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Abstract

What determines the composition of external liabilities, both across countries and over time? More specifically, which countries account for the massive increase in equity-like liabilities (foreign direct investment and portfolio equity), especially since the mid-1990s? The empirical analysis draws on the newly-released "External Wealth of Nations Mark II" dataset. In the cross-section, we find that larger, more open economies with a better institutional quality score have a greater equity share in external liabilities, which is also positively related to natural resource production. Along the time-series dimension, we find that the shift towards equity financing is stronger among those countries that have undertaken a greater degree of domestic financial reform. (JEL: F21, F34, F36)

1. Introduction

What determines the composition of external liabilities, both across countries and over time? While the debt/equity choice is a key question in corporate finance, international economics has paid limited attention to the relative weights of equity-like items (foreign direct investment and portfolio equity—henceforth "equity") and debt in total external liabilities. Yet, a high share of equity in total external liabilities is generally viewed as desirable for improving a country's ability to share risk with international investors and its resilience to external shocks (Rogoff, 1999). First, equity-type instruments offer a greater potential for international risk sharing because the return on equity tends to be procyclical, with the return to the foreign investor lower when the economy is experiencing difficulties and higher during boom conditions. Second, equity (FDI in particular) appears to be more stable, especially in times of sudden stop to financial flows (Levchenko and Mauro, 2006).

A few studies have begun to fill this gap, on both the theoretical side (Albuquerque, 2003; Razin and others, 1998; Schnitzer, 2002) and the empirical side (Faria and Mauro, 2004; Lane and Milesi-Ferretti, 2001b; Wei, 2001). However, previous empirical studies have primarily relied on cross-sectional information, with Albuquerque (2003) a notable exception. The massive increase in FDI and portfolio equity as a share of both GDP and total liabilities, especially since the mid-1990s, suggests that time series information can also contribute to a better understanding of external capital structure. Accordingly, we take advantage of the recent availability of more extensive time-series data and investigate the correlates of changes over time in external liability structures, while also providing updated cross-sectional estimates to inform our analysis. We are especially interested in exploring the potential connection between changes in the external capital structure and changes in domestic institutions and policies. Do countries that undertake investor-friendly reforms experience an increase in inward FDI? Do reforms that improve the climate for equity investment result in a shift in the external capital structure towards equity instruments?

2. Data Description and Stylized Facts Motivating the Analysis

All data on gross liabilities are drawn from Lane and Milesi-Ferretti (2006). The stylized facts that constitute the point of departure of our analysis are illustrated in a few simple charts. Total external liabilities have displayed a major increase as a share of GDP since the 1970s (Figure 1, top panel), particularly for the high-income countries, where bilateral financial integration has often taken a two-way form (assets and liabilities), in a manner loosely analogous to that observed for intra-industry trade among advanced countries. This increase has been especially pronounced for equity since the 1980s, and has further accelerated since the mid-1990s (middle panel). The share of equity has increased since the 1980s, for both high-income and—to a slightly greater extent—other countries as well (bottom panel).

Figure 2 shows that the ratio of equity to total liabilities varies substantially across countries. It also reveals a widespread increase in this ratio between 1996 and 2004 (indicated by most data points being to the left of the 45 degree line), with the extent of the change in external capital structure differing markedly across countries. In what follows, we seek to establish some key correlates of the cross-country and cross-time variation in external capital structures. In our econometric work, we focus on emerging market and developing countries. One reason is that the external capital structures of advanced economies are heavily influenced by two-way financial integration, with equity-debt ratios signaling relatively little about the underlying fundamentals of these countries. (For the same reason, we drop offshore financial centers from the sample.) In contrast, there is a widespread consensus on the importance of raising the equity share in foreign liabilities for emerging markets and developing countries and we seek to understand the differences within this group in meeting this objective.

3. Empirical Approach and Estimation Results

Our estimation strategy is as follows. In terms of empirical specification, we first follow the tradition in this literature by analyzing the cross-sectional relationship between capital structure and various determinants:

$$Y_{it} = \alpha + \beta_1 INST_{it} + \gamma Z_{it} + \varepsilon_{it} \tag{1}$$

where $INST_{it}$ is a measure of institutional quality and Z_{it} is a set of other determinants.

