

Structural Reforms, Financial Liberalization, and Foreign Direct Investment

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The relationship between structural reforms and foreign direct investment (FDI) inflows is complex because different reforms have different impacts and because their complementarities have important yet imperfectly understood effects on FDI inflows. The objective of this paper is to try to extricate these effects, focusing on the dynamics of privatization, trade, and financial liberalization in a large yearly panel of developing countries (Latin America and transition economies) for the period from 1989–2004. The main finding is that of a strong relationship of reforms to FDI and, especially, of financial liberalization. We subject our results to various sensitivity tests and find they are robust to different measures of reforms, split samples, panel estimators (fixed-effects, system generalized method of moments, and differences-in-differences), as well as to endogeneity and omitted variables concerns.

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Foreign direct investment (FDI) is an important component of financial globalization. Although the literature still lacks consensus on the benefits of financial globalization, FDI is believed to be one of the most important channels through which those benefits are delivered (Prasad and others, 2003). FDI is also considered to be the least volatile form of capital flows making countries less vulnerable to sudden stops (Kose and others, forthcoming). Against this background, many countries consider attracting FDI. Thus, an important policy question is what factors drive FDI to particular destinations.

This paper attempts to revisit the question on the determinants of FDI inflows with a novel focus on the role of structural reforms. We construct a panel data set for 19 Latin American countries and 25 transition economies from 1989 to 2004.¹ In both regions, massive structural reforms were undertaken in this period. In most countries in the two regions, financial markets were liberalized, trade barriers were greatly reduced, and state-owned enterprises privatized.

From the point of view of foreign investors, successful implementation of structural reforms by the host government is a positive signal as it implies less investment risk. Thus, the progress of structural reforms can be an impetus to strong foreign investment flows and it can generate real benefits (beyond being a mere signal) to foreign investors by affecting the key parameters upon which the decision to invest in a foreign country is taken.

Despite its relevance, there exists little research relating FDI flows and structural reforms. One of the main reasons for this is the paucity of comparable data across countries and regions on structural reforms.² One contribution of this paper is the construction of various structural reform indicators (privatization, trade liberalization, and financial reform) that are comparable across countries in more than one region and are defined consistently over time.³ In transition economies, the collapse of the socialist and import-substitution systems provided myriad investment opportunities. Many of these economies were industrialized and could count on a relatively cheap yet educated workforce. FDI was perceived as an important catalyst for the technological advancement necessary to make them competitive in the international market. Yet these high hopes for FDI contrast sharply with the reduced role governments in transition economies allowed for foreign investors during the privatization process (with few exceptions such as

¹There are numerous papers examining FDI inflows in Latin American and in transition economies, separately. For Latin American countries, see De Gregorio (1992); Trevino, Daniels, and Arbeláez (2002); and Bengoa and Sanchez-Robles (2003). For transition economies, see Bevan and Estrin (2000); Resmini (2000); and Garibaldi and others (2001).

²Seminal papers focusing on individual regions are Abed and Davoodi (2000) and Lora (1998) for transition economies and Latin America countries, respectively.

³For the sample period of 1989–2004, Asia received a lot of FDI but the extent of structural reforms had been comparatively limited.

Hungary) as well as against the backdrop of unexpectedly large falls in output per capita and extended recessions (Campos and Coricelli, 2002).

The period of our analysis for Latin America corresponds roughly to the one Anne Krueger calls “a decade of disappointment” (Singh and others, 2005). At the same time, the 1990s in Latin America were a decade of intense structural reform. The first years of the decade saw the implementation of various major macroeconomic stabilization programs that were successful after much trial and error, with the notable exception of Brazil where stabilization succeeded only in 1994 with *Plano Real*. Macroeconomic stability paved the way for the adoption, implementation, and deepening of important structural reforms. Despite massive reform programs, the period is said to be disappointing because the growth payoffs turned out to be low and came accompanied by severe financial crises.⁴

Our main finding is that of a strong relationship from structural reforms to FDI. Among the structural reforms considered in the study, we find a stronger effect on FDI from financial sector reforms than from privatization and trade liberalization, suggesting that foreign investors do value highly a host country’s financial system that is able to allocate capital efficiently, monitor firms, ameliorate, diversify and share risk, and ultimately mobilize savings.

These results give rise to a “paradox of finance”: why do multinational firms that clearly are not financially constrained systematically invest in countries in which such constraints are less binding? One explanation is that financial development may be a precondition to the maximization of the benefits of spillovers, via backward linkages, to foreign investors. This is because financial reform benefits the network of suppliers these foreign firms need in order to succeed in the host economy. This is also consistent with the notion that foreign investors often fail to bring with them all the capital needed to take control of a domestic company and thus tend to finance an important share of their investment in the domestic financial markets (Kindleberger, 1969; Graham and Krugman, 1991).

Further, our finding on the relative importance of financial reforms on FDI qualifies and reinforces previous findings. For example, Alfaro and others (2004) examine the links among FDI, financial development, and economic growth and find that countries with well-developed financial markets are able to generate a higher growth payoff from FDI. Similarly, Prasad, Rajan, and Subramanian (2007) argue that absorptive capacity, measured by financial development of the recipient country, is a precondition to the benefits of foreign capital inflows to higher growth. Our results support and extend these findings by suggesting that financial reform is not only more important than financial depth (the size of the financial sector), but also

⁴Lora, Panizza, and Quispe-Agnoli (2003) focus on “reform fatigue” as a consequence of the disappointing effect of the reforms on growth after extensive promarket reforms in the 1990s. For example, average yearly per capita GDP growth rate was only 2.1 percent in the 1990s compared with more than 3 percent for the 1960s and 1970s.

financial reform is more important than other structural reforms, such as trade reform and privatization.

In addition to financial liberalization and, to a lesser extent, privatization we also find that foreign investors are attracted to countries with more stable macroeconomic environment, higher levels of economic development, and better infrastructure. We subject our results to an extensive set of sensitivity tests and find they are robust to different measures of reforms, split samples, panel estimators (fixed-effects, system generalized method of moments (GMM), and differences-in-differences) as well as endogeneity and omitted variables concerns. Our regression results also hold up well after the inclusion of institutional variables.⁵

I. Modeling the Determinants of Foreign Direct Investment

The considerable theoretical work on the determinants of FDI centers on ownership advantages, location advantages, and benefits of internalization (Dunning, 1993; Caves, 1996). Past studies can be classified largely into two groups. One focuses on an analysis of the determinants endogenous to the multinational investing firm such as the size of the firm and R&D intensity, and asks why a firm becomes a foreign investor. The other group examines factors exogenous to the foreign investors, namely, location advantages of the host country such as market size and labor cost.⁶ In the rest of the section we focus on the latter group as this paper examines the determinants of FDI that are exogenous to the investor but endogenous to the host country.

What are the factors that attract FDI? The literature indicates that the key locational determinants are the classical sources of comparative advantages of the host country. Firms choose the investment site that minimizes the cost of production.⁷ Notably, host country's market size and relative factor prices (that is, natural resources, labor cost, and human capital) all affect the expected profitability of foreign investment. Wheeler and Mody (1992) find that infrastructure availability is an important attribute for foreign investors in the United States. Also, they find the past stock of foreign investment is important in explaining FDI inflows. The riskiness of investment in terms of economic and political environment also affects the expected returns to the investment. In this respect, greater macroeconomic and political stability of the host country could attract more

⁵This is consistent with results put forward by Gastanaga, Nugent, and Pashamova (1998); Alfaro and others (2004); and Bevan, Estrin, and Meyer (2004). Alfaro and others (2004) present cross-sectional (long-term) results, while Bevan, Estrin, and Meyer (2004) focus only on the transition economies. Our paper differs from Gastanaga, Nugent, and Pashamova (1998) in that we look at fewer reforms in fewer regions (although our samples are of approximately the same size) but we examine the effects of reform controlling for a richer set of standard determinants.

⁶See Blonigen (2005) for a survey of the literature on FDI determinants.

⁷Wheeler and Mody (1992) provide a comprehensive summary of the classical sources of comparative advantages.

foreign investment (Bevan and Estrin, 2000). It is also often argued that FDI and trade openness can be positively related as FDI flows can be considered complementary to trade flows (Caves, 1996; Singh and Jun, 1996).

A number of recent works examine FDI to the transition economies. Bevan and Estrin (2000) and Resmini (2000) examine the drivers for FDI into 11 transition countries in pooled and panel settings, respectively. They put forward the notion that the prospect of European Union membership played an important role in attracting export-platform FDI. Garibaldi and others (2001) examine the overall level as well as the composition of private capital flows. They find that FDI allocation across countries is well explained in terms of macroeconomic and initial condition variables. Campos and Kinoshita (2003) examine FDI determinants, expanding the set of host countries to 25 transition countries in a GMM framework and stressing the importance of institutions in foreign investors' locational decision. More recently, Demekas and others (2007) try to explain FDI flows into Southeastern European countries within the gravity framework.

The work on the determinants of FDI in Latin American countries is also vast. De Gregorio (1992) examines the impact of FDI on long-term growth in a large number of Latin American countries and finds that FDI is three to six times more efficient than total investment. Bengoa and Sanchez-Robles (2003) find that the overall level of economic freedom, economic stability, and the level of human capital are important determinants of FDI for a sample of Latin American countries. More closely related to our study, Trevino, Daniels, and Arbeláez (2002) examine the effects of three types of reforms—microeconomic, macroeconomic, and institutional—on FDI inflows in seven Latin American countries between 1998 and 1999. They report that the most significant factors explaining FDI inflows are the level of GDP, privatization, and macroeconomic stabilization.

Econometric Model

This study draws on the existing literature on the determinants of cross-country FDI. Specifically, we test for three categories of the determinants. First, we look into traditional or classical factors such as market size, infrastructure, and macroeconomic environment. Second, we look at institutional factors. Third, we question whether structural reforms play a significant role in attracting foreign investors, especially in emerging economies.

In our baseline model, we specify FDI as a function of three main groups of variables: a set of classical determinants of FDI, structural reforms, and institutional quality. The baseline econometric model is as follows:

$$\begin{aligned}
 Y_{it} &= \lambda X_{it} + \varepsilon_{it}, \\
 \varepsilon_{it} &= \eta_i + \gamma_t + u_{it},
 \end{aligned}
 \tag{1}$$

where Y_{it} is the dependent variable which is measured as FDI over GDP (or as FDI per worker) in country i at year t .⁸ X_{it} includes (1) the classical factors (market size, initial income level, natural resource abundance, infrastructure, inflation), (2) structural reform variables (depth of the financial market, banking sector efficiency, trade liberalization, privatization), and (3) institutional variables (quality of bureaucracy, executive constraints, rule of law). In addition, η_i represents unobservable country-specific attributes and γ_t is a vector of time-specific effects (for example, time dummies).

