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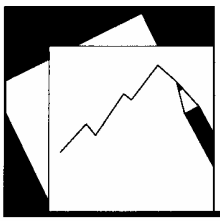

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Institutions and the External Capital Structure of Countries

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Institutions and the External Capital Structure of Countries

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Abstract

A widespread view holds that countries that finance themselves through foreign direct investment (FDI) and portfolio equity, rather than bonds and loans, are less prone to crises. But what determines countries' external capital structures? In a cross section of emerging markets and developing countries, we find that equity-like liabilities (FDI and, especially, portfolio equity) as a share of countries' total external liabilities (or as a share of GDP) are positively and significantly associated with indicators of educational attainment, natural resource abundance, and especially, institutional quality. These relationships are robust to attempts to control for possible endogeneity, suggesting that better institutional quality may help improve countries' capital structures. The results might also provide an explanation for the observed correlation between institutional quality and the frequency of crises.

JEL Classification Numbers: F21, F34, F36

Keywords: Foreign direct investment; portfolio equity; external debt; external liabilities

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I. INTRODUCTION

A widespread view holds that the external capital structure of countries—that is, the relative shares of items such as foreign direct investment (FDI) portfolio equity, and external debt in a country's external finance—is an important determinant of economic performance and propensity to crises. Indeed, this view has been reinforced by a number of recent emerging market crises, and some authors have argued that it would be desirable for emerging market countries to reduce their reliance on debt and increase the role of equity in their external capital structures (Rogoff, 1999). Equity finance makes it possible for domestic producers to share risk with foreign investors, thereby helping stabilize domestic consumption and improving domestic producers' ability to undertake projects with high risk and high expected return. In addition, liquidity crises have often been triggered by sudden stops in debt flows, but are unlikely to be generated by sudden stops in equity flows. Moreover, one form of equity-like finance, namely, FDI is often viewed as especially desirable because it is associated with technological transfer (Borensztein and others, 1998).

However, for policies aimed at improving capital structures to be formulated, or even for the effects of capital structures to be accurately estimated, it is first necessary to understand the factors underlying countries' existing capital structures: this is our paper's objective. Many previous studies have sought to identify the determinants of either total capital flows or FDI flows only. Previous work on the composition of countries' capital flows has been more limited. And only recently have new data sets made it possible for researchers to begin analyzing the composition of the stocks of countries' liabilities. We focus on emerging market countries and developing countries, and we restrict our analysis to external liabilities, rather than the whole balance sheet. While advanced economies have substantial gross assets and liabilities, emerging markets and developing countries have few external gross assets.[2] This makes for a simpler analysis and cleaner parallels with the corporate finance literature, which considers the composition of firms' liabilities. Moreover, developing countries and especially emerging markets are typically viewed as being more prone to crises than is the case for advanced economies.

In our analysis, we devote substantial attention to the role of institutional quality (e.g., the absence of corruption, red tape, or political violence), a potential determinant of capital structures.[3] Indeed, an additional motivation for our analysis is the recently

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[2] Thus, like Blonigen and Wang (2004), we think that, despite a practice that is common to many empirical studies of FDI, pooling advanced economies together with emerging markets and developing countries is inappropriate in this context: advanced economies have substantial amounts of two-way FDI flows, whereas emerging markets and developing countries are almost exclusively recipients of FDI flows.

[3] A recent wave of studies has empirically analyzed the relationship between indicators of institutional quality and economic variables such as investment and growth (Knack

(continued…)

identified association between weak institutional quality and severe crises (Acemoglu, Johnson, and Robinson, 2004). The mechanism underlying such association has not yet been uncovered. If institutional quality turns out to be associated with a more crisis-prone external capital structure, this might be a plausible channel through which weak institutions lead to higher frequency and severity of crises.

Existing studies have put forward conflicting hypotheses regarding the effect of institutions on the composition of external liabilities. Formal theories such as those by Razin and others (1998 and 2001) suggest that worse institutions would be associated with a higher share of FDI (viewed as relatively difficult to expropriate), and a lower share of portfolio equity, in total external liabilities. In contrast, Wei (2001) suggests that weak institutions may reduce the relative importance of FDI in total liabilities. He suggests that foreign banks are more likely than foreign direct investors to be bailed out in the context of a crisis, and are therefore more willing to invest in corrupt countries; thus, as countries with weak institutions are usually crisis-prone, they will tend to have a smaller share of FDI. An additional possibility is that weak institutions may have an especially deleterious impact on FDI: investors considering foreign direct investment may be particularly concerned about the likely exposure to requests for bribes and the need to work through red tape.

The role of institutional quality has been somewhat underexplored in previous studies. Indeed, pioneering work by Lane and Milesi-Ferretti (2001a, 2001b) on the composition of the stocks of countries' external liabilities analyzed a limited number of potential correlates (namely, openness, economic size, and per capita GDP).[4] Other authors have analyzed the impact of institutional variables on total capital flows; the composition of capital flows, rather than stocks; and specific subcomponents of the stock of liabilities drawn from different data sources. In a cross-section of about 40 advanced and developing countries, Alfaro and others (2003) find that institutional quality is a key determinant of total capital flows. In a panel of advanced and developing countries, Albuquerque (2003) finds the share of FDI in total flows to be negatively and significantly associated with good credit risk ratings, but unrelated to indicators of institutional quality.[5] In a cross section of advanced and developing countries, Hausmann and Fernández-Arias (2000) consider the determinants of the share of FDI flows in total flows, using averages for 1996–98, and find no relationship with

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and Keefer, 1995; Mauro, 1995); foreign direct investment (Wei, 2000); development outcomes (Kaufmann and others, 1999); economic and political instability (Acemoglu and others, 2003); and the severity of crises (Johnson and others, 2000).

[4] Lane (2004) empirically analyzes the determinants of long-term external debt levels, including the role of institutions.

[5] Albuquerque's (2003) empirical analysis abstracts from country fixed effects.

institutional quality.[6] In a gravity model of bilateral FDI stocks (drawn from OECD data) and bank loan stocks (drawn from BIS data) applied to a common sample of about 10 source countries and 20 recipient countries, Wei (2001) finds that weaker institutions are associated with less FDI and more bank loans.

In this paper, we take the same approach as Lane and Milesi-Ferretti (2001a, 2001b) by focusing on cross-country variation and, more important, working with stocks, rather than flows. Stocks are the object of capital structure theories in the corporate finance literature. Moreover, as Lane and Milesi-Ferretti (2001b, p.8) put it, "[the] stock position is the relevant state variable in a macroeconomic model, and capital flows arise to close the gap between desired and actual stock positions."[7] To measure institutional quality, we rely on subjective indicators. In an attempt to reduce potential endogeneity bias, we use instrumental variables, following a strategy used by studies such as Acemoglu, Johnson, and Robinson (2001) and Mauro (1995).[8]

We find that the key determinants of countries' external capital structures include institutional quality and, to a lesser extent, educational attainment and the availability of natural resources. Holding other factors constant, better institutions tilt countries' capital structures significantly toward foreign direct investment and, to an even greater extent (in some specifications), portfolio equity; and away from portfolio debt and, to an ever greater extent, other liabilities such as bank loans. While the positive empirical association between institutional quality and portfolio equity is consistent with existing theories, the positive association between institutional quality and FDI seems inconsistent with existing theories such as those by Razin and others (1998, 2001), and may reflect FDI's special vulnerability to factors such as red tape, corruption, judicial system inefficiencies, and political instability.

The rest of the paper is organized as follows. Section II surveys some of the existing hypotheses regarding the potential determinants of countries' external capital structures. Section III describes the data, presents the empirical strategy, and reports the results. Section V concludes.

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[6] Of these studies, only Alfaro and others (2003) use instrumental variables to address possible endogeneity issues.

[7] In a related vein, Wei (2001) sketches a model in which a multinational allocates FDI *stocks* among countries.

[8] Some authors have questioned the validity of an approach based on subjective indicators of institutional quality combined with instrumental variables, and have argued in favor of objective measures of institutional quality (Glaeser and others, 2004; Przeworski, 2004). We agree that developing better objective measures of institutional quality compared with the existing ones is a high priority task for further research. Nevertheless, our view is that subjective indicators are preferable, because they capture de facto institutional quality: countries may have excellent legislation on their books, but what matters is whether such legislation is applied and enforced in practice.