One potential problem with the cross-sectional approach is that unobserved country-specific factors may contribute to determining external capital structures. A second problem is that a country's external capital structure may deviate from its 'equilibrium' value if adjustment to shifts in its determinants is gradual. Accordingly, in order to directly investigate the connection between institutional and policy reform and change in external capital structure over 1996-2004, we also consider dynamic specifications. One is the first-difference estimator

$$Y_{it} - Y_{it-1} = \phi + \beta_1 \left[INST_{it} - INST_{it-1} \right] + \gamma \left[Z_{it} - Z_{it-1} \right] + u_{it} \tag{2}$$

A second dynamic specification includes a term that measures the deviation from equilibrium in the initial period, so as to capture the fact that adjustment to 'equilibrium' external capital structures may take time:

$$Y_{it} - Y_{it-1} = \phi + \beta_1 \left[INST_{it} - INST_{it-1} \right] + \gamma \left[Z_{it} - Z_{it-1} \right] - \delta \left[GAP_{it-1} \right] + u_{it} \tag{3}$$

where GAP_{it-1} is the residual from a cross-sectional specification based on data at the start of the sample period. If gradual adjustment is an important factor, we may expect countries with a positive GAP value to see a smaller change in external capital structure than warranted by the change in the

regressors; conversely, a negative *GAP* value would be associated with a larger change in external capital structure than warranted by the change in the regressors.[1]

3.1 Cross-sectional estimates

We first consider cross-sectional specifications that have been the primary focus of the literature on external capital structure until now. We examine three dimensions of external capital structure: the ratio of total foreign liabilities to GDP; the share of equity (portfolio and FDI) in total foreign liabilities; and the share of FDI in total foreign equity liabilities. We report estimates for two years: 1996 (at the beginning of the acceleration in financial globalization) and 2004 (the most recent year in our sample). The choice of initial year is also influenced by the fact that 1996 is the first year in the dataset on institutional quality assembled by Kaufmann, Kraay and Mastruzzi (2005).

The choice of regressors largely follows the recent work of Faria and Mauro (2004) that examined a broad range of potential determinants of external capital structure. However, some of the variables considered by these authors (such as educational attainment) are excluded because these added little explanatory power (owing in part to limited time-series variation in the data) and reduced sample size. Following the framework laid out above, in order to assess the relation between external capital structure and the institutional environment, a core regressor is an institutional quality index, measured as the simple average of six individual indicators constructed by Kaufmann and others (2005): Voice and Accountability; Political Stability and Absence of Violence; Government Effectiveness; Regulatory Quality; Rule of Law; and Control of Corruption.[2] This index is available at a bi-annual frequency between 1996 and 2004, allowing us to consider the association between

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[1] The cross-sectional benchmark will be less useful, the more important are country fixed effects (that are not captured in such a specification). However, that should introduce a bias towards not finding a significantly negative role for the GAP term.

[2] In the full country sample of Kaufmann and others (2005), 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.

institutional quality and external capital structure at different points of time and the co-movement

between changes in institutional quality and changes in external capital structure.

The other main 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); and the relative importance of natural resources (share of exports of

fuels, metals, and ores as a ratio to total exports). Several of these potential explanatory variables are

correlated with each other, highlighting the importance of using multivariate regressions. Estimation

is by ordinary least squares. Faria and Mauro (2004) show that estimation by instrumental variables

delivers broadly similar results. The difficulty of establishing good instruments when considering

time-series information (notably, for the change in institutional quality between 1996 and 2004)

means that we confine attention to estimating partial correlations in this paper.

Column (1) of Table 1 shows that natural resources and country size (highly correlated with

trade openness) are significant in explaining the cross-sectional variation in the ratio of total liabilities

to GDP in 1996; the pattern is slightly different for the 2004 cross section in column (4), where

institutional quality, country size, and trade openness are significant. Turning to the share of equity in

total liabilities, columns (2) and (5) show a significant role for the institutional quality variable in

both 1996 and 2004: countries with better institutions have a greater share of equity instruments in

total liabilities. In addition, the equity share is positively correlated with country size and the ratio of

natural resources to GDP for both the 1996 and 2004 cross sections, while trade openness is also

significant in the 2004 cross section. Columns (3) and (6) show that the distribution of equity

liabilities between direct investment and portfolio equity is influenced by country size, with larger

countries having a greater proportion of portfolio equity liabilities.

