the Caribbean. Our empirical analysis indicated that an increase of FDI inflow following an easing of capital controls can play a crucial role in improving institutional quality. The Latin America and the Caribbean economies also seem to exhibit a virtuous cycle wherein the introduction of foreign direct investment improves the quality of institutions, which in turn attracts a greater inflow of foreign capital. These results provide a direction for the countries of Latin America and the Caribbean, a region urgently in need of institutional reform.

[12] We derived these figures by solving simultaneous equations based on the estimation results in Table 5.

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Table 1 Definitions of variables*

Variables	Definition	Data Source
INST	Institutional quality index	International Country Risk Guide
POL	Political rights index	Freedom in the World
REST	Capital account liberalization index	IMF (various issues)
FRAC	Political fractionalization index	Beck et al. (2001)
FDI	Foreign direct investment, net inflows (% of GDP)	WDI2003
TRADE	Trade in goods (% of GDP)	WDI2003
EXPORT	Export of goods and services (% of GDP)	WDI2003
TARIFF	Total import duties (% of the value of imports)	WDI2003
GDP	Log of GDP per capita	WDI2003
LITERACY	Literacy rate, adult total (% of people aged 15 and above)	WDI2003
INFLATION	Standard Deviation of GDP deflator in each perod.	WDI2003

* See footnotes for the details on POL, REST and FRAC.

Table 2 Data description

	INST	POL	REST	FRAC	FDI	TRADE	EXPORT	TARIFF	GDP	LITERACY	INFLATION
Mean	2.69	0.73	0.31	0.59	2.03	52.15	24.79	12.75	7.67	83.09	1.96
Median	2.97	0.83	0.00	0.60	1.41	48.42	23.32	10.54	7.71	86.69	0.08
Max	4.50	1.00	1.00	0.91	10.68	112.81	53.78	43.64	9.01	98.16	52.20
Mini	0.33	0.06	0.00	0.00	-0.14	15.00	7.01	2.39	5.91	34.13	0.01
S.D.	0.98	0.22	0.42	0.19	2.16	22.91	11.28	9.21	0.71	13.84	7.69

Table 3 Determinants of institutional quality in Latin America and the Caribbean

The results of fixed effects OLS estimation

		[1]	[2]	[3]	[4]
TRADE		0.003			
		0.61			
FDI			0.058		
			0.04**		
TARIFF				0.009	
				0.57	
REST					0.38
					0.01**
POL		1.455	1.568	1.336	1.599
		0.00***	0.00***	0.01***	0.00***
LITERACY		0.127	0.111	0.122	0.112
		0.00***	0.00***	0.00***	0.00***
FRAC		-0.642	-0.784	-0.850	-0.734
		0.14	0.07*	0.26	0.08*
Intercept		-8.750	-7.383	-8.367	-7.577
		0.00***	0.00***	0.00***	0.00***
R^2	Within	0.449	0.475	0.302	0.488
	Between	0.567	0.578	0.519	0.539
	Overall	0.462	0.480	0.305	0.453
F-test		11.13	14.97	9.900	12.03
P-value		0.00***	0.00***	0.00***	0.00***
Haussman Test		23.2	15.0	68.21	44.2
P-value		0.00***	0.00***	0.00***	0.00***
Number of observations		110	110	79	110

(a) P-value is reported under estimated parameters.

(b) * significant at 10%; ** significant at 5%; *** significant at 1%.

Table 4 Determinants of FDI in Latin America and the Caribbean

The result of random effects OLS estimation

		[1]
INST		0.807
		0.00***
REST		1.409
		0.00***
INFLATION		-0.026
		0.25
EXPORT		0.052
		0.01***
GDP		-0.094
		0.81
Intercept		-1.085
		0.69
R^2	Within	0.334
	Between	0.344
	Overall	0.312
F-test		3.390
P-value		0.00***
Haussman Test		4.07
P-value		0.54
Model		Random
Number of observations		114

(a) P-value is reported under estimated parameters.

(b) * significant at 10%; ** significant at 5%; *** significant at 1%.

Table 5 Institutional quality and FDI in Latin America and the Caribbean

The result of 2SLS fixed effects estimation

		Dependent variables	
		INST	FDI
		[I]	[F]
FDI		0.128 0.03**	
INST			1.146 0.05**
REST			1.140 0.07*
POL		1.699 0.00***	
LITERACY		0.086 0.00***	
FRAC		-0.921 0.04**	
GDP			3.758 0.04**
EXPORT			0.075 0.04**
INFLATION			-0.0433 0.08**
Intercept		-5.466 0.01**	-32.071 0.02**
R^2	Within	0.434	0.339
	Between	0.585	0.332
	Overall	0.498	0.310
F-test		9.960	3.200
P-value		0.00***	0.00***
Haussman Test		7.91	92.42
P-value		0.09*	0.00***
Number of observations		110	110

(a) P-value is reported under estimated parameters.

(b) * significant at 10%; ** significant at 5%; *** significant at 1%.