It is a well-known concern in the literature that some of the regressors may be potentially endogenous or predetermined. For example, FDI might be attracted to a country that has a more liberalized financial market but at the same time financial liberalization may be enhanced by the presence of FDI. If we were to run the ordinary least squares (OLS) regression on (1), the estimate would be biased as the error term is correlated with X s.

The main strategy to address this problem is to rely on fixed effects model estimation. By so doing, we control for unobserved country-specific fixed characteristics that might affect FDI inflows. Here we will estimate whether within country the progress in financial sector reforms is associated with greater FDI inflows. However, the fixed effects model yields biased OLS coefficients when endogeneity is severe.

In order to address concerns about the potential endogeneity of the regressors, we also report the system-GMM estimator. The Blundell-Bond (1998) estimator is arguably a superior approach to the Arellano-Bond difference-GMM as adding lagged differenced variables as instruments in the level equations may generate substantial efficiency gains when the time window is relatively short.⁹ Another advantage of the system-GMM estimation is its ability to identify the coefficients of time-invariant variables in the level equation (so that time dummies can be easily introduced).

System GMM also has advantages over the standard or difference IV estimates because as the length of the panel increases, so does the number of valid instruments. For equation (1), valid instruments are lagged levels of dependent variable, Y_{it-s} where $s \geq 2$ and $t = 3, 4, \dots, T$. If X_{it} is strictly exogenous, then ΔX_{it-s} (for all s) can be used as additional instruments to increase the efficiency of the estimates.

Nevertheless, the GMM estimators also carry a risk arising from instrument proliferation. When a large set of instruments are collectively applied, even if individually valid, there is a risk of over-fitting endogenous variables and thereby the instruments are invalid in a finite sample

⁸Alternatively, we use the log of FDI per worker. The main reason for using FDI per worker is that, in developing countries, large informal sectors are not uncommon and they affect the official GDP figures.

⁹The difference-GMM estimator utilizes lagged levels as instruments in the difference equations (Arellano and Bond, 1991), whereas the system-GMM estimator uses lagged differences as additional instruments in the level equations.

(Bun and Windmeijer, 2007; Roodman, 2009). They also weaken the test of overidentifying restrictions.

With these caveats in mind, we estimate equation (1) first with OLS with country and time fixed effects, our preferred estimates, then with a system GMM estimator in order to address concerns about endogeneity and, finally, we report differences-in-differences results (under the synthetic counterfactuals heading below) that widely support our identification strategy.

Hypotheses

The main reasons for foreign investors to choose a certain investment location can be explained in general by market-seeking and resource-seeking motives (Lipsey, 2006). If FDI is market-seeking, then a large host country's market size and favorable growth prospects can be the main drivers of FDI. If it is resource-seeking, FDI is drawn to the location endowed with say abundant natural resources.

In order to test for these different hypotheses, we include various classical determinants of FDI as the first set of explanatory variables. Namely, we measure market size by log of GDP. If investment decisions are of market-seeking nature (that is, sell in the local market), then we would expect this to be positive. Natural resources endowment may also be an important factor, particularly for resource-driven FDI. We use (log of) the percentage of fuel and natural gas in total exports as a proxy for natural resource dependence. Log GDP per capita captures the level of development across countries, which reflects among other things differences in initial conditions. Inflation is our proxy for macroeconomic stability. We expect a negative sign on the coefficient of (log) inflation as low inflation is perceived by foreign investors as a favorable signal and it should lead to more FDI. High-quality infrastructure is another factor that allures foreign investors to a country. We use (log of) the number of main telephone lines as our infrastructure variable. Availability of main telephone lines is important to facilitate communication and help integrate the domestic market and, given that other important elements of the national infrastructure (for instance, internet services) are often complementary to telephones lines, this variable provides a useful proxy for the quality of infrastructure in the host country.

A second set of explanatory variables includes those that are related to structural reforms: financial reform, trade liberalization, and privatization efforts. The recent literature on capital account liberalization argues that precommitment to structural reforms can encourage more stable and longer-term capital inflows to the host country (Forbes, 2006). In our view, these three are among the most important reforms that help bring in FDI to the host country. These variables are discussed in detail in Section II.

A third set of variables include various measures of institutional quality. In the context of FDI, institutions underpin local business operating conditions, but they differ from "physical" supporting factors such as communication infrastructure. Consider, for instance, the case in which a

fair, predictable, and expedient judiciary, an efficient bureaucracy and less corruption may help attract FDI. On the other hand, as the recent literature of international trade argues, institutional quality may matter to the firm's decision to choose FDI as a mode of entry as opposed to outsourcing because of the hold-up problem (Antras, 2003).¹⁰ If this is indeed the case, poor institutional quality would encourage more FDI, *ceteris paribus*.

Thus, the theories point to two possibilities regarding the role of institutions in affecting FDI inflows. Good institutions may increase or decrease FDI inflows depending on the sector and type of FDI the country receives. In the past, data limitations have impeded extensive testing of these ideas, constraining them to focus on just one aspect of the issue, normally corruption. In this paper, we examine an array of institutional features and try to assess their relative importance. The institutional quality variables used in this study are the rule of law, quality of bureaucracy, and executive constraints.

II. Data and Measurement: Foreign Direct Investment and Structural Reforms

This section describes the data set we put together for this paper. The data set covers 19 Latin American and 25 transition economies from 1989 to 2004.¹¹ Below we describe the FDI measures, the indices of financial reform, and of trade liberalization, the privatization index, and our various institutional measures (executive constraints, corruption, rule of law, and quality of the bureaucracy), as well as the additional control variables we use (such as natural resources, infrastructure, and market size).

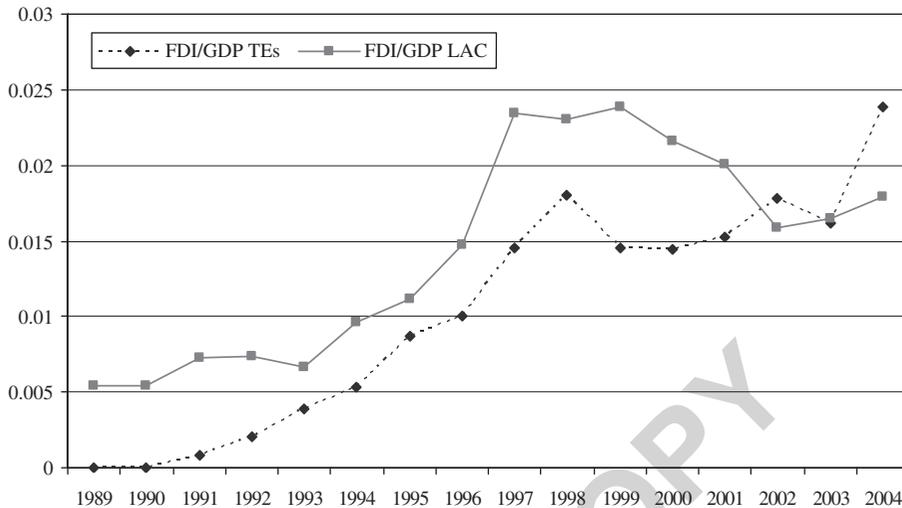
Foreign Direct Investment

The data on FDI are from the IMF's International Financial Statistics. Figures 1 and 2 show FDI inflows over GDP and per worker, respectively. First, it is interesting to note that throughout the 1990s average FDI inflows (over GDP as well as per worker) to Latin American countries tend to be substantially larger than to transition economies, with this reversing only for two years of the whole period of analysis. For the years up to the East Asian crisis (1997–98), the behavior of the two series in the two regions is similar,

¹⁰The hold-up problem arises when the firms' necessary investments are relationship-specific and it is impossible ex-ante to write complete contracts covering all contingencies between the buyer and seller. In the absence of property right protection, a firm would prefer to engage in vertical integration rather than the arm's length contracts with outside suppliers.

¹¹The Latin American countries in our sample are Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Jamaica, Mexico, Nicaragua, Paraguay, Perú, Uruguay, Venezuela, and Trinidad and Tobago; the transition economies are Albania, Armenia, Azerbaijan, Belarus, Bulgaria, Croatia, Czech Republic, Estonia, Georgia, Hungary, Kazakhstan, Kyrgyz Republic, Latvia, Lithuania, Macedonia, Moldova, Poland, Romania, Russia, Slovak Republic, Slovenia, Tajikistan, Turkmenistan, Ukraine, and Uzbekistan.

Figure 1. Foreign Direct Investment (FDI) Inflows over GDP for the Latin American Countries (LAC) and Transition Economies (TEs)
(In billions of constant U.S. dollars)



both showing a rapid increase in FDI inflows. The East Asia crisis of 1997 quickly spilled over to Brazil and Russia (Kaminsky and Reinhart, 2000) but has acquired contrasting dynamics: Figures 1 and 2 show that, in Latin American countries, FDI inflows come to a halt and have yet to recover in GDP terms although they did recover in 2004 in per worker terms (Calvo, 2003), while for transition economies these effects seem milder with FDI inflows recovering two years after the crisis. The relatively small dip in 2002 in Latin America coincides with the Argentine crisis (2001–02).