In summary, the cross-sectional estimates for 1996 and 2004 show broadly the same pattern

across the two time periods. In particular, the cross-country variation in the share of equity in total

liabilities is positively associated with the level of institutional quality. Among the other covariates,

we find that larger countries have smaller total liabilities but a greater share of equity (especially

portfolio equity) in total liabilities. In addition, in the 2004 cross-section the equity share is also positively associated with greater trade openness and a higher reliance on natural resources.

3.2 Dynamic Approach

We turn to a dynamic analysis in Tables 2a-2b, where the goal is to understand the co-movements between changes in external capital structure and changes in the independent variables between 1996 and 2004. We begin in Table 2a with a simple first-difference specification, which allows us to focus on the time series information in the data by eliminating the impact of country fixed effects.

Columns (1)-(3) of Table 2a report estimates for the broad sample of emerging market and developing countries. These regressions show that some dimensions of changes in external capital structure can be successfully related to some of our independent variables. In particular, we find in column (1) that growth in the ratio of total foreign liabilities to GDP over 1996 to 2004 is positively associated with growth in output per capita and in trade openness. Furthermore, column (2) shows that growth in output per capita is also positively associated with an increase in the equity share in total liabilities. While the equity share in liabilities is positively associated with country size in the cross-section, faster population growth is associated with a fall in the equity share in the dynamic specification. Finally, the low R^2 in column (3) shows that our specification is unable to explain the relative growth of FDI versus portfolio equity during this period.

A common feature across columns (1)-(3) is that changes in external capital structure cannot be related to changes in the index of institutional quality. This is not surprising, because measured changes in this index over a relatively short time period are limited. Thus, at the price of a major reduction in sample size, we examine an alternative specification in columns (4)-(6) that also includes a variable that captures changes in financial sector policies during this period. We exploit the database constructed by Detragiache and others (2006) which tracks financial reforms in seven areas and provides indices of reforms in each area considered: credit controls, interest rate controls, entry barriers, bank regulations, privatization, capital account, and securities markets. Following

Detragiache and others (2006), we employ the average across these indices as a general measure of the level of financial reform at a national level.[3]

Columns (4) and (5) of Table 2a show that the financial reform index is significant in explaining changes in the ratio of total foreign liabilities to GDP and in the equity share in liabilities: countries that undertook deeper financial reforms during this period saw a decrease in the ratio of total liabilities to GDP but also a larger shift towards equity-type instruments. However, the financial reform index does not help explain changes in the relative importance of direct investment versus portfolio equity investment (column 6).

As discussed earlier, a potential limitation of the simple first-difference estimator is that it does not allow for gradual adjustment to the equilibrium capital structure. Accordingly, Table 2b reports the results from the dynamic specification that includes the GAP variable (which captures deviation from equilibrium in the initial year). This two-step procedure, in which the residuals from the 1996 cross section enter the dynamic equation for changes between 1996 and 2004, imputes a generated regressor in the regression of changes on changes. As discussed by Murphy and Topel (1985) and Newey and McFadden (1994), a simple OLS approach that fails to take this into account generates a bias in the estimated covariance matrices, thus making inference invalid. To correct for this problem, we follow the approach of Dustmann and Meghir (2005) and Aguiar and Hurst (2005) among others, and bootstrap the first and second stages of the estimation procedure together. It has been shown that this relative simple procedure works at least as well as the asymptotic distribution in small samples (Horowitz, 2001). (Relative to OLS, we usually find that the bootstrapped standard errors are substantially larger.)

Taking first the results for the broad sample in columns (1)-(3) of Table 2b, the introduction of the GAP variable substantially raises the overall explanatory power of these regressions. Moreover, the GAP variable is itself significant: relative to the equilibrium values implied by the 1996 cross-

[3] A separate measure of capital account liberalization turned out to be typically individually insignificant.

sectional estimates, and controlling for changes in the 'fundamentals', countries with a low share of equity in total liabilities and a low share of FDI within the equity category saw faster growth in these ratios over 1996 to 2004. The importance of the GAP variable illustrates how the values of key variables (such as institutional quality) can have a persistent impact on the dynamics of external capital structure if adjustment towards the equilibrium capital structure occurs gradually.