II. EXISTING THEORIES AND HYPOTHESES

A generally accepted theory of the external capital structure of countries has not yet been developed, though several studies have sought to draw lessons for international finance from the corporate finance literature, which has extensively analyzed capital structures at the firm level.[9] Adapting corporate finance theory to the case of countries is difficult, primarily owing to governments' ability to expropriate private agents directly or through sovereign debt repudiation, possibly treating asymmetrically foreigners and nationals (Eaton and Gersovitz, 1981, 1984; Cole and English, 1991, 1992; Cole and Kehoe, 1995; Bulow and Rogoff, 1989).[10] In this section, we provide a brief review of two full-fledged theories of external capital structure, both of which yield predictions for possible relationships between institutions and external capital structure. We also summarize a number of less formal hypotheses that identify possible roles for institutions and other factors as well.

The first theory, by Razin and others (1998, 2001) focuses on the role of informational asymmetries, and foresees a *pecking order* in countries' external capital structures, as in the corporate finance literature. According to this view, firms would finance themselves first through FDI (a parallel to retained earnings and, therefore, internal equity), then debt, and then portfolio equity (external equity). To circumvent informational barriers, foreign multinationals would favor placing their own managers in the recipient country and thus investing abroad through FDI. The theory predicts that more severe informational asymmetries will lead to a larger share of FDI in total external liabilities. Under this view, better institutions (such as better regulated stock markets) would reduce informational asymmetries,[11] and would therefore be associated with a lower share of FDI, and a higher share of portfolio equity, in total external liabilities.

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[9] A survey of theories of corporate capital structures is Myers (2001). Attempts to extend corporate finance reasoning to the international finance setting are reviewed in Borensztein and others (2004).

[10] Other important ways in which governments affect capital structures include taxation, bankruptcy laws, and other regulations. Rajan and Zingales (1995) and Booth and others (2001) study the effects of these factors on the domestic capital structures of the G-7 countries, and developing countries, respectively.

[11] Acemoglu and Johnson (2003) report that corporate governance and political governance are highly correlated, implying that it is difficult to disentangle their individual effects.

The second theory, by Albuquerque (2003), focuses on the problems of expropriation and imperfect enforcement of international financial contracts.[12] The theory assumes that FDI is less subject to expropriation than are other liabilities, though the validity of this assumption may depend on the specific economic sector in which FDI is undertaken. On the whole, Albuquerque (2003) suggests that much of FDI is of an intangible nature (technology, brand names) and thus difficult to expropriate. Under this view, the optimal contract between international investors and financially constrained countries, which are unable to pre-commit not to expropriate, will usually take the form of FDI. Therefore this theory predicts that countries with tighter financial constraints will finance themselves primarily through FDI, which is seen as harder to expropriate. The theory may also be interpreted to predict that—for given financial constraints—worse institutions (greater ease of expropriation of FDI) will lead to a lower share of FDI in total external liabilities.[13]

As mentioned in the introduction, early empirical tests of the relationship between indicators of institutional quality and variables related to countries' capital structures have reached a variety of results. In a cross-section of countries (including advanced economies), Hausmann and Fernández-Arias (2000) document no relationship or a negative relationship between the ratio of FDI inflows to total private capital inflows and institutional quality. In contrast, Wei (2000, 2001) and Wei and Wu (2002) find that weak institutions tilt capital inflows toward bank loans and away from FDI, consistent with their hypothesis that foreign direct investors are less likely to be bailed out than are foreign banks in the event of a crisis.

Other studies have identified a number of additional factors that may affect countries' capital structures, with special attention to FDI.[14] Such factors include human capital, natural resources, economic size, and openness. Human capital may act as a stronger "pull" factor for FDI (Borensztein and others, 1998; Monge-Naranjo, 2002) than other forms of capital such as portfolio equity or debt. Natural resources may also attract FDI to a greater extent than they do other types of capital, as suggested by Hausmann and Fernández-Arias (2000) and Lane and Milesi-Ferretti (2001b). Indeed, in many cases natural resources might lie unexploited or even undiscovered without the crucial expertise provided by multinationals (Markusen, 1997). However, as argued by Eaton and Gersovitz (1984) and Albuquerque (2003), the tangible nature of FDI aimed

[12] Albuquerque's (2003) main interest is in why FDI flows are less volatile than other capital flows, and he focuses on financial constraints—empirically proxied by credit risk ratings.

[13] This is our interpretation of Albuquerque's (2003) model, though it is not emphasized by the author. It is based upon the author's simulations in Table 2, page 370, and interpreting the parameter θ as the ease with which FDI may be expropriated. (Other types of capital can always be fully expropriated in the model).

[14] Lim (2001) reviews the literature on the determinants of FDI.

at extracting natural resources may make it especially vulnerable to expropriation once it is in place. Larger economic size (proxied by measures such as total GDP) also attracts FDI, which provides an opportunity to better serve the local market (possibly circumventing trade barriers). Finally, openness may reduce the need for "tariff-hopping" FDI, though the ease with which products can be exported increases a country's appeal as a destination for FDI.

With a variety of existing theoretical hypotheses, the relationship between countries' external capital structures and variables such as institutions is ultimately an empirical question. Early empirical tests have not reached definitive conclusions, owing to data constraints. In the next section, we provide new empirical evidence on this question, drawing on data sets that have become available recently.

III. EMPIRICAL ANALYSIS

This section briefly describes the data, presents the empirical strategy, and reports the results. Appendix I describes the data sources and variable definitions in greater detail.

A. Data Sources and Variables Used

The data on external liabilities are drawn from the International Investment Position reported in the International Monetary Fund's *International Financial Statistics*.[15] In our opinion, these are the best available data to address the questions we pose. The IIP's current vintage consists of data for 2001, whereas the data collected by Lane and Milesi-Ferretti for their seminal work published in 2001 refer to 1997. More important, the IIP's coverage has been considerably expanded in the past few years, and now covers more countries than does the original database put together by Lane and Milesi-Ferretti. Our largest sample consists of 55 developing and emerging market countries (listed in Appendix I). These advantages come at a cost, however. The IIP reports FDI at market value for some countries and at book value for others, whereas Lane and Milesi-Ferretti's database included portfolio equity at market value and FDI at book value for all countries. While our impression is that there is no clear pattern between valuation method and the explanatory variables, in interpreting the results it will be important to bear in mind the measurement error resulting from possible methodological inconsistencies across countries in valuing FDI. Other drawbacks of the IIP data are that they do not distinguish between public and private liabilities, nor do they separate out bank loans. This makes it impossible for us to consider ratios of the various liability components to total private liabilities, or to replicate the results of studies that focused on bank loans.[16] While a public/private decomposition would be

[15] A thorough description of the IIP data is provided in IMF (2002).

[16] We analyzed the unpublished, finer components of the various types of liabilities in the IIP dataset. We found that while several countries provide a public-private split of the various types of liabilities to the IMF's Statistics Department, the criteria for the split

(continued…)

interesting, in practice it may not be too informative, because many loans originally extended to private entities are assumed by the sovereign borrower when repayment difficulties emerge.

In the IIP classification, external liabilities consist of FDI, portfolio equity, portfolio debt, and "other" liabilities (loans, currency, and deposits; financial derivatives are reported separately but we subsume them in "other" liabilities because the amounts are small—they do not exceed 0.8 percent of total liabilities for any country in the sample). For the typical country in the sample (that is, the cross-country average in the sample of 41 countries for which all components of liabilities are available), FDI is 31 percent of total liabilities, portfolio equity 4 percent, portfolio debt 11 percent, and other liabilities 54 percent. Portfolio equity is a relatively small but interesting category, especially because the theory by Razin and others (1998, 2001) yields predictions regarding differential impacts of institutions on FDI and portfolio equity. At the same time, in several of the exercises below, we consider the sum of FDI and portfolio equity, which we label as "total equity," because the returns from both FDI and portfolio equity depend on the success of the firm. Table 1 reports the descriptive statistics for all variables used in this study.