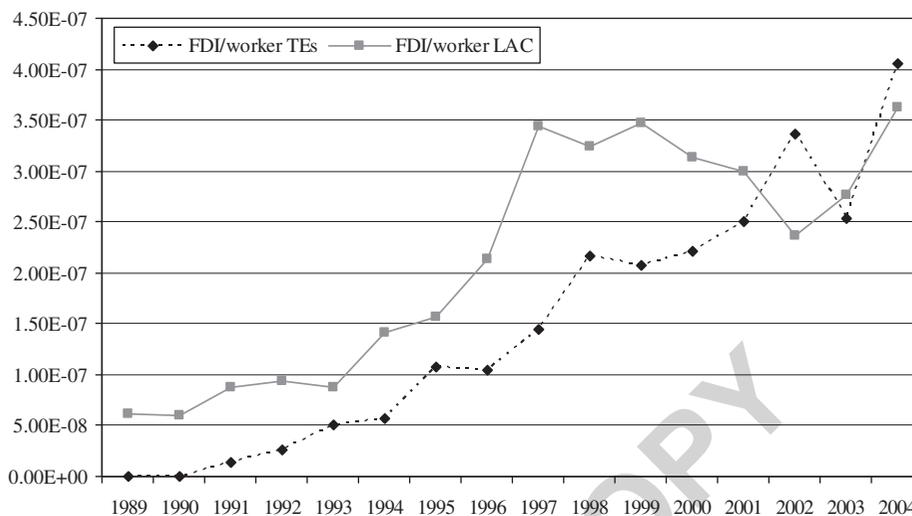
Measures of Structural Reform

We construct three reform indices comparable across regions and over time: financial sector reform, privatization, and trade liberalization.¹² In so doing, one should differentiate reform *efforts* from reform *outcomes*.¹³ For instance, in discussions of trade liberalization, reform efforts based upon indicators of trade openness are common. Yet improvements in trade openness can be generated by myriad of reasons other than attendant changes in trade policy (for example, exchange rate movements, technological change, climate

¹²The IMF Research Department has recently compiled the new database on structural reform indexes on domestic financial sector reform, capital account liberalization, trade reform, and product market reforms (SM/08/166). The financial liberalization variables are available online, cf. Abiad, Detragiache, and Tressel (2008), at www.imf.org/external/pubs/cat/longres.cfm?sk=22485.0.

¹³Rodrik (1996) and Loayza and Soto (2004) also make this important point.

Figure 2. Foreign Direct Investment (FDI) Inflows per Worker for the Latin American Countries (LAC) and Transition Economies (TEs)
(In billions of constant U.S. dollars)



shocks, and changes in trade policy of major trading partners). A similar argument can be made for privatization: consider the use of the share of private sector in GDP. One of the main goals of our reform indices is to try to isolate the impact of reform efforts from that of reform outcomes, and to capture the former as much as possible.

Financial Sector Reform

We construct several indicators for financial sector reform: overall financial development and the efficiency of the banking sector.¹⁴ The source of our data is the February 2006 version of the World Bank's *Financial Structure Dataset* (Beck, Demirgüç-Kunt, and Levin, 2000).¹⁵ This data set has been widely used in the financial liberalization literature as a main source for financial reform indicators (Beck, 2008).

Our first indicator reflects the depth of the financial market. For this, we use three underlying variables: the ratio of liquid liabilities to GDP, the ratio to GDP of credit issued to the private sector by banks and other financial intermediaries, and the ratio of commercial bank assets to the

¹⁴These two indices are also helpful in distilling different interpretations of the effects of financial reform. The underdevelopment of financial markets may encourage FDI inflows in search of monopoly power, or financial market deregulations may be taken as a credible signal of a host government committed to economic reforms (for example, multinational firms seldom depend on the host country's financial markets to raise finance).

¹⁵Available at http://siteresources.worldbank.org/INTRES/Resources/469232-1107449512766/FinStructure_2007.xls.

sum of commercial bank assets and central bank assets. We follow Lora (1998) to combine these variables into a single indicator by normalizing the underlying variables and equating the maximum for all countries and all years.¹⁶

The second indicator is the efficiency of the banking sector that is built upon two variables: the ratio of overhead costs to total bank assets and the net interest margin. Because larger values of these two variables are associated with a more inefficient financial sector, we adjusted the normalization above so that the larger values indicate more efficient financial intermediation.¹⁷

A critic may charge that our indices of financial intermediation, despite reflecting *de facto* policy changes, may capture more reform outcomes than reform efforts. In order to address this issue, we complement our analysis by using a set of *de jure* policy reform variables drawn from Abiad, Detragiache, and Tressel (2008). Notice that one main cost of using these data is a significant reduction in the country coverage.

Trade Liberalization

To measure the extent of trade liberalization,¹⁸ We use data from the World Bank-UNCTAD's World Integrated Trade Solution (WITS) system, for about 6,000 HS-6 digit product groups to calculate the average tariff (weighted by trade volumes) and standard deviations yearly and for each of the 44 countries in our sample.¹⁹

Privatization

The measure of privatization reform efforts is based on recently constructed data on privatization proceeds by the World Bank (Kikeri and Kolo, 2005).²⁰ This covers all privatization transactions in developing countries between 1990 and 2003. Privatization proceeds are defined as "all monetary receipts to the government resulting from partial and full divestitures (via asset sales

¹⁶See Appendix I for more details.

¹⁷We also generate a third index of financial reform measuring the level of stock-market-based financial development (as opposed to the more traditional, bank-based indicator described above). This index was constructed upon three variables: (a) the ratio of stock market capitalization to GDP, (b) the total value traded: the ratio of trades in domestic shares (on domestic exchanges) to GDP, and (c) the turnover ratio, which is the ratio of trades in domestic shares to market capitalization. As the results turn out to be similar to the ones for the first financial development index, we refrain from reporting them for the sake of space.

¹⁸For the discussion of the various problems in measuring the restrictiveness of trade policy, see Kee, Nicita, and Olarreaga (2006). In particular, notice that our indicator does not capture nontariff barriers.

¹⁹We expect a positive effect of trade liberalization on FDI inflows if trade and FDI are complementary (Caves, 1996; Singh and Jun, 1996) while it has a negative impact on FDI if FDI is of tariff-jumping type.

²⁰Available at <http://rru.worldbank.org/Privatization/>.

or sale of shares), concessions, leases, and other arrangements” (Kikeri and Kolo, 2005, p. 2). Thus excluding management contracts, new green-field investments, and investments committed by new private operators as part of concession agreements.

One should note that these data do not fully reflect “voucher” privatization programs as these methods tend to generate little revenues for the government. This biases results from using this privatization index downwards. However, there are only a few countries that carried out extensive voucher privatization programs (for example, the Czech Republic, Russia) and excluding these does not affect our results below. Our data set also contains information on whether or not the buyer is foreigner (company, individual, or consortium). Thus, we construct a data series of government revenues from privatization that exclude all those transactions with a foreign buyer as well.

Institutions

Host country institutions also influence investment decisions because they directly affect business operating conditions. The cost of investment consists of not only economic costs but also noneconomic costs such as bribery and time lost in dealing with bureaucracy and local authorities. To assess the institutional aspects of business operation conditions in the host country, we use two main data sources: Polity IV (2002) and the *International Country Risk Guide* (ICRG).²¹

From Polity IV, we use the extent of constraints on the executive power and the actual number of years the current regime has been in power (*xconst* and *durable*, respectively in the original sources). These measures have been used widely in the economics literature (for example, Acemoglu and Robinson, 2001).

From the ICRG, we use the indices of quality of the bureaucracy and the rule of law.²² These measures have also been used extensively in the economics literature (Gelos and Wei, 2005). The former is a 1 to 4 indicator reflecting the “autonomy from political pressure, institutional strength and quality of the bureaucracy” with higher ratings indicating a better bureaucracy along these lines. Also note that this measure is somewhat close to the corruption measure used by Wei (2000) and Wei and Shleifer (2000). High values for this variable implies good quality of bureaucracy and, thus, a lower cost for foreign investors as an honest government with transparent regulations is probably less likely to ask for bribes and side payments. The indicator for the rule of law is coded from 1 to 6 with higher ratings

²¹Available at www.cidcm.umd.edu/inscr/polity/ and www.icrgonline.com/, respectively.

²²Notice that below we do not report results on durable from Polity IV for the sake of space. We have assessed other institutional dimensions from ICRG, such as their measure of corruption, of government stability, and of political and economic risks, but for space reasons also do not discuss these results as they are similar to the ones we report.

reflecting the effectiveness of the legal system.²³ A higher score in the rule of law implies better legal institutions. We expect that countries with better legal infrastructure will be able to attract more FDI, everything else the same.

Other Control Variables

In addition to variables above, we also try to control for other traditional FDI determinants: market size, the level of development, macroeconomic stability, infrastructure, and natural resource abundance.

Depending on the motives for investment, investors value one factor over the other. For example, market-seeking investors will be attracted to a country with a large and fast-growing local market. Resource-seeking investors will favor a country with abundant natural resources, everything else constant. Efficiency-seeking investors will weigh more heavily geographical proximity to the home country, to minimize transportation costs.

Market-seeking FDI is mostly to serve the host country market. Market size is a measure of the size of potential demand in the host country. We expect FDI inflows (per worker and over GDP) to be greater in countries with larger domestic markets. For a proxy of market size, we follow the literature and use gross domestic product (in PPP terms), while the level of development is proxied by the level of real per capita GDP. The source of these two series is the IMF World Economic Outlook (WEO) database.

One indicator of a stable macroeconomic environment is price stability. Low inflation signals to investors the extent of government commitment and credibility. To proxy for stability, we use annual average inflation rates from WEO. Many transition and Latin American countries experienced high inflation after liberalizing prices in the late 1980s and early 1990s. Those countries that embarked on stabilization programs succeeded in bringing inflation under control rapidly. Thus, we expect that foreign investment, *ceteris paribus*, will be attracted to countries with lower inflation rates.

Also from WEO, we construct a measure of natural resources dependence which is the percentage of oil and natural gas in total exports. Countries that are natural resources abundant may attract foreign investment in those industries, possibly diverting investment from the manufacturing sector.²⁴

Good infrastructure is an important factor for foreign investors to operate successfully, regardless of the type of FDI. Availability of main telephone lines is necessary to facilitate communication and we draw this information from the World Bank's World Development Indicators.²⁵

²³It is originally called "law and order" in ICRG. The "law" subcomponent assesses the strength and impartiality of the legal system and the "order" subcomponent assesses popular observance of the law. Each subcomponent equals half of the total.

²⁴Gylfason and Zoega (2001) find that abundant natural resources may crowd out physical capital and inhibit economic growth. See also Robinson, Torvik, and Verdier (2002).

²⁵Further details on data construction, characteristics, and basic statistics, including the correlation matrix, are provided in Campos and Kinoshita (2008).

III. Empirical Results

The objective of this section is to identify what factors explain the distribution of FDI across Latin American and transition economies for the period 1989–2004. The novelty of our study is to explicitly introduce structural reforms as determinants of FDI. We argue that the omission of such factor may have biased previous results.

Baseline Results

As discussed earlier, the OLS estimates with country fixed effects are potentially prone to endogeneity bias. The alternative is to apply the system GMM, which also suffers from the possibility of overidentification. We thus present both the fixed effects model and system GMM in order to make up for possible shortcomings of each method.