We next turn to the specifications for the narrower sample that includes the financial reform variable in columns (4)-(6) of Table 2b. For this sample, the GAP variable is significant only in the total liabilities regression in column (4); it also renders the financial reform index insignificant in this regression. However, financial reform remains significant as a correlate for the change in the equity share in liabilities in column (5). Finally, the introduction of the GAP variable in column (6) has only a limited impact on our ability to capture the covariates of changes in the FDI share in equity liabilities.

4. Conclusions

Our goal in this paper has been to examine the shift toward equity (FDI and portfolio equity) in the composition of external liabilities, with a focus on emerging markets and developing economies. In particular, we have attempted to capture the most important covariates of the equity share in total foreign liabilities, a ratio that has featured heavily in recent policy analyses of the financial stability of these countries.

We have shown that, along the cross-sectional dimension, larger, more open economies with a better institutional quality score and a greater reliance on natural resource production have a greater share of equity in external liabilities. Along the time-series dimension, the increase in the ratio of total liabilities to GDP is larger for countries with higher growth and increased openness, and the shift towards equity financing is stronger among those countries that have undertaken more domestic financial reforms. In addition, we have shown the importance of a dynamic approach to estimation, in view of the gradual nature of adjustment towards equilibrium capital structures.

This study provides only an initial step in uncovering the dynamic relation between changes in external capital structure and in economic fundamentals. For instance, we have focused on the co-movement between external capital structure and general indices of institutional quality and domestic financial reform. It could be enlightening to disaggregate these general indices and investigate which are the most important institutional changes and dimensions of financial reforms for the various components of external capital structure. A further extension could verify whether an increase in the equity share of liabilities is indeed associated with improved international risk sharing and greater financial stability. We defer these important questions to future research.

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Table 1. External Capital Structure: Cross-Sectional Evidence, 1996 and 2004

	1996			2004		
	Total	Eq.Share	FDI/Equity	Total	Eq.Share	FDI/Equity
Institutional quality index	0.263	0.088**	-0.047	0.241**	0.08*	-0.059
	(0.143)	(0.046)	(0.033)	(0.100)	(0.046)	(0.039)
GDP (log)	-0.047	0.023**	-0.066***	-0.066**	0.029**	-0.064***
	(0.041)	(0.013)	(0.01)	(0.030)	(0.014)	(0.011)
GDP per capita (log)	-0.18*	0.017	0.025	-0.098	0.012	0.035
	(0.08)	(0.026)	(0.019)	(0.061)	(0.028)	(0.022)
Openness	0.14	0.101	-0.031	0.257*	0.151**	-0.029
	(0.23)	(0.073)	(0.053)	(0.130)	(0.060)	(0.050)
Natural resources	0.41**	0.167**	0.047	0.236	0.157**	0.037
	(0.204)	(0.066)	(0.047)	(0.154)	(0.071)	(0.059)
Constant	1.11**	-0.077	1.55***	1.43***	-0.042	1.53***
	(0.49)	(0.156)	(0.11)	(0.35)	(0.164)	(0.14)
Observations	74	74	74	73	73	73
R-squared	0.26	0.35	0.54	0.28	0.34	0.39

Note: Standard errors in parentheses; *,**, *** denote significance at the 10, 5 and 1 percent levels respectively. Total liabilities (expressed as a ratio to GDP) consist of the sum of total equity plus portfolio debt, and other liabilities; Eq. Share is the ratio of (portfolio and FDI) equity in total liabilities; FDI/Equity is the ratio of FDI liabilities to total equity liabilities. The Institutional Quality Index is the simple average of six indicators from Kaufmann, Kraay and Mastruzzi (2005): 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). Openness is the sum of imports and exports, divided by GDP and natural resources are the percentage of ore, metals and fuels in total exports.