Following the hypotheses summarized in Section II, potential explanatory variables include the size of the economy (total GDP in U.S. dollars); the level of economic development (GDP per capita in U.S. dollars); openness (sum of imports and exports over GDP); the relative importance of natural resources (share of exports of fuels, metals, and ores as a ratio of GDP); human capital (two measures: primary school attainment, that is, the percentage of population over 25 with some schooling; and secondary school attainment, that is, the percentage of population over 25 that has attended some level of secondary school); dummy variables for English legal origin and transition economy, respectively; and an index of institutional quality. This last variable is the simple average for 2000 of six institutional indicators drawn from Kaufmann and others (2003): Voice and Accountability, Political Stability and Absence of Violence, Government Effectiveness, Regulatory Quality, Rule of Law, and Control of Corruption.[17] In the full country sample of Kaufmann and others (2003), the index ranges from -2.5 to 2.5 (for 99 percent of the observations), with a mean of zero and a standard deviation of one; the range is narrower in our sample because we exclude the advanced economies and the countries without adequate data coverage. Several of these potential explanatory variables are correlated with each other (Table 2), highlighting the importance of using multivariate regressions.

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do not seem to be consistent across countries. The same is true for bank loans versus other types of loans.

[17] In our view, the indices compiled by Kaufmann and others (2003) are "the state of the art" among indicators of institutional quality, in the sense that they are a summary measure of the largest set available of such indicators.

Table 1. Descriptive Statistics

Variable	N	Minimum	Maximum	Mean	Median	Standard Deviation	Coefficient of Variation
Independent Variables							
Institutional quality index	55	-1.28	1.16	-0.03	-0.08	0.61	n.a.
GDP (US$ billions)	55	0.7	617.8	68.3	16.1	129.8	1.90
GDP per capita (in US dollars)	55	99	9,443	2,468	1,874	2,259	0.92
Primary school attainment	47	0.11	1.00	0.74	0.81	0.25	0.34
Secondary school attainment	47	0.02	0.70	0.33	0.32	0.21	0.63
Natural resources	48	0.00	0.93	0.18	0.10	0.22	1.22
Openness	55	0.22	2.11	0.81	0.73	0.42	0.52
English legal origin	55	0.00	1.00	0.20	0.00	0.40	2.02
Transition	55	0.00	1.00	0.33	0.00	0.47	1.45
Dependent Variables							
(Shares of total liabilities unless otherwise indicated)							
Total equity	44	0.01	0.71	0.35	0.33	0.18	0.52
Portfolio equity	44	0.00	0.22	0.04	0.02	0.05	1.31
FDI	55	0.01	0.71	0.30	0.28	0.17	0.55
Portfolio debt	48	0.00	0.38	0.10	0.08	0.10	0.97
Other liabilities	55	0.22	0.99	0.57	0.56	0.21	0.37
Portfolio equity ratio to FDI	44	0.00	0.86	0.14	0.07	0.19	1.32
(Shares of GDP)							
Total liabilities	55	0.09	3.28	0.89	0.80	0.50	0.56
Total equity	44	0.01	0.73	0.29	0.26	0.19	0.64
Portfolio equity	44	0.00	0.15	0.03	0.01	0.04	1.25
FDI	55	0.01	0.74	0.27	0.23	0.19	0.70
Portfolio debt	47	0.00	0.47	0.09	0.06	0.10	1.13
Other liabilities	55	0.08	2.09	0.52	0.41	0.39	0.74

Sources and notes: Liabilities and their components are from countries' International Investment Position in the IMF's *International Financial Statistics*. Total equity consists of portfolio equity plus FDI. Other liabilities include bank loans, currency, deposits, and financial derivatives. Total liabilities consist of the sum of total equity plus portfolio debt, and other liabilities. The Institutional Quality Index is the simple average of six indicators for 2000 from Kaufmann, Kraay and Mastruzzi (2003): voice and accountability; political stability and absence of violence; government effectiveness; regulatory quality; rule of law; and control of corruption. GDP and GDP per capita are from the World Bank's *World Development Indicators* (WDI). Natural resources are the percentage of ore, metals, and fuels in total exports; and openness is the sum of imports and exports, divided by GDP; both for 2001 from the WDI. Primary school attainment and secondary school attainment are the 1990 shares of total population over 25 that attended primary and secondary school, respectively, from Barro and Lee (1993) complemented by UNESCO data. English legal origin is a dummy for countries with English law or former British colonies and protectorates. Transition is a dummy for countries that belonged to the former Soviet Union, former Yugoslavia, or ex-communist countries. The Appendix provides further details on sources and variable definitions.

Table 2. Pairwise Correlations (Independent Variables)

	Institutional quality index	GDP	GDP per capita	Primary school attainment	Secondary school attainment	Natural resources	Openness	English legal origin	Transition
Institutional quality index	1.00								
GDP	0.05	1.00							
GDP per capita	0.69***	0.23 *	1.00						
Primary school attainment	0.35**	0.07	0.54***	1.00					
Secondary school attainment	0.20	-0.06	0.34**	0.81***	1.00				
Natural resources	-0.34**	0.01	-0.11	0.19	0.17	1.00			
Openness	0.33**	-0.31**	0.29**	0.33**	0.37***	-0.21	1.00		
English legal origin	0.13	0.04	-0.04	-0.18	-0.22	-0.02	0.23*	1.00	
Transition	0.08	-0.13	0.17	0.58***	0.81***	-0.02	0.37***	-0.35***	1.00

Sources and notes: The number of observations varies from 47 to 55, depending on data availability. * significant at the 10 percent level; ** significant at the 5 percent level; *** significant at the 1 percent level. The Institutional Quality Index is the simple average of six indicators for 2000 from Kaufmann, Kraay and Mastruzzi (2003): voice and accountability; political stability and absence of violence; government effectiveness; regulatory quality; rule of law; and control of corruption. GDP and GDP per capita are from the World Bank's *World Development Indicators* (WDI). Natural resources are the percentage of ore, metals and fuels in total exports; and openness is the sum of imports and exports, divided by GDP; both for 2001 from the WDI. Primary school attainment and secondary school attainment are the 1990 shares of total population over 25 that attended primary and secondary school, respectively, from Barro and Lee (1993) complemented by UNESCO data. English legal origin is a dummy for countries with English law or former British colonies and protectorates. Transition is a dummy for countries that belonged to the former Soviet Union, former Yugoslavia, or ex-communist countries. The Appendix provides further details on sources and variable definitions.

This list of potential explanatory variables is relatively parsimonious—not an unnatural choice in light of the limited number of countries for which data are available and the need to attain a sufficient number of "degrees of freedom" in the estimation. We intentionally did not use a number of variables used in related empirical studies. One example worth highlighting is "sovereign credit ratings" produced by agencies such as Moody's or Standard and Poor's, and used by researchers including Albuquerque (2003). Our impression is that credit ratings are a reflection of a country's ability to tap bond markets, and thus cannot be viewed as exogenous determinants of liability composition. Moreover, our interest is in the deep, long-run determinants of cross-country differences, and credit ratings reflect macroeconomic conditions, as well as institutional quality that we seek to measure directly. Similarly, we did not include measures of domestic financial development (such as stock market capitalization as a share of GDP, or the number of listed firms) in our baseline regressions, because we view them as clearly endogenous. In fact, a substantial share of portfolio equity in a country's external finance will, to a considerable extent, be mirrored in a large domestic stock market. Nevertheless, we show below that our main results are reasonably robust even to the inclusion of such endogenous indicators of domestic financial development. Instead, we would have liked to be able to control for "deeper" determinants of domestic financial development, such as the measures of "anti-director rights" put forward by La Porta and others (1998), but these are available only for a very small subset of countries in our sample.[18] Finally, another potential explanatory variable one might wish to control for is restrictions on certain types of capital flows (such as FDI, or short-term flows). Again, unfortunately, accurate cross-country measures of capital controls by type of flow are not available.[19]

Some of the variables we consider also raise special concerns. In particular, the indicators of institutional quality are subjective, and the consultants who produce them might be influenced in their judgment by the structure of a country's liabilities, or by other factors that are correlated with the structure of liabilities. To reduce the possibility of bias, we attempted to use a variety of instruments suggested by previous studies. These include settler mortality and population density in the 1500s from Acemoglu and others (2003), ethnolinguistic fractionalization and a dummy for post-1945 independence (Mauro, 1995).

[18] We do include dummies for English law, which are predetermined and have been shown by La Porta and others (1998) to be correlated with domestic financial development.

[19] In the robustness section, we use a dummy on whether countries liberalized their equity markets to foreign investors before 1995 (drawn from Bekaert and others, forthcoming).