Table 1 reports the regression results from the fixed effects model. The dependent variable is the ratio of FDI to GDP. As shown in columns 1 and 2, the results on the classical determinants of FDI are mostly consistent with the existing literature. Higher level of per capita income, stable macroeconomic environment reflected in low inflation, and high-quality infrastructure are positively related to FDI inflows. Note that the coefficient of resource abundance is negative, although not statistically significant.²⁶

It is worth noting that the interpretation of market size on FDI requires some caution. Owing to a scaling factor on the dependent variable, the net effect of market size on FDI is equal to the reported coefficient of $\log(\text{GDP})$ plus one. For example, in column 2 of Table 1, the reported coefficient of $\log(\text{GDP})$ is -0.739 and thus the true effect of market size is 0.261 ($= -0.739 + 1$). This implies that the country with large market size indeed draws more FDI. Yet columns 3–6 show that this result is fragile: the coefficient is negative and its absolute value is greater than one, thereby, market size is negatively correlated with FDI inflows. The fragility of these results may be due to endogeneity problem. When we use GMM in Table 2, the effect of market size becomes consistently positive and significant.²⁷

In columns 4 through 7, we include our structural reform variables. It is striking the significance and relative magnitude of financial reform measured as bank efficiency, as well as of privatization. Note that the sizes of the coefficients of four types of structural reform are comparable as they are all normalized. In column 5, for example, the coefficient of bank efficiency is about four times as large as that of privatization indicating that financial development measured by bank efficiency is more important than the progress toward privatization on foreign investment decisions.

²⁶Resource abundance is found to be positive and significant in the GMM results in Table 2.

²⁷This is not necessarily the case for Latin American countries as shown in column 6. It might be the case that foreign investors are in search of monopoly power and that they do not care about the domestic market size (Detragiache, Gupta, and Tressel, 2005).

Table 1. Determinants of Foreign Direct Investment (FDI) Inflows in Latin American Countries (LAC) and Transition Economies (TE), 1989–2004

(Fixed-effects estimates)

	1 ALL	2 ALL	3 ALL	4 ALL	5 ALL	6 LAC	7 TE
log(GDP)	0.285 [0.20]	-0.739* [0.38]	-1.127** [0.51]	-1.631*** [0.55]	-1.096* [0.57]	-1.042 [0.76]	-0.858 [0.97]
log(GDP per capita)	0.817*** [0.15]	1.076*** [0.20]	1.478*** [0.23]	1.338*** [0.23]	1.287*** [0.23]	1.154*** [0.29]	1.611*** [0.46]
log(inflation)	-0.161*** [0.029]	-0.105*** [0.034]	-0.0608 [0.040]	-0.0435 [0.039]	-0.0419 [0.038]	-0.116** [0.049]	0.121* [0.063]
log(telephone lines)		0.696*** [0.17]	0.928*** [0.22]	1.088*** [0.22]	0.906*** [0.23]	0.673** [0.32]	0.764* [0.39]
log(fuel)		-0.00292 [0.046]	0.00137 [0.051]	0.0157 [0.050]	-0.0249 [0.053]	0.00488 [0.060]	-0.123 [0.15]
Quality of bureaucracy			-0.167* [0.10]	-0.145 [0.099]	-0.155 [0.095]	-0.0514 [0.11]	-0.0466 [0.27]
Executive constraints			-0.0668 [0.075]	-0.0384 [0.075]	-0.0599 [0.072]	-0.161* [0.091]	0.0175 [0.14]
Rule of law			0.0377 [0.065]	0.0413 [0.063]	0.0421 [0.061]	0.0286 [0.083]	-0.167 [0.13]
Overall financial development				1.735 [1.31]	1.177 [1.32]	2.793* [1.59]	-4.764* [2.62]

Bank efficiency				5.119***	5.765***	3.160**	13.13***
				[1.32]	[1.30]	[1.50]	[3.34]
Trade liberalization					-1.45	1.713	-1.269
					[1.42]	[2.96]	[1.69]
Privatization					1.319***	1.009**	1.290***
					[0.30]	[0.45]	[0.41]
Observations	519	447	315	315	298	182	116
Number of countries	40	40	33	33	31	15	16
R-squared	0.35	0.28	0.36	0.4	0.46	0.49	0.56

Note: This table reports fixed-effects estimates for a panel of Latin American and transition economies from 1989 to 2004. The dependent variable is the ratio of FDI to GDP (in logs). The explanatory variables are GDP (in logs), per capita GDP (in logs), the annual inflation rate (in logs), the number of telephone lines as a proxy for quality of infrastructure (in logs), the share of fuel in total exports (in logs), an indicator for the institutional quality of the government bureaucracy, an indicator for the extent of the constraints faced by the executive branch of government, an indicator for the quality of the rule of law, an index of the depth of financial reform, an index of the efficiency levels of the domestic banking system, an index of the extent of trade reform carried out, and an index to the extent of the privatization efforts of the government. All regressions include a constant term which is not reported for the sake of space. Columns 1 to 5 report estimates for the combined panel, while column 6 reports estimates only for the Latin American countries and column 7 only for the transition economies. Heteroskedasticity robust standard errors are reported in brackets with ***, **, and * denoting significance at the 1, 5, and 10 percent level, respectively.

Table 2. Determinants of Foreign Direct Investment (FDI) Inflows in Latin American Countries (LAC) and Transition Economies (TE), 1989–2004
(System generalized method of moments estimates)

	1 ALL	2 ALL	3 ALL	4 ALL	5 ALL	6 LAC	7 TE
log(GDP)	−0.167*** [0.041]	−0.515*** [0.096]	−0.432*** [0.097]	−0.413*** [0.098]	−0.383*** [0.096]	−1.161*** [0.17]	−0.622*** [0.17]
log(GDP per capita)	0.499*** [0.075]	0.473*** [0.073]	0.271*** [0.089]	0.285*** [0.093]	0.218** [0.090]	−0.269** [0.13]	0.17 [0.19]
log(inflation)	−0.237*** [0.035]	−0.176*** [0.035]	−0.180*** [0.034]	−0.139*** [0.039]	−0.153*** [0.038]	−0.101** [0.050]	−0.0777 [0.052]
log(telephone lines)		0.341*** [0.090]	0.252*** [0.092]	0.274*** [0.092]	0.259*** [0.091]	1.192*** [0.18]	0.460*** [0.15]
log(fuel)		0.0513* [0.028]	0.0734*** [0.028]	0.0817*** [0.028]	0.0570** [0.027]	0.0645** [0.028]	0.0357 [0.069]
Quality of bureaucracy			0.216*** [0.074]	0.165** [0.077]	0.155** [0.078]	0.0266 [0.10]	0.185 [0.14]
Executive constraints			0.0316 [0.039]	0.0376 [0.041]	0.0851* [0.047]	−0.152** [0.077]	0.074 [0.064]
Rule of law			0.0389 [0.040]	0.0343 [0.041]	0.0241 [0.041]	0.349*** [0.063]	−0.0221 [0.090]
Overall financial development				−1.105 [0.82]	−1.018 [0.82]	−0.791 [1.13]	0.107 [1.54]
Bank efficiency				4.485*** [1.49]	3.048** [1.43]	4.132** [1.62]	9.180*** [2.47]
Trade liberalization					1.835 [1.47]	5.582* [2.88]	−1.796 [1.62]
Privatization					1.133*** [0.37]	1.410*** [0.51]	1.512*** [0.47]

Observations	355	315	315	315	298	182	116
Number of countries	33	33	33	33	31	15	16
Sargan over-id test	0.55	0.64	0.53	0.66	0.27	0.31	0.18
Test for serial correlation							
<i>AR(1)</i>	0.006	0.003	0.003	0.004	0.023	0.035	0.10
<i>AR(2)</i>	0.42	0.46	0.39	0.49	0.21	0.65	0.09

Note: This table reports system generalized method of moments estimates for a panel of Latin American and transition economies from 1989 to 2004. The dependent variable is the ratio of FDI to GDP (in logs). The explanatory variables are GDP (in logs), per capita GDP (in logs), the annual inflation rate (in logs), the number of telephone lines as a proxy for quality of infrastructure (in logs), the share of fuel in total exports (in logs), an indicator for the institutional quality of the government bureaucracy, an indicator for the extent of the constraints faced by the executive branch of government, an indicator for the quality of the rule of law, an index of the depth of financial reform, an index of the efficiency levels of the domestic banking system, an index of the extent of trade reform carried out, and an index to the extent of the privatization efforts of the government. Instruments used are log(GDP), log(GDP per capita), log(inflation), log(telephone lines), log(fuel), quality of bureaucracy, executive constraints, rule of law, overall financial development, bank efficiency, trade liberalization, and privatization: for the difference equations, all in lagged levels and, for the level equation, in first difference. *p*-values reported for the Sargan test of overidentifying restrictions and tests for serial correlation. All regressions include a constant term which is not reported for the sake of space. Columns 1 to 5 report estimates for the combined panel, while column 6 reports estimates only for the Latin American countries and column 7 only for the transition economies. Heteroskedasticity robust standard errors are reported in brackets with ***, **, and * denoting significance at the 1, 5, and 10 percent level, respectively.

The importance of a well-developed financial market is often cited as one of the prerequisites for economic growth. Tackling the financial globalization-growth puzzle, Prasad, Rajan, and Subramanian (2007) argue that foreign capital inflows including FDI can boost growth only when the recipient countries' financial markets are developed enough to channel foreign capital efficiently to finance productive investment. Alfaro and others (2004) report a similar finding for FDI that well-developed financial markets are a precondition for the positive effects of FDI on economic development.

This finding gives rise to a "paradox of finance" in the context of FDI. Why do multinational firms that are not severely financially constrained, systematically invest in countries in which such constraints are least binding? The conjecture we offer is that financial reform benefits the network of suppliers the foreign firms needs to operate successfully in the host economy. Recent studies from the related literature on FDI spillovers find that FDI generate spillovers mainly through intraindustry backward linkages rather than interindustry horizontal linkages: the productivity of foreign firms can be increased by having efficient domestic suppliers.²⁸ In the current context, we could argue that foreign investors care about the efficiency of domestic financial market for its indirect benefit even if they do not need to raise capital locally themselves. When the country has well-developed financial markets, it is more likely that local suppliers can invest in upgrading technology and machinery to provide better inputs.

Our results also show that privatization is another important structural reform that affects FDI inflows as shown in columns 5 through 7. The privatization measure is based on information from all privatization transactions above \$50,000. That is, it contains the data on total revenues that privatized enterprise generated for the government per year, given that the privatized enterprise was valued above this threshold. There are several issues using this measure of privatization.