Table 2a. Dynamics of External Capital Structure I: 1996-2004   (Basic Specification)

	Full			Narrow		
	Total	Eq.Share	FDI/Equity	Total	Eq.Share	FDI/Equity
Institutional quality index	-0.07	0.052	-0.058	-0.02	0.039	-0.057
	(0.17)	(0.051)	(0.048)	(0.2)	(0.065)	(0.084)
Financial reform index				-1.18*	0.55**	-0.072
				(0.67)	(0.22)	(0.287)
GDP (log)	-0.076	-0.039**	-0.01	-0.08	0.003	-0.023
	(0.05)	(0.015)	(0.014)	(0.082)	(0.027)	(0.035)
GDP per capita (log)	0.11**	0.025*	0.005	0.12	-0.016	0.017
	(0.043)	(0.013)	(0.012)	(0.08)	(0.026)	(0.034)
Openness	0.94**	0.17	0.004	0.43	0.282	-0.123
	(0.41)	(0.12)	(0.12)	(0.6)	(0.199)	(0.257)
Natural resources	-0.24	0.038	0.14	1.0	-0.128	0.463
	(0.4)	(0.12)	(0.11)	(0.71)	(0.236)	(0.305)
Constant	0.02	0.23***	-0.002	0.22	0.076	0.038
	(0.15)	(0.05)	(0.04)	(0.24)	(0.080)	(0.103)
Observations	62	62	62	35	35	35
R-squared	0.30	0.19	0.05	0.32	0.28	0.12

Table 2b. Dynamics of External Capital Structure II: 1996-2004

|	Full			Narrow		
	Total	Eq.Share	FDI/Equity	Total	Eq.Share	FDI/Equity
Institutional quality index	-0.053	0.034	-0.07	-0.026	0.048	-0.07
	(0.15)	(0.052)	(0.05)	(0.170)	(0.081)	(0.09)
Financial reform index				-1.317	0.503*	-0.08
				(0.789)	(0.274)	(0.36)
GDP (log)	-0.08	-0.024	-0.012	-0.067	0.008	-0.028
	(0.05)	(0.015)	(0.013)	(0.104)	(0.029)	(0.045)
GDP per capita (log)	0.08*	0.024	0.01	0.070	-0.016	0.020
	(0.045)	(0.014)	(0.01)	(0.095)	(0.029)	(0.04)
Openness	0.84**	0.17	-0.01	0.407	0.28	-0.124
	(0.4)	(0.13)	(0.09)	(0.865)	(0.248)	(0.34)
Natural resources	-0.001		0.15	0.805	-0.08	0.443
	(0.61)		(0.16)	(0.759)	(0.27)	(0.4)
ECM	-0.5***	-0.31**	-0.33**	-0.73**	-0.13	-0.42
	(0.13)	(0.12)	(0.15)	(0.3)	(0.25)	(0.35)
Constant	0.1	0.17***	0.003	0.31	0.06	0.05
	(0.13)	(0.05)	(0.04)	(0.27)	(0.09)	(0.13)
Observations	62	62	62	35	35	35
R-squared	0.49	0.27	0.14	0.48	0.29	0.19

Note to Tables 2a and 2b: Standard errors in parentheses; *,**, *** denote significance at the 10, 5 and 1 percent levels respectively. Total liabilities (expressed as a ratio to GDP) consist of the sum of total equity plus portfolio debt, and other liabilities; Eq. Share is the ratio of (portfolio and FDI) equity in total liabilities; FDI/Equity is the ratio of FDI liabilities to total equity liabilities. The Institutional Quality Index is the simple average of six indicators from Kaufmann, Kraay and Mastruzzi (2005): voice and accountability; political stability and absence of violence; government effectiveness; regulatory quality; rule of law; and control of corruption. The financial reform index is a composite of indices of reforms in credit controls, interest rate controls, entry barriers, bank regulations, privatization, capital account, and securities market. GDP and GDP per capita are from the World Bank's World Development Indicators (WDI). Openness is the sum of imports and exports, divided by GDP and natural resources are the percentage of ore, metals and fuels in total exports.
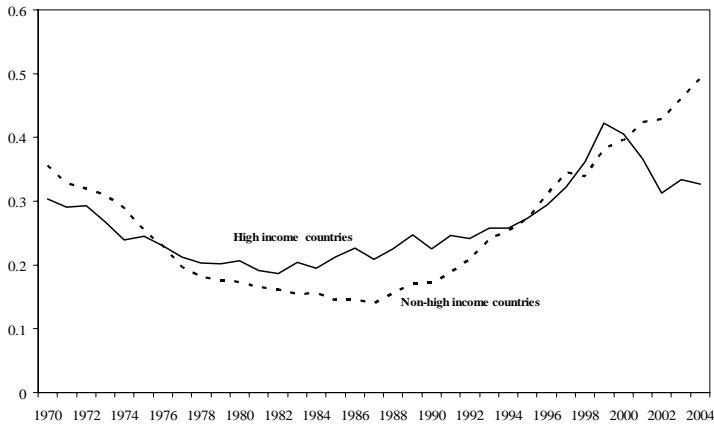
Figure 1.