While our main interest is in the composition of countries' external liabilities, throughout the estimation section we also consider the ratios of individual components (such as total equity, portfolio equity, FDI, or portfolio debt) to GDP. We do this because we feel that it is important to identify the determinants of not only the share, but also the amount (scaled by the size of the economy) of desirable forms of finance.

Our empirical analysis is based upon cross-country regressions. This is consistent with our focus on the composition of liability *stocks*. Moreover, we are interested in the fundamental, slow-moving, determinants of cross-country differences. In panel regressions, most of the information we are looking for would be in the country fixed effects.

B. Results

Considering the univariate correlations between, on the one hand, the shares of a variety of components of total liabilities and, on the other hand, factors potentially associated with liability composition, a number of significant correlations emerge (Table 3). Both total equity as a share of total liabilities and FDI as a share of total liabilities are significantly correlated with GDP per capita, human capital, institutional quality, openness, and the share of natural resources in total exports. Portfolio equity as a share of total liabilities is positively correlated with institutional quality, though with a *p*-value of 0.19; it is significantly correlated not only with economic size, but interestingly also with English legal origin. This is consistent with La Porta and others' (1998) view that English legal origin provides better shareholder protection, and their finding that English legal origin is associated with stock market development more generally. Indeed, the ratio of portfolio equity to FDI is positively and significantly correlated with economic size and English legal origin, reflecting the especially strong association between these variables and portfolio equity. Portfolio debt as a share of liabilities is significantly associated with larger economic size, higher levels of both economic development and human capital, and non-English legal origin. Not surprisingly (given that the shares of the various components of liabilities need to sum to one), the remaining component of total liabilities, namely, other liabilities (mainly bank loans, currency, and deposits) bears a negative and significant relationship with economic size, economic development, institutional quality, and human capital. Broadly similar patterns hold when expressing the various external liability components as shares of GDP. In particular, total equity, portfolio equity, and FDI (each expressed as a ratio to GDP) are all positively and significantly correlated with institutional quality.

Table 3. Pairwise Correlations (Dependent Variables with Independent Variables)

	Institutional quality index	GDP	GDP per capita	Primary school	Secondary school	Natural resources	Openness	English legal origin	Transition
(Shares of total liabilities unless otherwise indicated)									
Total equity	0.45***	0.16	0.37***	0.50***	0.34**	0.35**	0.28*	0.25*	0.15
	(0.00)	(0.29)	(0.01)	(0.00)	(0.03)	(0.03)	(0.06)	(0.11)	(0.33)
Portfolio equity	0.20	0.62***	0.15	0.11	-0.02	-0.04	-0.02	0.31**	-0.14
	(0.19)	(0.00)	(0.33)	(0.48)	(0.92)	(0.83)	(0.91)	(0.04)	(0.36)
FDI	0.37***	0.02	0.30**	0.42**	0.31**	0.30**	0.32**	0.09	0.19
	(0.00)	(0.88)	(0.02)	(0.00)	(0.03)	(0.04)	(0.02)	(050)	(0.18)
Portfolio debt	0.19	0.45***	0.39***	0.43***	0.16	0.11	-0.22	-0.26*	0.05
	(0.20)	(0.00)	(0.00)	(0.00)	(0.30)	(0.49)	(0.13)	(0.07)	(0.72)
Other liabilities	-0.46***	-0.38***	-0.49***	-0.58***	-0.36**	-0.22	-0.19	-0.00	-0.21
	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)	(0.13)	(0.16)	(0.99)	(0.13)
Portfolio equity ratio to FDI	0.01	0.65***	-0.06	-0.11	-0.15	-0.08	-0.11	0.34**	-0.23
	(0.93)	(0.00)	(0.70)	(0.50)	(0.35)	(0.65)	(0.48)	(0.02)	(0.13)
(Shares of GDP)									
Total liabilities	0.17	-0.22*	0.17	0.10	0.11	-0.08	0.23*	-0.09	-0.06
	(0.23)	(0.10)	(0.21)	(0.48)	(0.44)	(0.58)	(0.09)	(0.53)	(0.65)
Total equity	0.52***	-0.05	0.46***	0.44***	0.31**	0.16	0.44***	0.09	0.13
	(0.00)	(0.75)	(0.00)	(0.00)	(0.05)	(0.35)	(0.00)	(0.54)	(0.40)
Portfolio equity	0.29**	0.45***	0.18	0.18	0.00	-0.04	0.13	0.24	-0.11
	(0.05)	(0.00)	(0.24)	(0.26)	(0.99)	(0.81)	(0.41)	(0.12)	(0.46)
FDI	0.40***	-0.13	0.33***	0.35**	0.29*	0.14	0.36***	-0.04	0.10
	(0.00)	(0.34)	(0.01)	(0.02)	(0.05)	(0.36)	(0.00)	(0.79)	(0.46)
Portfolio debt	0.19	0.19	0.30**	0.39***	0.18	0.01	-0.12	-0.27	0.00
	(0.19)	(0.20)	(0.05)	(0.01)	(0.25)	(0.93)	(0.42)	(0.07)	(0.98)
Other liabilities	-0.07	-0.33***	-0.06	-0.16	-0.06	-0.16	0.13	-0.05	-0.16
	(0.60)	(0.01)	(0.69)	(0.28)	(0.70)	(0.29)	(0.36)	(0.73)	(0.26)

Sources and notes: The number of observations varies from 38 to 55, depending on data availability. *p*-values are reported in brackets. * significant at the 10 percent level; ** significant at the 5 percent level; *** significant at the 1 percent level. Liabilities and their components are from countries' International Investment Position in the IMF's *International Financial Statistics*. Total equity consists of portfolio equity plus FDI. Other liabilities include bank loans, currency, deposits, and financial derivatives. Total liabilities consist of the sum of total equity plus portfolio debt, and other liabilities. The Institutional Quality Index is the simple average of six indicators for 2000 from Kaufmann, Kraay and Mastruzzi (2003): voice and accountability; political stability and absence of violence; government effectiveness; regulatory quality; rule of law; and control of corruption. GDP and GDP per capita are from the World Bank's *World Development Indicators* (WDI). Natural resources are the percentage of ore, metals and fuels in total exports; and openness is the sum of imports and exports, divided by GDP; both for 2001 from the WDI. Primary school attainment and secondary school attainment are the shares of total population over 25 that attended primary and secondary school, respectively, for 1990 from Barro and Lee (1993) complemented by UNESCO data. English legal origin is a dummy for countries with English law or former British colonies and protectorates. Transition is a dummy for countries that belonged to the former Soviet Union, former Yugoslavia, or ex-communist countries. The Appendix provides further details on sources and variable definitions.

Turning to multivariate regressions, we begin by focusing on the determinants of the share of total equity in total liabilities, for a loose parallel to the corporate finance literature; portfolio equity, given the emphasis on this component in existing theories; and the share of FDI in total liabilities, given the attention that FDI has received in previous studies (Table 4). The positive impact of institutions on total equity, portfolio equity, and FDI remains significant controlling for other explanatory variables. The share of total equity in total liabilities is found to be positively and significantly associated with the institutional quality index, controlling for economic size and economic development (Column 2). A one-digit improvement in the institutional quality index is associated with a 12 percentage point increase in the ratio of total equity to total liabilities.[20] Introducing additional explanatory variables in the analysis reduces the number of observations but yields interesting relationships. Institutional quality and abundance of natural resources are positively and significantly associated with the share of total equity in total liabilities (Columns 3–5). Openness, human capital, and economic size are also positively associated with total equity, though not always significantly. Portfolio equity as a share of total liabilities (Columns 6–10) is positively and significantly associated with institutional quality, GDP, GDP per capita, natural resources, and openness. The ratio of FDI to total liabilities (Column 11–15) is also positively and significantly associated with institutional quality and natural resources. In what concerns the composition of total equity, the ratio of portfolio equity to FDI is significantly associated with English legal origin, better institutional quality, larger economic size, and a lower level of economic development (Column 16). A dummy variable for transition countries is never significant in the regressions.[21] The results for the same regressions as in Table 4 are broadly unchanged if the sample is restricted to the countries with per capita GDP above US$1,000 (36 countries in the equivalent of Column 11; 29 countries in the equivalent of Column 16), except that institutional quality is no longer significantly associated with the share of portfolio equity to FDI (the *p*-value rises to 17 percent in Column 16). (The full results are not reported, for the sake of brevity.) Similar results are obtained when considering external liability components as a share of GDP (Table 5).