One concern is that the relationship we uncover is spurious because of the suspicion that most of the privatizations that took place in these emerging economies comprise the selling of state owned enterprises to foreigners. Our data set also contains information on whether or not the buyer is of foreign origin. We construct an additional data series of government revenues from privatization that exclude all those transactions with a foreign buyer. All our main results remain (including that for the role of privatization), which suggests that the link between greater private sector involvement (for example, privatization) and FDI inflows is not spurious in this sense.²⁹

The other concern is that the amount of privatization proceeds may not reflect perfectly the privatization efforts either because some countries relied

²⁸See Javorcik (2004); Gorodnichenko, Svejnar, and Terrell (2007); and Lin and Saggi (2007).

²⁹We also find no evidence of Granger-causality between our privatization index and FDI inflows (over GDP or per worker). These results are also available from the authors upon request.

more on “voucher privatization” with little revenue (for example, Russia and the Czech Republic) or governments may have to sell their companies cheap in a case of a crisis. To differentiate voucher privatization, we also run the regressions excluding Russia and the Czech Republic. The results are insensitive to the exclusion of the two countries. We also constructed a stock variable to capture cumulative privatization efforts and reran the regressions. The results again remain unchanged.³⁰

The coefficients of institution quality variables are often negative and statistically insignificant. This contrasts with the evidence that weak institutions ought to deter foreign direction investment (Wei, 2000; Wei and Schleifer 2000; Fan and others, 2007.) There are three possible reasons why the estimates from the fixed effects model are imprecise. First, institutional quality may be subject to the endogeneity problem. Second, it takes time for institutional quality to change and these data are virtually time-invariant. Third, there might be multicollinearity among our three institutional variables.³¹

The first two problems can be alleviated by the instrumentation strategy. In the GMM estimates shown in Table 2, the quality of bureaucracy consistently shows a positive impact on FDI inflows for all countries while its statistical significance diminishes for the region-wise regressions shown in columns 6 and 7. The coefficients of executive constraints and rule of law are positive as expected, although they fail to bear statistical significance. It is also worth stressing that we find that rule of law is particularly important for Latin American countries (column 6), while quality of bureaucracy is the most important institutional quality for foreign direct investors in transition economies (column 7).³²

Table 2 reports the regression results from the system-GMM due to Blundell and Bond (1998).³³ Two specification tests—the Sargan test and the second-order correlation test for the validity of instruments—are reported in the last two rows of each column. Comparing with the results from the fixed effects model in Table 1, the robustness of structural reform variables is noticeable. As before, the reforms in the areas of financial sector and private sector development are important determining factors of FDI inflows. Both the Sargan and second-order correlation tests show that instruments are valid throughout.

Interestingly, progress in trade liberalization is not a good predictor of FDI inflows even after endogeneity concerns are taken into account in the

³⁰Results are available upon request.

³¹Results are available upon request.

³²Fan and others (2007) report that FDI inflows correlates with various institutional variables similar to ours—executive constraints, rule of law, and government’s good track record.

³³We used all lagged values of the explanatory variables as instruments (in level for the first difference equations and in difference for the level equation). The assumption of weak exogeneity for all variables is not rejected by the Sargan over-identification tests while the strict exogeneity of the same variables was rejected.

system GMM framework. Yet, we find an important difference between Latin American countries and transition economies in that progress in trade liberalization is a significant impetus to FDI inflows in Latin American countries but not in transition economies. This may well be due to the fact that the main sectors receiving FDI are different in the two regions, although data for further investigating this issue is still inexistent.

De Jure Financial Sector Reform Measures

The previous tables show that an efficient banking sector helps the country attract more FDI inflows. One might argue that our indicators of financial sector reform—overall financial development and bank efficiency—reflect *de facto* other than *de jure* considerations (Kose and others, forthcoming). Further, our results might simply indicate that FDI is attracted to the country with a financial market that had been *already* well-developed.

Table 3 reports the results for other measures of financial sector reform from an alternative data source (Abiad, Detragiache, and Tressel, 2008).³⁴

We use eight additional financial reform variables. The definitions of these variables are found in Appendix III. The financial liberalization index is constructed as an overall average of these variables. We also include overall financial development to control for the current level of financial sector development.

Columns 1 to 7 in Table 3 report the coefficients on each component of the financial reform variables when included separately in the fixed effects model. In column 7, it shows that *securities markets* is associated with higher FDI inflows. Furthermore, easing of restrictions on capital flows (*capital flows*) seems to reduce FDI flows. This is somewhat counterintuitive. However, it has been argued that *de jure* measures of capital account liberalization are often misleading as a proxy of financial integration because enforcement issues may matter a great deal and policy changes (that is, *capital flows*) do not translate into outcomes (that is, actual FDI flows). For instance, capital account restrictions are often ineffective in episodes of capital flights.

Columns 8 to 10 report the results when we include *financial liberalization index* (the composite of all financial reform variables). For all countries, *financial liberalization index* is positive and significant. The same result holds for transition economies. However, the *index* is no longer important for Latin American countries. We also tried with each of the financial reform variables for Latin American countries, but they fail to bear statistical significance.³⁵

³⁴Simple Granger-causality tests show that financial reforms drive FDI inflows but not the other way around. We also performed standard IV estimation by using various *de jure* financial reform indexes taken from Abiad, Detragiache, and Tressel (2008) and found that bank efficiency remains significant in the second stage of the IV results. These are available from the authors upon request.

³⁵These results available upon request.

Table 3. Determinants of Foreign Direct Investment (FDI) Inflows in Latin American Countries (LAC) and Transition Economies (TE), 1989–2004: Decomposition of Financial Liberalization

(Fixed-effects estimates)

	1	2	3	4	5	6	7	8	9	10
	ALL	ALL	ALL	ALL	ALL	ALL	ALL	ALL	LAC	TE
log(GDP)	−0.401 [0.65]	−0.518 [0.66]	−0.455 [0.65]	−0.328 [0.65]	−0.657 [0.63]	−1.195 [1.06]	−0.539 [0.65]	−0.563 [0.65]	0.0216 [0.89]	−2.217** [0.98]
log(GDP per capita)	1.036*** [0.27]	0.982*** [0.27]	1.019*** [0.26]	1.099*** [0.27]	1.238*** [0.26]	2.096*** [0.50]	0.993*** [0.26]	0.921*** [0.27]	0.811** [0.32]	1.910*** [0.46]
log(inflation)	−0.0655 [0.041]	−0.0645 [0.041]	−0.0574 [0.041]	−0.0678* [0.041]	−0.0549 [0.041]	0.0948 [0.068]	−0.0652 [0.040]	−0.0544 [0.041]	−0.146*** [0.051]	0.154** [0.063]
log(telephone lines)	0.769*** [0.25]	0.767*** [0.25]	0.822*** [0.24]	0.862*** [0.25]	0.905*** [0.24]	0.727 [0.45]	0.782*** [0.24]	0.720*** [0.25]	0.488 [0.36]	−0.0548 [0.43]
log(fuel)	−0.167* [0.089]	−0.161* [0.089]	−0.170* [0.087]	−0.171* [0.087]	−0.0899 [0.076]	−0.334 [0.25]	−0.167* [0.087]	−0.153* [0.088]	−0.175* [0.098]	−0.0559 [0.22]
Quality of bureaucracy	−0.276** [0.11]	−0.279** [0.11]	−0.286*** [0.11]	−0.300*** [0.11]	−0.216** [0.11]	−0.686*** [0.21]	−0.230** [0.11]	−0.236** [0.11]	−0.0987 [0.13]	−0.589** [0.28]
Executive constraints	−0.0353 [0.090]	−0.0356 [0.089]	−0.0637 [0.089]	−0.0303 [0.089]	−0.0921 [0.089]	0.182 [0.16]	−0.0477 [0.088]	−0.0474 [0.088]	−0.163 [0.11]	0.329** [0.16]
Rule of law	0.0261 [0.068]	0.0509 [0.069]	0.0359 [0.067]	0.0534 [0.069]	−0.0223 [0.069]	0.0478 [0.11]	0.0209 [0.067]	0.0423 [0.067]	−0.0567 [0.093]	−0.0298 [0.11]
Overall financial development	1.013 [1.43]	1.243 [1.42]	0.687 [1.44]	1.126 [1.41]	1.692 [1.40]	−2.609 [2.30]	1.257 [1.41]	1.019 [1.41]	2.724 [1.71]	−3.291 [2.53]
Trade liberalization	−3.026 [1.95]	−2.075 [1.89]	−2.646 [1.83]	−2.056 [1.87]	−3.716* [1.90]	−3.211 [2.37]	−2.929 [1.83]	−2.754 [1.83]	1.365 [3.55]	−2.318 [2.17]
Privatization	1.285*** [0.32]	1.280*** [0.32]	1.303*** [0.32]	1.249*** [0.32]	1.180*** [0.32]	0.939** [0.45]	1.381*** [0.32]	1.343*** [0.32]	1.082** [0.46]	1.446*** [0.41]
Competition	0.0676 [0.096]									

Table 3 (concluded)

Supervision		0.0972								
		[0.094]								
Privatization of banks			0.108							
			[0.070]							
Capital controls				-0.118						
				[0.094]						
Capital flows					-0.110*					
					[0.064]					
Credit ceiling						0.482				
						[0.33]				
Securities markets							0.170*			
							[0.088]			
Financial liberalization index								0.960*	-0.441	4.126***
								[0.51]	[0.73]	[0.82]
Observations	245	245	245	245	253	113	245	245	145	100
Number of countries	24	24	24	24	25	13	24	24	11	13
R-squared	0.46	0.46	0.46	0.46	0.46	0.54	0.46	0.46	0.51	0.66

Note: This table reports fixed-effects estimates for a panel of Latin American and transition economies from 1989 to 2004. The dependent variable is the ratio of FDI to GDP (in logs). The explanatory variables are GDP (in logs), per capita GDP (in logs), the annual inflation rate (in logs), the number of telephone lines as a proxy for quality of infrastructure (in logs), the share of fuel in total exports (in logs), an indicator for the institutional quality of the government bureaucracy, an indicator for the extent of the constraints faced by the executive branch of government, an indicator for the quality of the rule of law, an index of the efficiency levels of the domestic banking system, an index of the extent of trade reform carried out, and an index to the extent of the privatization efforts of the government. The decomposition of financial liberalization is achieved by using the following explanatory variables (instead of our measure of financial depth): competition reflects policies to lower entry barriers in banking, supervision refers to the quality of supervisory policies for the banking sector, privatization of commercial banks, policies to develop securities markets, whether or not there are ceilings on the expansion of bank credit, whether or not there are restrictions on capital inflows and outflows, and finally a composite financial liberalization index based on these variables. All regressions include a constant term which is not reported for the sake of space. Columns 1 to 8 report estimates for the combined panel, while column 9 reports estimates only for the Latin American countries and column 10 only for the transition economies. Heteroskedasticity robust standard errors are reported in brackets with ***, **, and * denoting significance at the 1, 5, and 10 percent level, respectively.