Gross External Liabilities as a Share of GDP, High-income and other countries
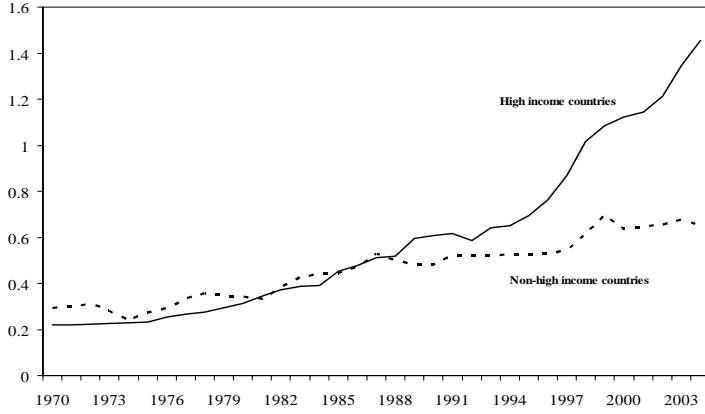
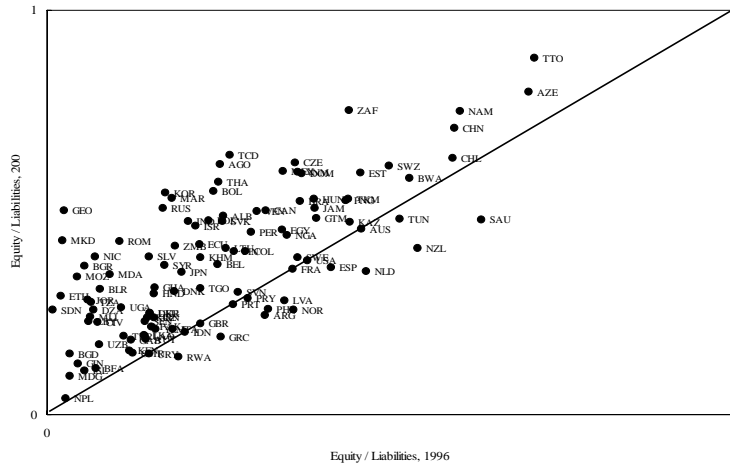Equity Liabilities (FDI plus Portfolio Equity) as a Share of GDP
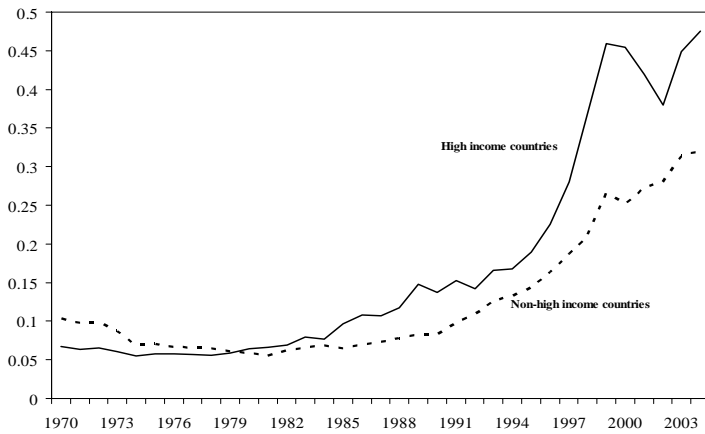
Equity Liabilities (FDI plus Portfolio Equity) as a Share of Total External Liabilities

Source: Lane and Milesi-Ferretti (2006).

Figure 2. Share of Equity in Total External Liabilities, 1996 and 2004.

Source: Lane and Milesi-Ferretti (2006).