[20] In the institutional quality scale, one digit is approximately equal to one standard deviation within the full country sample of Kaufmann and others (2003): taking the index at face value, this would be equivalent, for example, to improving the institutions of Croatia to the level of those of Chile, or improving the institutions of Peru to the level of Slovenia. Of course, these comparisons between pairs of countries are only for illustration purposes. Our view is that the institutional quality index is useful in identifying broad cross-country correlations, but measurement error is often too large for comparisons between pairs of countries to be taken too seriously (see Kaufmann and Kraay, 2004).

[21] If a dummy variable for offshore financial centers is introduced in the regressions, it is not significant. (The results are not reported, for the sake of brevity).

Table 4. Equity-Like Components as Shares of Total Liabilities, Ordinary Least Squares Regressions

	Total Equity to Total Liabilities					Portfolio Equity to Total Liabilities					FDI to Total Liabilities					Portfolio equity to FDI
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
Institutional quality index	0.14***	0.12*	0.17***	0.18***	0.17***	0.02*	0.03**	0.05**	0.04**	0.04***	0.10***	0.08	0.08*	0.08*	0.09**	0.10**
	(0.00)	(0.05)	(0.00)	(0.00)	(0.00)	(0.07)	(0.01)	(0.01)	(0.01)	(0.01)	(0.00)	(0.11)	(0.07)	(0.06)	(0.04)	(0.03)
GDP		0.19	0.39***	0.43***	0.37**		0.23***	0.29***	0.29***	0.25***		-0.02	0.07	0.09	0.15	1.01**
		(0.17)	(0.00)	(0.00)	(0.03)		(0.00)	(0.00)	(0.00)	(0.00)		(0.87)	(0.55)	(0.47)	(0.24)	(0.00)
GDP per capita		0.01	-0.02	-0.01	-0.02		0.00	-0.01***	-0.01***	-0.01**		0.01	0.00	0.00	0.00	-0.04**
		(0.70)	(0.11)	(0.23)	(0.17)		(0.10)	(0.00)	(0.00)	(0.03)		(0.66)	(0.91)	(0.83)	(0.89)	(0.02)
Natural resources			0.48***	0.53***	0.49***			0.07**	0.07**	0.07**			0.25	0.27*	0.29**	0.22*
			(0.00)	(0.00)	(0.00)			(0.01)	(0.01)	(0.02)			(0.12)	(0.08)	(0.04)	(0.08)
Openness			0.09**	0.09**	0.07			0.05**	0.05**	0.03			0.03	0.04	0.05	0.12
			(0.03)	(0.02)	(0.19)			(0.03)	(0.01)	(0.27)			(0.51)	(0.49)	(0.30)	(0.13)
Primary school attainment			0.22**		0.21			-0.02		0.02			0.16*		0.07	-0.12
			(0.03)		(0.13)			(0.40)		(0.54)			(0.01)		(0.59)	(0.27)
Secondary school attainment				0.20**					-0.03					0.14		
				(0.05)					(0.23)					(0.16)		
English legal origin					0.04					0.05					-0.08	0.19*
					(0.53)					(0.19)					(0.24)	(0.06)
Transition					0.03					0.00					0.04	0.03
					(0.68)					(0.82)					(0.42)	(0.61)
Constant	0.35***	0.32***	0.03	0.10*	0.04	0.04***	0.03***	0.00	0.00	-0.02	0.31***	0.29***	0.11	0.16**	0.14*	0.07
	(0.00)	(0.00)	(0.62)	(0.08)	(0.60)	(0.00)	(0.01)	(0.99)	(0.87)	(0.32)	(0.00)	(0.00)	(0.16)	(0.01)	(0.08)	(0.40)
Observations	44	44	37	37	37	44	44	37	37	37	55	55	44	44	44	37
R-squared	0.20	0.23	0.61	0.60	0.62	0.04	0.46	0.55	0.56	0.66	0.14	0.14	0.36	0.35	0.42	0.73

Sources and notes: Robust *p*-values in parentheses. * significant at the 10 percent level; ** significant at the 5 percent level; *** significant at the 1 percent level. Liabilities and their components are from countries' International Investment Position in the IMF's *International Financial Statistics*. Total equity consists of portfolio equity plus FDI. Other liabilities include bank loans, currency, deposits, and financial derivatives. Total liabilities consist of the sum of total equity plus portfolio debt, and other liabilities. The Institutional Quality Index is the simple average of six indicators for 2000 from Kaufmann, Kraay and Mastruzzi (2003): voice and accountability; political stability and absence of violence; government effectiveness; regulatory quality; rule of law; and control of corruption. GDP and GDP per capita are from the World Bank's *World Development Indicators* (WDI). Natural resources are the percentage of ore, metals and fuels in total exports; and openness is the sum of imports and exports, divided by GDP; both for 2001 from the WDI. Primary school attainment and secondary school attainment are the shares of total population over 25 that attended primary and secondary school, respectively, for 1990 from Barro and Lee (1993) complemented by UNESCO data. English legal origin is a dummy for countries with English law or former British colonies and protectorates. Transition is a dummy for countries that belonged to the former Soviet Union, former Yugoslavia, or ex-communist countries. The Appendix provides further details on sources and variable definitions.

Table 5. Equity-Like Components as a Share of GDP, Ordinary Least Squares Regressions

	Total Equity to GDP					Portfolio Equity to GDP					FDI to GDP				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
Institutional quality index	0.17***	0.12*	0.21***	0.21***	0.21***	0.02**	0.03**	0.04***	0.04***	0.04***	0.12***	0.09*	0.13**	0.13**	0.14**
	(0.00)	(0.05)	(0.00)	(0.00)	(0.00)	(0.02)	(0.01)	(0.00)	(0.00)	(0.00)	(0.00)	(0.09)	(0.03)	(0.02)	(0.02)
GDP		-0.12	0.14	0.14	0.07		0.12***	0.17***	0.17***	0.14***		-0.27**	-0.14	-0.14	-0.08
		(0.37)	(0.41)	(0.39)	(0.62)		(0.00)	(0.00)	(0.00)	(0.01)		(0.04)	(0.39)	(0.40)	(0.62)
GDP per capita		0.02	-0.01	-0.01	-0.01		0.00	-0.01***	-0.01**	-0.01**		0.02	0.00	0.00	0.00
		(0.33)	(0.60)	(0.64)	(0.47)		(0.26)	(0.01)	(0.01)	(0.02)		(0.40)	(0.91)	(0.88)	(0.91)
Natural resources			0.49***	0.51***	0.44**			0.06***	0.07***	0.05**			0.29*	0.29*	0.30*
			(0.00)	(0.00)	(0.01)			(0.00)	(0.00)	(0.03)			(0.09)	(0.08)	(0.06)
Openness			0.18**	0.18**	0.19**			0.04**	0.05***	0.03*			0.10	0.10	0.16*
			(0.03)	(0.02)	(0.03)			(0.02)	(0.00)	(0.06)			(0.24)	(0.24)	(0.06)
Primary school attainment			0.04		0.19			-0.01		0.03			0.02		0.07
			(0.77)		(0.29)			(0.63)		(0.29)			(0.87)		(0.70)
Secondary school attainment				0.00					-0.03					0.01	
				(0.99)					(0.11)					(0.93)	
English legal origin					-0.01					0.02					-0.11
					(0.85)					(0.41)					(0.15)
Transition					-0.10					-0.02					-0.08
					(0.26)					(0.23)					(0.33)
Constant	0.29***	0.25***	0.05	0.06	-0.01	0.03***	0.02***	0.00	0.00	-0.02	0.27***	0.25***	0.13	0.14*	0.10
	(0.00)	(0.00)	(0.53)	(0.33)	(0.94)	0.00	(0.00)	(0.85)	(0.87)	(0.19)	0.00	0.00	(0.16)	(0.10)	(0.31)
Observations	44	44	37	37	37	44	44	37	37	37	55	55	44	44	44
R-squared	0.27	0.31	0.53	0.53	0.53	0.09	0.31	0.48	0.51	0.57	0.16	0.20	0.31	0.31	0.35

Sources and notes: Robust *p*-values in parentheses. * significant at the 10 percent level; ** significant at the 5 percent level; *** significant at the 1 percent level. Liabilities and their components are from countries' International Investment Position in the IMF's *International Financial Statistics*. Total equity consists of portfolio equity plus FDI. Other liabilities include bank loans, currency, deposits, and financial derivatives. Total liabilities consist of the sum of total equity plus portfolio debt, and other liabilities. The Institutional Quality Index is the simple average of six indicators for 2000 from Kaufmann, Kraay and Mastruzzi (2003): voice and accountability; political stability and absence of violence; government effectiveness; regulatory quality; rule of law; and control of corruption. GDP and GDP per capita are from the World Bank's *World Development Indicators* (WDI). Natural resources are the percentage of ore, metals and fuels in total exports; and openness is the sum of imports and exports, divided by GDP; both for 2001 from the WDI. Primary school attainment and secondary school attainment are the shares of total population over 25 that attended primary and secondary school, respectively, for 1990 from Barro and Lee (1993) complemented by UNESCO data. English legal origin is a dummy for countries with English law or former British colonies and protectorates. Transition is a dummy for countries that belonged to the former Soviet Union, former Yugoslavia, or ex-communist countries. The Appendix provides further details on sources and variable definitions.