In sum, the efforts of developing a well-functioning financial sector do indeed encourage more FDI inflows even after controlling for the current level of financial development. This implies that precommitment to financial sector reforms can send a good signal to foreign investors in terms of the potential development of their supplier networks even if the financial market is not yet quantitatively developed.

Foreign Direct Investment in the Financial Sector

We found from the above results that financial sector reforms are an important driver for FDI. One important concern is that this result is affected by a high participation of foreign banks in the financial sector. If foreign banks are generally more efficient than domestic banks, the entry of foreign banks can be responsible for an improvement in financial sector efficiency and FDI.³⁶

Our strategy in this case is to collect additional information on the share of foreign ownership in the financial sector and run split-sample regressions to check whether such variation does affect our results. Although we cannot distinguish FDI inflows in the financial sector from the nonfinancial sector, we can make use of the data on the share of foreign ownership in the financial sector.³⁷ In Table 4, we divided the sample into two subgroups, nonfinancial FDI and financial FDI. If the country-year observation has a foreign share greater than 20 percent, then it is classified as financial FDI. If the foreign share is less than 20 percent, it is grouped as nonfinancial FDI.

The results in the first two columns in Table 4 show that, for all countries, bank efficiency is significant for both groups. This implies that the results on the importance of financial sector reforms as a determinant of FDI are not merely driven by countries that receive mostly FDI in the financial sector. In region-wise regressions in the last four columns, this result holds for transition economies but not for Latin America. In fact, the results in two regions are contrasting. For Latin American countries, bank efficiency matters only in *financial FDI* while it seems to matter only in *nonfinancial FDI* for transition economies. Note also that privatization has a limited effect on FDI in the financial sector.

For *financial FDI*, in particular, the coefficient of bank efficiency is likely subject to the reverse causality problem: foreign investors are not attracted by an efficient financial sector but they simply cherry-pick those with an efficient

³⁶This concern is particularly relevant to our study as foreign ownership in the banking industry has skyrocketed in transition economies especially between 1998 and 2005. For example, in 1998 only five transition countries (the Baltics, Hungary, and Tajikistan) showed foreign-owned banks accounting for more than 50 percent of the banking industry. In 2005, there are only six countries for which the share of foreign-owned banks in the domestic banking industry is below 50 percent.

³⁷These data were drawn from BankScope.

Table 4. Determinants of Foreign Direct Investment (FDI) Inflows in Latin American Countries (LAC) and Transition Economies (TE), 1989–2004: Split-Sample Analysis of Nonfinancial versus Financial FDI
(Fixed-effects estimates)

	1	2	3	4	5	6
	NoFinFDI	FinFDI	NoFinFDI	FinFDI	NofinFDI	FinFDI
	ALL	ALL	LAC	LAC	TE	TE
log(GDP)	−2.201***	−2.840***	−1.702*	−2.3	0.239	−0.592
	[0.84]	[0.89]	[0.88]	[1.80]	[2.01]	[2.09]
log(GDP per capita)	1.637***	2.075***	1.128***	2.046***	2.100***	0.226
	[0.34]	[0.56]	[0.43]	[0.71]	[0.61]	[1.30]
log(inflation)	−0.015	0.177*	−0.105**	−0.00657	0.149*	0.236*
	[0.044]	[0.099]	[0.050]	[0.15]	[0.081]	[0.14]
log(telephone lines)	1.020***	1.771***	0.824**	1.208	−0.133	−0.415
	[0.33]	[0.51]	[0.34]	[0.91]	[0.92]	[1.04]
log(fuel)	−0.0251	−0.0542	0.0437	−0.191	−0.275	−0.37
	[0.060]	[0.11]	[0.061]	[0.14]	[0.17]	[0.52]
Quality of bureaucracy	−0.471***	0.271	−0.349***	0.372	−0.36	−0.394
	[0.13]	[0.21]	[0.13]	[0.26]	[0.46]	[0.51]
Executive constraints	0.0515	−0.0688	−0.0994	−0.13	0.11	0
	[0.081]	[0.16]	[0.095]	[0.21]	[0.18]	[0]
Rule of law	−0.074	0.103	−0.187*	−0.0277	−0.00129	−0.0969
	[0.089]	[0.11]	[0.10]	[0.16]	[0.21]	[0.34]
Bank efficiency	4.605***	7.347*	1.322	9.336*	8.641*	6.582
	[1.40]	[4.07]	[1.50]	[4.85]	[4.77]	[15.6]
Overall financial development	1.091	−0.619	1.946	−2.361	−5.969	1.915
	[1.58]	[2.98]	[1.50]	[4.70]	[5.53]	[6.29]
Trade liberalization	−1.085	−1.807	1.577	17.19	−0.156	−1.011
	[1.41]	[4.92]	[2.45]	[15.7]	[1.92]	[4.90]
Privatization	2.937***	0.441	2.442***	−0.257	4.566***	0.59
	[0.60]	[0.37]	[0.61]	[0.67]	[1.41]	[0.48]
Observations	181	117	116	66	65	51
Number of countries	27	21	14	11	13	10
R-squared	0.53	0.4	0.6	0.55	0.65	0.29

Note: This table reports fixed-effects estimates for a panel of Latin American and transition economies from 1989 to 2004. The dependent variable is the ratio of FDI to GDP (in logs). The explanatory variables are GDP (in logs), per capita GDP (in logs), the annual inflation rate (in logs), the number of telephone lines as a proxy for quality of infrastructure (in logs), the share of fuel in total exports (in logs), an indicator for the institutional quality of the government bureaucracy, an indicator for the extent of the constraints faced by the executive branch of government, an indicator for the quality of the rule of law, an index of the depth of financial reform, an index of the efficiency levels of the domestic banking system, an index of the extent of trade reform carried out, and an index to the extent of the privatization efforts of the government. All regressions include a constant term which is not reported for the sake of space. Columns 1 and 2 report estimates for the combined panel, while columns 3–4 report estimates only for the Latin American countries and columns 5–6 only for the transition economies. The sample split accords to the level of foreign ownership in the financial sector with “NoFinFDI” classified as foreign ownership below 20 percent and “FinFDI” as above 20 percent. Heteroskedasticity robust standard errors are reported in brackets with ***, **, and * denoting significance at the 1, 5, and 10 percent level, respectively.

financial sector.³⁸ A way of dealing with this is to perform IV estimations. If the importance of financial sector reforms is due to reverse causality, then we expect its significance would disappear once we instrument them. Within a system GMM framework, however, the significance of bank efficiency for *financial FDI* appears for all countries.³⁹ Bank efficiency in *nonfinancial FDI* in Latin American countries becomes statistically significant, providing support to our understanding of the “paradox of finance.” Financially unconstrained multinational firms care about the efficiency of domestic financial market as a better local financial market enables local suppliers to be more efficient.

In sum, financial sector reforms are an important driver of FDI not only in the financial sector but also in the nonfinancial sector. Yet the two categories—Latin American countries and transition economies—show a contrasting pattern. Bank efficiency helped increase FDI in the financial sector in Latin American countries, which implies that foreign banks may be cream-skimming. This tendency is less noticeable in transition economies and, rather, bank efficiency seems to matter more to nonfinancial sector FDI.

Other Robustness Checks

So far we find that institutional quality have a somewhat more limited impact than we expected on FDI inflows in the data. Namely, the quality of bureaucracy seems to play a role in attracting FDI for all countries while rule of law is important only for Latin American countries. As it is well-known that the institutional variables tend to be closely related with one another, the inclusion of all institutional variables at once might make it difficult to see which institutional attribute is more important.

We conducted a sensitivity analysis by including one institutional variable at a time to address this issue. We also tested other institutional variables such as corruption, political risk, and indicator of polity durability for all samples as well as for the two categories, Latin American countries and transition economies. Rule of law still fails to account for FDI inflows for all samples, while it matters to FDI in Latin American countries.⁴⁰

Overall, our main findings on structural reforms and institutions withstand robustness tests. We find that the efficiency of the banking sector and privatization are two areas of structural reforms important for FDI investors. Good institutions also play a role via the quality of

³⁸Detriagiache, Gupta, and Tressel (2005) find that foreign bank entry can lead to cream-skimming, undermining ability of local banks to engage profitably in soft information lending.

³⁹These GMM results are not reported here but are discussed at length in Campos and Kinoshita (2008).

⁴⁰Another sensitivity analysis was carried out for the infrastructure variable as one might argue that fixed telephone lines have lost their importance vis-à-vis more modern technologies. We alternatively use the number of computers per 1,000 people and the use of Internet. The main results hold. These results are available upon request.

bureaucracy and rule of law for transition economies and Latin American countries, respectively.

Synthetic Counterfactuals

In this subsection, we present an additional set of empirical results with the goal of confirming the main conclusions above as well as to highlight their economic significance in addition to the statistical importance shown in the previous section. We employ a recently developed methodology referred to as synthetic control methods for causal inference in comparative case studies, or short, “synthetic counterfactuals” (Abadie and Gardeazabal, 2003; Abadie, Diamond, and Hainmueller, 2007).

The main objective of this exercise is to see how much FDI inflows a given country would have received had it reformed its financial sector in the way as a selected group of other countries. This synthetic control method is intended to estimate the effect of a given intervention (that is, financial reform) by comparing the evolution of an aggregate outcome variable (that is, FDI inflows) for a country or a group of countries affected by that intervention vis-à-vis the evolution of the same aggregate outcome for a synthetic control group. For example, the research question we address below is: what would have been the level of FDI inflows into Russia (or Argentina) had it implemented financial reform in the same way as Estonia, Latvia, and Lithuania (idem, Brazil, Chile, Mexico, and Venezuela)?

The method focuses on the construction of the “synthetic control group.” It does so by searching for a weighted combination of other countries chosen to mimic the country affected by the intervention given a set of predictors of the outcome variable. The evolution of the outcome for the synthetic control group is therefore an estimate of the counterfactual of what would have been the behavior of the outcome variable (in our case, FDI inflows) for the affected country if the intervention had happened in the same way as in the control group.⁴¹ In our context, the outcome variable is FDI inflows and the set of predictors correspond to the baseline specification of FDI determinants excluding the financial efficiency variable.