In an effort to disentangle the exact mechanisms whereby various factors may affect the composition of countries' external liabilities, we run multivariate regressions of each component of external liabilities on the same set of potential determinants (Table 6). This allows us to ask questions such as the following: when the institutional quality index improves by one digit, by how many percentage points of total liabilities do the shares of FDI, portfolio equity, portfolio debt, and "other liabilities" change, respectively? Of course, by identity, the sum of the changes has to equal zero. A one-digit improvement in the institutional quality index is associated with a 5 percentage point increase in the share of portfolio equity share in total liabilities; a 10 percentage point increase in the FDI share; a 1 percentage point decline in the portfolio debt share; and a 13 percentage point decline in the share of other liabilities. A similar exercise is reported expressing liability components as shares of GDP, though of course the sum of the coefficients in this case does not need to add up to zero, but rather to the overall impact on total liabilities as a share of GDP.

On the whole, the multivariate regression results may be summarized, and tentatively interpreted, as follows:

- Institutional quality is positively and significantly associated with total equity, portfolio equity, and FDI, each expressed as a share of total liabilities (or GDP). As countries' institutional quality improves, the composition of external liabilities tilts in favor of FDI over debt—contrary to the hypothesis put forward by Razin and others (1998, 2001). FDI may thus be especially vulnerable to institutional weaknesses such as red tape hurdles or expropriation through bribes.

- Institutional quality is also positively and significantly associated with the ratio of portfolio equity to FDI, though only in some specifications. This is consistent with the predictions by Razin and others (1998, 2001). Thus, in countries where governance in general and corporate governance in particular is weak, the fear of expropriation may be even greater for portfolio equity than it is for FDI.

- Consistent with previous studies, a number of "pull" factors are positively and significantly associated with the share of FDI in total liabilities and thus seem to play a role in attracting FDI: such factors include natural resources and human capital.

C. Robustness Tests

The key relationships identified above may raise a number of concerns to be addressed by robustness tests. The five main concerns, and related tests, are as follows. First, possible fragility of the results to changes in the set of countries considered: we run the key regressions routinely dropping one country at a time (or dropping small subgroups such as the offshore financial centers), and find that no individual country has excessive influence

Table 6. Components of Liabilities and their Determinants

	Dependent Variables as Shares of Total Liabilities				Dependent Variables as Shares of GDP			
	Portfolio Equity	FDI	Portfolio Debt	Other Liabilities	Portfolio Equity	FDI	Portfolio Debt	Other Liabilities
Institutional quality	0.05**	0.10***	-0.01	-0.13**	0.04***	0.14*	-0.01	-0.17
	(0.02)	(0.01)	(0.67)	(0.01)	(0.00)	(0.05)	(0.84)	(0.27)
GDP	0.29***	0.09	0.13*	-0.52***	0.17***	-0.04	0.03	-0.68**
	(0.00)	(0.44)	(0.09)	(0.00)	(0.00)	(0.80)	(0.72)	(0.03)
GDP per capita	-0.01***	-0.01	0.01	0.01	-0.01***	0.00	0.00	0.05
	(0.01)	(0.54)	(0.40)	(0.46)	(0.01)	(1.00)	(0.87)	(0.25)
Natural Resources	0.07**	0.38***	-0.07	-0.38***	0.06***	0.39**	-0.08	-0.17
	(0.02)	(0.00)	(0.38)	(0.01)	(0.01)	(0.02)	(0.25)	(0.58)
Openness	0.05**	0.03	-0.10***	0.02	0.04**	0.12	-0.08**	0.28
	(0.02)	(0.39)	(0.00)	(0.58)	(0.02)	(0.14)	(0.01)	(0.13)
Primary school attainment	-0.02	0.29***	0.23***	-0.51***	-0.01	0.12	0.22***	-0.87***
	(0.32)	(0.00)	(0.00)	(0.00)	(0.66)	(0.35)	(0.00)	(0.01)
Constant	0.00	-0.01	0.00	1.00***	0.00	0.00	0.00	0.86***
	(0.90)	(0.89)	(0.93)	(0.00)	(0.86)	(0.98)	(0.92)	(0.00)
R-squared	0.56	0.65	0.46	0.77	0.48	0.52	0.32	0.52

Sources and notes: Robust *p*-values in parentheses. Ordinary least squares regressions. There are 36 observations in each regression. * significant at 10%; ** significant at 5%; *** significant at 1%. When dependent variables are expressed as shares of total liabilities, the estimated coefficients in the four separate regressions sum (horizontally) to zero, up to rounding errors. Liabilities and their components are from countries' International Investment Position in the IMF's *International Financial Statistics*. Total equity consists of portfolio equity plus FDI. Other liabilities include bank loans, currency, deposits, and financial derivatives. Total liabilities consist of the sum of total equity plus portfolio debt, and other liabilities. The Institutional Quality Index is the simple average of six indicators for 2000 from Kaufmann, Kraay and Mastruzzi (2003): voice and accountability; political stability and absence of violence; government effectiveness; regulatory quality; rule of law; and control of corruption. GDP and GDP per capita are from the World Bank's *World Development Indicators* (WDI). Natural resources are the percentage of ore, metals and fuels in total exports; and openness is the sum of imports and exports, divided by GDP; both for 2001 from the WDI. Primary school attainment and secondary school attainment are the shares of total population over 25 that attended primary and secondary school, respectively, for 1990 from Barro and Lee (1993) complemented by UNESCO data. English legal origin is a dummy for countries with English law or former British colonies and protectorates. Transition is a dummy for countries that belonged to the former Soviet Union, former Yugoslavia, or ex-communist countries. The Appendix provides further details on sources and variable definitions.

on the results.[22] Second, the need to take into account the bounded nature of the dependent variables (shares of total liabilities by definition cannot lie outside the 0–1 range): we run the key regressions using a quasi-maximum likelihood procedure, as proposed by Papke and Wooldrige (1996), and obtain broadly similar results (not shown) to those reported above. Third, validity of the results for the mid-1990s, that is, prior to the boom in international financial integration. (While indicators of institutional quality do not change much over time, stocks of assets and liabilities have boomed in recent years.) We run the regressions for FDI as a share of GDP (as in Table 5, columns 11–15) using UNCTAD data for 1996 (drawing the institutional quality index for 1996 from Kaufmann and others (2003), and obtain (not shown) essentially the same results as for 2001. Fourth, one might wonder whether the results are robust to the inclusion of indicators of domestic capital market development, such as stock market capitalization as a share of GDP and the logarithm of the number of listed firms. While we think that domestic capital market development is clearly endogenous, we show that our main results are reasonably robust even when introducing these variables as additional controls (Table 7). While market capitalization and the number of firms are significant in a number of specifications, institutional quality is the variable that remains significant in the largest number of specifications, with its *p*-value rising as high as 0.25 only in a few instances.[23] Fifth, robustness of the results to possible endogeneity of the institutional quality index: we use instrumental variables, as outlined below in detail.