This synthetic control approach extends the linear panel data (differences-in-differences) framework by allowing the effects on unobserved variables on the outcome to vary over time. This is similar to the “policy-experiment approach” discussed by Henry (2007). Moreover, it “allow(s) researchers to perform inferential exercises about the effects of the event or intervention of interest that are valid regardless of the number of available comparison units, the number of available time periods, and

⁴¹Abadie and Gardeazabal (2003) investigate “what would have been per capita GDP in the Basque country without terrorism?” Abadie, Diamond, and Hainmueller (2007) present two examples: “what would have been cigarette consumption in California without Proposition 99?” and “what would have been the per capita GDP of West Germany without reunification?”

whether aggregate or individual data are used for the analysis” (Abadie, Diamond, and Hainmueller, 2007, p. 3).

We present these results as a way of confirming and strengthening our findings so far. If we obtain similar results to the fixed-effects and system GMM estimates as previously reported, this can be seen as a powerful robustness check. Moreover, because of the desirability of selecting interesting control and treatment groups, the results we present shall serve to illustrate the workings of the effects we estimate.

We first start by selecting one country from each region. There are clearly various interesting candidates but we decide to report results for Argentina and for Russia because they are both large and influential countries in their respective regions, both have received relatively high levels of FDI inflows between 1990 and 2004, and also both have experienced severe economic crises in this time period. In order to make the exercise more meaningful, we also selected a small number of countries for the potential “donor pool.”⁴² For Russia, we selected the Baltics (Estonia, Latvia, and Lithuania) and, for Argentina, we select Brazil, Chile, Mexico, and Venezuela. We present one set of results for each country and the questions each answer is as follows: what would have been the level of FDI inflows into Russia (Argentina) had it implemented financial reform in the same way as Estonia, Latvia, and Lithuania (Brazil, Chile, Mexico, and Venezuela)?

The predictors we use for the level of FDI inflows are the same in the two cases and are based on our baseline specifications above. They include level of GDP level as a proxy for market size (in logs), per capita GDP (also in logs), inflation (in logs), the number of telephone lines as a measure of the quality of infrastructure (in logs), energy exports as a share of total exports (in logs), three institutional variables (quality of the bureaucracy, constraints on the executive, and rule of law), and the structural reform variables excluding the level of financial efficiency (that is, trade liberalization, privatization, and the size of the financial sector). By examining our financial reform indicator, we selected 1996 as the year in which the reform trajectories start to diverge from the control groups in the two countries.⁴³

⁴²One can argue that the natural initial donor pool would be the whole Latin America for Argentina and all transition economies for Russia. Yet restricting the donor pool in this framework is actually advisable: “researchers trying to minimize biases caused by interpolating across regions with very different characteristics may restrict the donor pool to regions with similar characteristics to the region exposed to the event or intervention of interest in contrast with more traditional regression methods, which typically rely on asymptotic limit theorems for inference, the availability of a small number of regions to construct the synthetic control does not invalidate our inferential procedures” (Abadie, Diamond, and Hainmueller, 2007, pp. 7–8)

⁴³The algorithm was implemented in STATA using Abadie and others’ *synth* routine. Our results were generated using the options that deliver the most statistically robust results albeit the two most computationally intensive methods (*nested* and *allop*). The former employs a fully nested optimization procedure (as opposed to constrained) while the latter provides a robustness check by running the nested optimization using three different starting points.

Figure 3. Synthetic Counterfactuals: What would be FDI/GDP in Russia had it Liberalized its Financial Sector after 1996 in the Same Way as the Baltics?

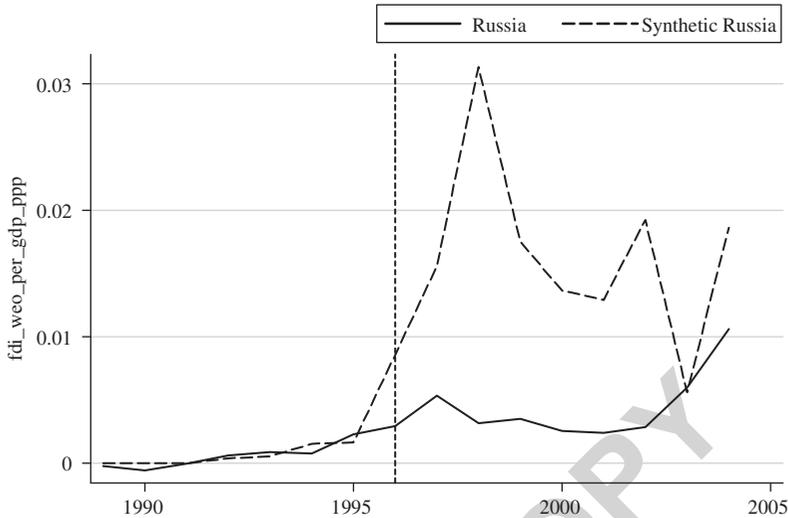


Figure 3 reports the results for the synthetic control method. In the first panel for Russia, we find that the weights of the best combination of countries for a synthetic Russia counterfactual would be 0.885 for Lithuania, 0.108 for Latvia and 0.007 for Estonia. As shown in Figure 3, the fit for Russia is good in the preintervention period which may not be very surprising given the fact that all these countries were part of the former Soviet Union.⁴⁴ The root mean square prediction error (RMSPE) is indeed rather low (0.00047) indicating a relatively good fit of the model. For the second panel, the best synthetic Argentina counterfactual, on the other hand, comes from a more balanced combination of countries with México receiving the highest weight of 0.397, followed by Venezuela (0.283), Brazil (0.198), and Chile (0.122).⁴⁵ Although the matching before 1996 may seem as not quite good as the one for Russia, the RMSPE is still quite low at 0.0036.

⁴⁴The values for the variables used in the model for Russia are as follows (in parenthesis, actual value followed by estimated value for Synthetic Russia): log GDP (13.82751 and 10.01679), log GDP per capita (7.003062 and 6.649543), log inflation (6.251343 and 5.080559), log telephone lines (16.97115 and 13.63415), log fuel exports as share of total exports (3.763755 and 2.091273), financial depth (0.4734032 and 0.5841832), privatization (0.0012221 and 0.0262577), quality of bureaucracy (2 and 2.007), and rule of law (3.194444 and 4).

⁴⁵The values for the variables used in the model for Argentina are as follows (in parenthesis, actual value followed by estimated value for Synthetic Argentina): log GDP (12.71237 and 12.67407), log GDP per capita (8.880356 and 8.16927), log inflation (2.335659 and 3.747093), log telephone lines (15.23147 and 15.35517), log fuel exports as share of total exports (2.254053 and 2.221135), financial depth (0.5310238 and 0.5069918), trade liberalization (0.9463074 and 0.9381946), privatization (0.145129 and 0.0504535), quality of bureaucracy (2 and 2.198), and rule of law (3.9444 and 3.551).

Figure 4. Synthetic Counterfactuals: What would be FDI/GDP Argentina had it Liberalized its Financial Sector after 1996 in the Same Way as Brazil, Mexico, Chile, and Venezuela?

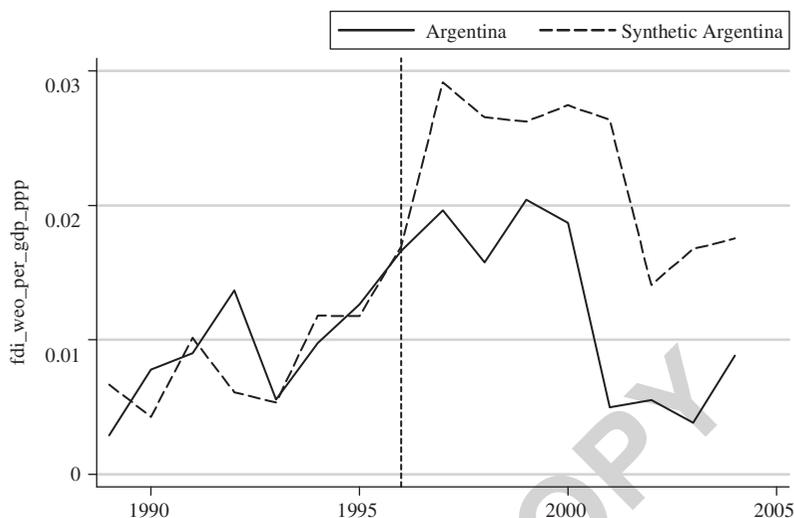


Figure 4 shows that if Russia had implemented financial reform the same way as Estonia, Latvia, and Lithuania did (that is, had it implemented it like the best combination of these three countries did), then the level of FDI inflows it would have received would have been substantially larger. The average FDI inflows were about 0.5 percent of GDP since 1996. According to our results, had Russia implemented financial reform like our “Synthetic Russia” this ratio would have increased (more than tripled) to 1.6 percent of GDP. Moreover, Figure 4 shows that the average effect is somewhat misleading because the differential impact is much larger for 1996–98 than for 2001–04.

Figure 4 shows that if Argentina had implemented financial reform the same way as Mexico, Chile, Brazil, and Venezuela (or had it implemented it like the best combination of these countries did), then the level of FDI inflows in Argentina would have been also much larger. While FDI inflows to Argentina were approximately 1.2 percent of GDP since 1996, according to our results had Argentina implemented financial reform like the “Synthetic Argentina” this ratio would have increased to 2.2 percent of GDP.

In both cases, the impact clearly has great economic significance, although the effects over time are quite different. In contrast to the Russian case, the differential impact is remarkably constant after 1996 for Argentina. There are of course many possible explanations for this, yet we believe that the timing of the economic crises each country suffered may be playing a large role here.

There are at least three issues we should highlight with respect to these results. The first is that, in the original applications of the synthetic counterfactuals methodology mentioned above, the usual ratio of a number of periods before and after the treatment favors the former, that is, there are at least twice as many years before treatment than after treatment. In our case, we have basically the opposite. Allowing for a longer pretreatment window, everything else the same, would improve the quality of the matching.

The second issue is that it would be obviously naïve to interpret the gaps we estimate between actual and synthetic levels of FDI inflows as driven by occurrence of reform in the control groups against total absence of it in the treatment countries (Argentina and Russia). We believe that a more realistic interpretation regards these gaps as relative changes in the intensity of financial reforms in the two groups.

The third issue is the need to recognize the risk of omitted variable biases. The underlying model is the same as before except for the exclusion of financial reform. Thus, the impact of other reforms, changes in institutions, macroeconomic stability, quality of infrastructure, and general economic conditions are all taken into account. However, it is possible that key variables are still omitted. For instance, possible candidates are reforms in the areas of fiscal, labor market, and product markets.

IV. Conclusions

Since the late 1980s, structural reforms have been implemented in unparalleled scale across the developing world while FDI became one of the main components of private capital flows. The literature has not yet fully investigated their relationship in large part because of the lack of measures of structural reforms that are comparable over time and across regions. More recently, the literature has given weight to the identification of possible channels through which FDI may be made more effective, for instance as minimum threshold levels of absorptive capacity such as human capital in the host country (Borensztein, De Gregorio, and Lee, 1998). The implementation of structural reforms can work in a similar way *inter alia* because they can improve business conditions and the investment climate.

In this paper we construct the new data set on structural reform indices for 19 Latin American and 25 transition economies from 1989 to 2004. We go beyond the identification of the effects of selective individual reforms and try to provide a more comprehensive assessment of these links by asking which reforms matter *vis-à-vis* FDI and whether the effects of individual reform efforts differ in systematic ways.

Our main finding from the regression analyses is a robust empirical relationship from structural reforms to FDI. Also, we find a stronger effect from financial sector reforms than from privatization and trade liberalization. When we use measures of both reform efforts and reform outcomes (for example, financial reform), we find that the effect of reform *outcomes* is fragile

(that is, financial depth), while that of reform *efforts* tend to be more powerful. We conclude that this set of determinants of FDI inflows—financial reform, privatization, level of development, and quality of the infrastructure—is robust to different measures of reform, different estimators, split samples, and potential endogeneity and omitted variables biases.

We highlight three extensions of our study. First, one could further extend the analysis to re-investigate the long-term effects of FDI on growth after taking into account structural reforms. In particular, our findings point to the direction that financial sector reform may be a key factor in enhancing the benefits of foreign capital inflows. Second, it would be interesting to assess whether our findings hold as well for developed and for other groups of developing countries (Africa, Middle East, and Asia), although this would require a substantial data collection effort. Third, as previously mentioned, the choice of structural reforms can be extended to have a broader coverage such as labor market and product market liberalization, tax policy, as well as changes in the regulatory framework.

APPENDIX I

Data on Structural Reform Indexes

Financial Sector Development and Reform

The source of financial development and bank efficiency is the February 2006 version of the World Bank's *Financial Structure Dataset* (Beck, Demirgüç-Kunt, and Levine, 2000). This data set has been widely used in the financial liberalization literature as a main source for financial reform indicators.

Overall Financial Development

The three underlying variables for overall financial development are the ratio of liquid liabilities to GDP, based on the liquid liabilities of the financial system (currency plus demand and interest-bearing liabilities of bank and nonbank financial intermediaries); the ratio to GDP of credit issued to the private sector by banks and other financial intermediaries; and the ratio of commercial bank assets to the sum of commercial bank assets and central bank assets. We generated two versions of this index: one is an arithmetic average of the normalized values (more details shown below) of these three variables, and the second is based solely on the ratio of commercial bank assets to the sum of commercial bank assets and central bank assets.

We follow the procedure suggested by Lora (1998) to combine these variables into a single indicator. We normalize the underlying variables by equating the maximum for all countries and all years (or the minimum depending on whether higher values of the variable indicate more or indicate less reform) of each component to one. We calculate the distance from each country-year data point to the global maximum (which is normalized to one) by (a) subtracting each country-year data point from the overall minimum (by overall we mean for all countries and all years), (b) calculating the range for each series (that is, maximum minus minimum), and (c) dividing the results from (a) by those from (b).

Bank Efficiency

The index of the efficiency of the banking sector is built upon the ratio of overhead costs to total bank assets and the “net interest margin” (that is, the difference between bank interest income and interest expenses divided by total assets). Because larger values of these two variables are associated with a more inefficient financial sector, we normalize it by subtracting the actual value from the minimum in the numerator so that the larger values indicating more efficient financial intermediation.

Financial Sector Reform Indexes

We use the data set by Abiad, Detragiache, and Tressel (2008) for detailed financial liberalization reform policy. Their data set covers the various *de jure* financial reform and policy changes along seven different dimensions: credit controls and reserve requirements, interest rate controls, entry barriers, state ownership, policies on securities markets, banking regulations, and restrictions on the capital account. Their data are available at www.imf.org/external/pubs/cat/longres.cfm?sk=22485.0.

Trade Liberalization

The source data for trade liberalization index is the World Bank-UNCTAD’s WITS system, for about 6,000 HS-6 digit product groups to calculate the average tariff (weighted by trade volumes) and standard deviations yearly and for each of the 44 countries in our sample. A drawback of using UNCTAD data is that we are faced with missing information for Latin American countries for more recent years and for transition economies for earlier years. To remedy this, we use also two supplementary data sources, Lora (2001) and the Heritage Foundation’s “Economic Freedom of the World” project (Gwartney, Lawson, and Samida, 2000).⁴⁶ Once these were obtained, we applied the normalization above and took the arithmetic average of the two variables to generate an overall trade reform indicator.

Privatization

The main source of privatization reform efforts is the World Bank’s data on privatization proceeds in developing countries between 1990 and 2003 (Kikeri and Kolo, 2005). Privatization proceeds are defined as “all monetary receipts to the government resulting from partial and full divestitures (via asset sales or sale of shares), concessions, leases, and other arrangements” (Kikeri and Kolo, 2005, p. 2). Note that this excludes management contracts, new green-field investments, and investments committed by new private operators as part of concession agreements.

⁴⁶Lora (2001) covers the Latin American countries until 2000 and the Heritage Foundation’s “Economic Freedom of the World” project covers most of the countries in our sample for years 1985, 1990, 1995, 2000, and yearly after 2000. Both data measure trade reform as a combination of average tariff levels and tariff dispersion across a large number of products and/or sectors.

APPENDIX II

Table B1. Summary Statistics

Variable	Observations	Mean	Standard Deviation	Minimum	Maximum
log(FDI/GDP)	582	-4.73	1.12	-8.3	-2.2
log(GDP)	704	10.62	1.39	8.3	14.2
log(GDP per worker)	704	7.51	1.00	3.4	9.7
log(inflation)	563	2.70	1.65	-3.0	8.9
log(telephone)	638	13.84	1.38	10.6	17.6
log(fuel)	523	1.39	1.94	-4.6	4.5
Executive constraints	543	5.44	1.80	1	7
Quality of bureaucracy	498	1.93	0.86	0	4
Rule of law	498	3.51	1.19	1	6
Overall financial development	672	0.52	0.08	0	1
Bank efficiency	672	0.78	0.09	0	1
Trade liberalization	571	0.93	0.07	0	1
Privatization	704	0.05	0.11	0	1
Financial liberalization index	473	0.58	0.23	0	1
Competition	478	2.28	0.97	0	3
Supervision	478	1.02	0.90	0	3
Privatization_banks	478	1.23	1.18	0	3
Securities markets	478	1.62	1.00	0	3
Credit ceilings	286	0.81	0.39	0	1
Capital flows	476	1.72	1.06	0	3
Credit controls	474	1.87	1.00	0	3

APPENDIX III

Table C1. Data Description and Sources

Variable	Definition	Source
log(FDI/GDP)	Log of FDI to GDP ratio	IMF, World Economic Outlook (WEO)
log(GDP)	Log of GDP	WEO
log(GDP per worker)	Log of GDP per capita	WEO
log(inflation)	Log of annual inflation	WEO
log(telephone)	Log of number of main telephone lines	World Bank, World Development Indicators (WDI)
log(computer)	Log of number of computers	WDI
log(fuel)	Log of fuel exports as percent of total exports	WDI
Executive constraints	Executive constraints, operational <i>de facto</i> independence of chief executives	Polity IV
Quality of bureaucracy	The extent to which the bureaucracy has the strength and expertise to govern without drastic changes in policy or interruptions in government services	International Country Risk Guide (ICRG)
Rule of law	Aggregate governance indicator measuring the quality of contract enforcement, the police, and the courts, as well as the likelihood of crime and violence	ICRG
Overall financial development	Overall financial development index based on three underlying variables, the ratio of liquid liabilities to GDP, the ratio of private sector credit to GDP, and the ratio of commercial bank assets to the total bank assets	Authors' calculations
Bank efficiency	Index of bank efficiency based on the ratio of overhead cost to total bank assets and net interest margin	Authors' calculations
Trade liberalization	Arithmetic average of normalized average tariff rate and tariff dispersion	Authors' calculations

Privatization	Government's privatization proceeds	Kikeri and Kolo (2005)
Corruption	Corruption indicator. Component of the political risk rating, counting for 6 of the 100 points	ICRG
Political risk	Political risk rating measuring political stability using political and social attributes, from 0 (most risky) to 100 (least risky). Composed of 12 weighed variables: government stability, socioeconomic conditions, investment profile, internal conflict, external conflict, corruption, military in politics, religion in politics, law and order, ethnic tensions, democratic accountability, and bureaucracy quality	ICRG
Durability	The number of years the dictator is in power	Polity IV
Competition	Policies to lower banking sector entry barriers: (1) foreign banks allowed to enter? (2) new domestic banks allowed to enter? (3) restrictions on branching? (4) allow banks to engage in a wide range of activities?	
Supervision	Policies to enhance banking sector supervision: (1) A country adopted capital adequacy ratio based on Basel standard, (2) banking supervisory agency independent from executive influence, (3) does banking supervisory agency conduct effective supervisions? (4) does supervisory agency cover all financial institutions?	Abiad, Detragiache, and Tressel (2008)
Privatization_bank	Privatization of banks or the state involvement in the banking sector; = 3(FL) if no state banks exist, = 2(LL) if most banks are privately owned, = 1(PR) if major banks are still state-owned, = 0(FR) if major banks are all state owned.	Abiad, Detragiache, and Tressel (2008)
Securities markets	Policies to develop securities in stock markets: (1) a country took measures to develop securities markets, (2) stock market open to foreigners	Abiad, Detragiache, and Tressel (2008)
Credit ceilings	Ceilings on expansion of bank credit imposed by the CB; = 0 if yes, = 1 if no	Abiad, Detragiache, and Tressel (2008)
Capital flows	Capital account restrictions: (1) ex rate unified? (2) restrict capital inflow? (3) restrict capital outflows?	Abiad, Detragiache, and Tressel (2008)
Financial liberalization index	A composite index of financial liberalization using bank entry, credit controls, securities markets, interest rates and bank privatization	Abiad, Detragiache, and Tressel (2008)

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