We run regressions of liability components (as a share of total liabilities) on institutional quality (and, in some variants, per capita GDP and human capital), using a variety of instruments such as settler mortality. The identifying assumption is that settler mortality (and/or the other instruments) affect institutional quality, and institutional quality in turn affects the composition of countries' external liabilities, with no other links between liability structures and the instruments. In particular, for the identifying assumption to hold, there must be no direct channel from the instruments to liability structures. This leads us to use either univariate regressions combined with a broad interpretation of "institutions," or an extremely parsimonious list of other regressors (Table 8). For example, Column (2) reports the results of the share of total equity in total liabilities on an index of institutional quality, using settler mortality and population density in the 1500s as instruments. This specification may be of interest to those who believe that settler mortality and population density in the

[22] The largest decline in the *p*-value for the institutional quality index coefficient occurs when dropping Chile from the sample; the key relationships remain significant at the conventional levels.

[23] The results are similar when controlling for a dummy variable indicating whether a country had liberalized international access to its equity markets by 1995 (from Bekaert and others, forthcoming). The samples for which the data are available consists of 22–31 countries (depending on specification). Institutional quality is significant in most specifications, though the *p*-value rises to 0.25 in one specification; in such limited samples, the equity market liberalization is never significant. Moreover, Bekaert and others (forthcoming) use an index of institutional quality as an instrument for equity market liberalization, suggesting that equity market liberalization is probably best viewed as endogenous to institutional quality.

Table 7. Robustness Tests: Including Financial Market Development

	Dependent Variables as Shares of Total Liabilities						Dependent Variables as Shares of GDP					
	Total Equity		Portfolio Equity		FDI		Total Equity		Portfolio Equity		FDI	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Institutional quality	0.12*	0.20***	0.01	0.03	0.10	0.16***	0.10	0.22***	0.01	0.03**	0.08	0.19**
	(0.05)	(0.00)	(0.24)	(0.19)	(0.16)	(0.00)	(0.13)	(0.01)	(0.19)	(0.04)	(0.22)	(0.01)
GDP	0.31*	0.42**	0.18***	0.23***	0.10	0.23	-0.02	0.28	0.08***	0.14***	-0.16	0.13
	(0.05)	(0.04)	(0.00)	(0.00)	(0.45)	(0.20)	(0.86)	(0.12)	(0.01)	(0.00)	(0.18)	(0.49)
GDP per capita	-0.02	-0.03**	0.00	-0.01*	-0.01	-0.02**	0.00	-0.03	0.00	-0.01**	0.00	-0.03
	(0.25)	(0.04)	(0.26)	(0.10)	(0.48)	(0.04)	(0.99)	(0.15)	(0.35)	(0.03)	(0.96)	(0.15)
Market capitalization	0.08	0.05	0.08***	0.07**	0.02	-0.03	0.00**	0.00	0.00***	0.00***	0.00	0.00
	(0.21)	(0.53)	(0.00)	(0.04)	(0.74)	(0.66)	(0.02)	(0.18)	(0.00)	(0.00)	(0.31)	(0.73)
Number of listed firms	-0.49**	-0.25	0.04	0.03	-0.33	-0.21	-0.45**	-0.62**	0.01	-0.01	-0.41**	-0.71**
	(0.03)	(0.27)	(0.11)	(0.30)	(0.11)	(0.33)	(0.01)	(0.04)	(0.55)	(0.80)	(0.02)	(0.02)
Natural resources		0.51***		0.04	0.55***	0.55***		0.44***		0.04		0.45**
		(0.00)		(0.24)	(0.00)	(0.00)		(0.00)		(0.11)		(0.01)
Openness		0.07		0.03		0.09		0.15**		0.03**		0.14
		(0.13)		(0.13)		(0.13)		(0.03)		(0.03)		(0.11)
Primary school attainment		0.09		-0.02		0.02		-0.06		0.00		-0.14
		(0.51)		(0.56)		(0.86)		(0.71)		(1.00)		(0.44)
Constant	0.62***	0.29*	0.00	-0.02	0.51***	0.27*	0.50***	0.50**	0.01	-0.01	0.48***	0.63***
	(0.00)	(0.07)	(0.82)	(0.32)	(0.00)	(0.07)	(0.00)	(0.03)	(0.64)	(0.72)	(0.00)	(0.01)
Observations	36	32	36	32	41	35	36	32	36	32	41	35
R-squared	0.30	0.58	0.71	0.76	0.17	0.54	0.35	0.62	0.61	0.72	0.25	0.51

Sources and notes: Robust *p*-values in parentheses. * significant at the 10 percent level; ** significant at the 5 percent level; *** significant at the 1 percent level. The R-squared is not an appropriate measure of goodness of fit with two-stage least squares. Two-stage least squares using logarithm of settler mortality and logarithm of population density in the 1500s (from Acemoglu, Johnson, and Robinson, 2001) as instruments for institutional quality index. Liabilities and their components are from countries' International Investment Position in the IMF's *International Financial Statistics*. Total equity consists of portfolio equity plus FDI. Other liabilities include bank loans, currency, deposits, and financial derivatives. Total liabilities consist of the sum of total equity plus portfolio debt, and other liabilities. The Institutional Quality Index is the simple average of six indicators for 2000 from Kaufmann, Kraay and Mastruzzi (2003): voice and accountability; political stability and absence of violence; government effectiveness; regulatory quality; rule of law; and control of corruption. GDP and GDP per capita are from the World Bank's *World Development Indicators* (WDI). Natural resources are the percentage of ore, metals and fuels in total exports; and openness is the sum of imports and exports, divided by GDP; both for 2001 from the WDI. Primary school attainment and secondary school attainment are the shares of total population over 25 that attended primary and secondary school, respectively, for 1990 from Barro and Lee (1993) complemented by UNESCO data. English legal origin is a dummy for countries with English law or former British colonies and protectorates. Transition is a dummy for countries that belonged to the former Soviet Union, former Yugoslavia, or ex-communist countries. The Appendix provides further details on sources and variable definitions.

Table 8. Two-Stage Least Squares Regressions

	Total Equity to Total Liabilities				Portfolio Equity to Total Liabilities				FDI to Total Liabilities			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	OLS	IV	OLS	IV	OLS	IV	OLS	IV	OLS	IV	OLS	IV
Institutional quality index	0.23***	0.63***	0.14**	0.27*	0.06*	0.15**	0.05	0.18	0.10**	0.31**	0.03	0.34
	(0.00)	(0.00)	(0.04)	(0.08)	(0.06)	(0.03)	(0.13)	(0.18)	(0.03)	(0.01)	(0.60)	(0.27)
Primary school attainment			0.48***	0.39**			0.05	-0.04			0.31***	-0.03
			(0.00)	(0.05)			(0.27)	(0.79)			(0.01)	(0.94)
Constant	0.33***	0.36***	0.05	0.11	0.05***	0.06***	0.02	0.09	0.27***	0.29***	0.08	0.31
	(0.00)	(0.00)	(0.52)	(0.31)	(0.00)	(0.01)	(0.39)	(0.35)	(0.00)	(0.00)	(0.27)	(0.25)
Observations	20	20	19	19	20	20	19	19	28	28	25	25
R-squared in OLS	0.34	n.a.	0.68	n.a.	0.19	n.a.	0.22	n.a.	0.15	n.a.	0.35	n.a.
					First-Stage for Institutional Quality Index							
Settler mortality		-0.17*		-0.17*		-0.17*		-0.17*		-0.20*		-0.18
		(0.08)		(0.10)		(0.08)		(0.10)		(0.05)		(0.11)
Population density in 1500		-0.07		-0.07		-0.07		-0.07		-0.12*		-0.12
		(0.31)		(0.33)		(0.31)		(0.33)		(0.10)		(0.12)
Constant		0.75*		0.74		0.75*		0.74		0.89*		0.84
		(0.10)		(0.12)		(0.10)		(0.12)		(0.06)		(0.12)
R-squared in first stage		0.25		0.23		0.25		0.23		0.28		0.24

Sources and notes: Liabilities and their components are from countries' International Investment Position in the IMF's *International Financial Statistics*. Total equity consists of portfolio equity plus FDI. Other liabilities include bank loans, currency, deposits, and financial derivatives. Total liabilities consist of the sum of total equity plus portfolio debt, and other liabilities. The Institutional Quality Index is the simple average of six indicators for 2000 from Kaufmann, Kraay and Mastruzzi (2003): voice and accountability; political stability and absence of violence; government effectiveness; regulatory quality; rule of law; and control of corruption. GDP and GDP per capita are from the World Bank's *World Development Indicators* (WDI). Natural resources are the percentage of ore, metals and fuels in total exports; and openness is the sum of imports and exports, divided by GDP; both for 2001 from the WDI. Primary school attainment and secondary school attainment are the shares of total population over 25 that attended primary and secondary school, respectively, for 1990 from Barro and Lee (1993) complemented by UNESCO data. English legal origin is a dummy for countries with English law or former British colonies and protectorates. Transition is a dummy for countries that belonged to the former Soviet Union, former Yugoslavia, or ex-communist countries. Market capitalization as a share of GDP and the logarithm of the number of listed firms in 2000 are drawn from the IFC's Emerging Markets Factbook. The Appendix provides further details on sources and variable definitions.

1500s affected institutions in the broad sense (the institutional quality index would then proxy for many aspects of institutions, perhaps even including educational attainment); and institutions in turn affected our dependent variable, with no direct channel from the instruments to liability structures. Column (4) introduces education as an additional explanatory variable, assuming that education is an exogenous variable. The results are similar if we introduce per capita income as an additional explanatory variable, imposing the heroic assumption that GDP per capita is exogenous. (GDP per capita never turns out significant, and we do not report these results to conserve space.)

In all cases, the coefficient on institutional quality rises compared with the ordinary least squares estimation. (To emphasize this point, we report the OLS results obtained with the same sample of countries as is available for instrumental variable estimation.) The broad pattern of the results is unchanged if alternative instruments or alternative country samples are used. Nevertheless, caution is needed in interpreting the results, in light of the small sample size and the (possibly related) relatively weak ability of the instruments to predict institutional quality in the sample of countries with available data.[24] The instruments we use in the estimates reported in Table 8 are the logarithms of settler mortality and population density in the 1500s. Similar results (not reported) are obtained using only one of these instruments. The results obtained using alternative instruments, such as ethnolinguistic fractionalization, post-WWII independence, or English rule, are also broadly similar, but the R^2 in the first-stage regressions in our limited sample was far too low for the results to be reliable.

IV. Conclusion

The external capital structure of countries has important implications for economic performance. Countries' reliance on equity-like instruments (FDI and portfolio equity) improves their ability to share risks with international investors. Moreover, FDI is usually considered to be a vehicle for technological transfer. This study has shown that equity-like components in countries' external capital structures—namely FDI and portfolio equity—are significantly associated with indicators of institutional quality, as well as educational attainment and natural resources. This finding may help shed light on the mechanism underlying the observed correlation between weak institutional quality and severe crises (Acemoglu, Johnson, and Robinson, 2004): weak institutions may tend to increase countries' reliance on crisis-prone forms of financing, thereby increasing the frequency and severity of crises.

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[24] The highest R^2 we find in "first-stage" regressions is 0.28, using the logarithms of settler mortality and population density in the 1500s, available only for former colonies. Alfaro and others (2003) find that "familiarity with the legal code" predicts institutional quality extremely well. This variable takes the value of 1 if the country is the origin of a legal family or exhibits familiarity with an imported law, and correlates strongly with whether countries are advanced (with strong institutions) or developing (with weak institutions). Our sample, however, excludes advanced economies.

With the necessary caution, in light of the limited sample size and the difficulties in establishing causality, our interpretation of the results is that improving institutions—obviously no easy task and typically requiring a long time—may be an effective way of promoting more desirable external liability structures. Moreover, measures aimed at improving countries' external capital structures in a more direct manner should be evaluated carefully, because their effectiveness might be undermined by countries' weak institutional quality.

Sources and Description of the Variables

Dependent Variables

The source for countries' total external liabilities and their components (FDI, Portfolio Equity, Portfolio Debt, and Other Instruments) is the International Investment Position reported in the IMF's *International Financial Statistics*. All variables are in millions of U.S. dollars. A thorough description of the methodology is available at http://www.imf.org/external/np/sta/iip/guide/index.htm.

The dependent variables are expressed as ratios to total liabilities or (see below) GDP. The data refer to 2001; when data are not available for 2001, the data for the numerator and the denominator refer to the most recently available year (2000 for Burundi and Namibia and 1999 for Botswana and Senegal).

Independent Variables

Gross Domestic Product (GDP): Current U.S. dollars billion in 2001 (or same year as data for liabilities). Rescaled to trillions in the regressions, to make results more legible. Source: *World Development Indicators*, World Bank, http://www.worldbank.org/data/wdi2002.

GDP per capita (GDPpc): Current U.S. dollars in 2001. Rescaled to thousands in the regressions, to make results more legible. Source: *World Development Indicators*, World Bank. http://www.worldbank.org/data/wdi2002.

Institutions: Simple average for 2000 of six institutional indicators (Voice and Accountability, Political Stability and Absence of Violence, Government Effectiveness, Regulatory Quality, Rule of Law, Control of Corruption), drawn from Kaufmann, Kraay and Mastruzzi (2003). http://www.worldbank.org/wbi/governance/govdata2002. The index is scaled so that 99 percent of the observations for the full sample of countries analyzed by the authors range between -2.5 and 2.5.

Natural Resources: Percentage of ore, metals and fuels total exports for 2001. Source: *World Development Indicators*, World Bank. http://www.worldbank.org/data/wdi2002.

Openness: Sum of imports and exports divided by total GDP, for 2001. Source: *World Development Indicators*, World Bank. http://www.worldbank.org/data/wdi2002.

Primary school attainment: Percentage of total population over 25 that attended school. Sources: Barro and Lee (1993) http://www.worldbank.org/research/growth/ddbarle2.htm complemented by UNESCO (2002) data available at http://www.uis.unesco.org/ev.php?URL_ID=5187&URL_DO=DO_TOPIC&URL_SECTION=201. Most observations refer to 1990 (all those from Barro and Lee dataset); when data for 1990 are not available, we use the most recent data available (the earliest data refer to 1985).

Secondary school attainment: Percentage of total population over 25 that attended secondary school. Sources: Barro and Lee (1993) http://www.worldbank.org/research/growth/ddbarle2.htm complemented by UNESCO

(2002) data available at http://www.uis.unesco.org/ev.php?URL_ID=5187&URL_DO=DO_TOPIC&URL_SECTION=201. Most observations (all those from Barro and Lee dataset) refer to 1990; when data for 1990 are not available, we use the most recent data available (the earliest data refer to 1985).

English rule: Countries with English law or former British colonies or protectorates. Sources: La Porta et al. (1996), Wei (2001), and the Central Intelligence Agency's (CIA) *World Factbook*, available at http://www.cia.gov/cia/publications/factbook.

Transition: Countries that belonged to the former Soviet Union, former Yugoslavia, or ex-communist countries.

Market capitalization as a share to GDP: Source: *Emerging Markets Factbook*, International Finance Corporation.

Listed firms: the logarithm of the number of firms listed on the stock market. Source: *Emerging Markets Factbook*, International Finance Corporation.

Instruments

Ethnolinguistic Fractionalization: Probability that two randomly selected persons from a given country will not belong to the same ethnolinguistic group. Source: Mauro (1995).

Post-1945 independence dummy: drawn from the CIA's *World Factbook*. http://www.cia.gov/cia/publications/factbook.

Logarithm of settler mortality: for former colonies. Source: Acemoglu, Johnson and Robinson (2002).

Logarithm of population density in the 1500s: for former colonies. Source: Acemoglu, Johnson and Robinson (2002).

Countries

The 55 countries in our main sample are the following: Argentina, Armenia, Bangladesh, Belarus, Benin, Bolivia, Botswana, Brazil, Bulgaria, Burkina Faso, Burundi, Cambodia, Chile, Colombia, Costa Rica, Côte d'Ivoire, Croatia, Czech Republic, Ecuador, El Salvador, Estonia, Hungary, India, Kazakhstan, Kyrgyz Republic, Latvia, Lithuania, Malaysia, Mali, Malta, Mexico, Moldova, Namibia, Panama, Paraguay, Peru, Philippines, Poland, Romania, Russia, Rwanda, Senegal, Slovak Republic, Slovenia, South Africa, Swaziland, Tanzania, Thailand, Togo, Tunisia, Turkey, Ukraine, Uruguay, Venezuela, Yemen.

Although IIP data for Bahrain are available, we exclude it from our main sample because its ratio of total liabilities to GDP is unusually high (11.1 compared with a maximum of 3.3 and a mean of 0.9 in our 55 country sample.) Bahrain's role as an international banking center, as well as its high GDP per capita and large oil reserves, also make it stand out. Including Bahrain in the sample strengthens the significance of the results for institutional quality and human capital.

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