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Financial globalization, convergence and growth*

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Abstract

We provide evidence that the composition of foreign capital, measured by the ratio foreign direct investment over total liabilities, affects growth directly and through the speed of convergence. Developing countries benefit relatively more as their initial GDP is smaller. The dataset comprises the period 1970-2004 and 96 countries, and the results are robust to different measures of the composition of foreign capital, restricted time period, developing countries, and alternative explanations of convergence and growth. These results are consistent with the neoclassical growth model with credit constraints presented in this paper, in which the composition of foreign capital affects the transition dynamics through a positive effect on the speed of convergence and steady state GDP.

JEL Classification: F21, F36, F43, O47

Keywords: composition of foreign capital; speed of convergence; growth

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1 Introduction

The ratio International Financial Integration (stock of foreign assets and liabilities) over GDP gives an idea of the dramatic increase of Financial Globalization in the last decades. Following Lane and Milesi-Ferretti (2007), this ratio increased by a factor of 7, from 45% in 1970 to over 300% in 2004. The theory suggests that Financial Globalization would lead to a better allocation of resources, implying an increase of growth, with capital going from North to South. But there is no robust empirical evidence of a positive effect of Financial Globalization on growth, as stated by Kose, Prasad, Rogoff and Wei (2006) after surveying this literature. In general, the papers of the literature were looking for a positive effect of a proxy of financial integration on growth. Henry (2007) provides a critical reading of the literature on Financial Globalization from the perspective of the textbook theory of liberalization. He claims that the neoclassical growth model only suggests a temporary effect on growth and that the macro growth regressions are not able to capture this effect following financial integration.

In this paper, we present and test a neoclassical growth model for a small open economy, based on Barro, Mankiw and Sala-i-Martin (1995), where the composition of foreign capital affects growth through the speed of convergence and the steady state level of GDP. Instead of relying on proxies based on all foreign capital or on its components over GDP, as in previous studies, we use the composition of foreign capital. We find that the composition of foreign capital, measured by the ratio foreign direct investment over total liabilities, has a positive effect on growth through mechanisms in line with the model. That is, the effect on growth is related to an increase in the speed of convergence and a direct effect on growth. The later effect could be associated with a collateral effect of financial globalization, through transfer of technology in the presence of relatively more foreign direct investment in foreign liabilities. The former effect is associated with the possibility of going faster to the steady state, implying a higher speed of convergence.

Although the effect on growth associated with the speed of convergence is one of the mechanisms of the dynamics of the small open economy neoclassical growth model, we are

not aware of previous studies that analise it empirically in a sistematic way. Nor of this effect in association with the direct one mentioned above.

Figure 1 provides an illustration of the effect of the composition of foreign capital on the speed of convergence. It shows the relationship between the growth rate of GDP and the initial level of GDP, using five-year period data for 96 countries over 1970-2004. In each graph we have the residuals of a growth regression[1] and the initial level of GDP, and the countries are ranked in function of their composition of foreign capital. The left-hand side graph shows the results for the lower quartile and the right-hand side shows those for the upper quartile. There is a stronger negative relationship between growth and initial GDP for the countries in the upper quartile, which implies that the speed of convergence is faster for countries that rely relatively more on foreign direct investment in their total foreign liabilities.

[INSERT FIGURE 1 ABOUT HERE]

In Section 2 we provide an explanation for the positive effect of the composition of foreign capital on the speed of convergence and on growth. We present a model, based on Barro et al. (1995), where only a part of the capital serves as collateral in international markets[2]. The other part of capital can not serve as collateral. We suppose that the share in the production function of the capital that serves as collateral varies with the composition of foreign capital. More precisely, we assume that foreign capital in the form of foreign direct investment leads to a higher collateral than external debt, given other conditions. For example, a foreign direct investor may know better than an international banker what happens in a borrowing firm. It follows that with relatively more foreign direct investment (or with relatively less external debt) there will be more capital as collateral, and then more resources will flow from abroad. On the one hand, the speed of convergence will increase with relatively more foreign direct investment. On the other

[1] We run OLS regressions. The control variables are initial level of GDP, investment rate, average years of secondary schooling, population growth, trade openness, and the composition of foreign capital. The variables are defined in Section 3. Descriptive statistics are reported in Table 1.

[2] For an early model with borrowing constraints, see Cohen and Sachs (1986). These authors assume that a fraction of the capital, say k, serves as collateral. Barro et al. (1995) assume instead that there are two types of capital and that only one of the capitals serves as collateral.

hand, and assuming that foreign direct investment may be associated with transfer of technology and then with an increase of productivity, the steady state GDP will increase, as will also increase the growth rate. We would like to point out that both effects are associated with the transition dynamics of a neoclassical growth model.

The empirical implications of our open-economy growth model are tested using system-generalized method of moments (system-GMM) estimations on a dataset comprising seven consecutive and non-overlapping 5-year periods from 1970 to 2004, and 96 countries. After controlling for initial GDP per capita, the investment share, initial education, population growth, and trade openness, we find that economies with relatively more foreign direct investment in the composition of foreign capital have a higher speed of convergence and higher output in the steady state. This important result is robust to (1) considering both foreign assets and liabilities in the definition of the composition of foreign capital; (2) restricting the sample to the period 1985-2004, over which financial globalization grew considerably; (3) restricting the sample to the developing countries; (4) controlling for macroeconomic stability; and, (5) considering alternative explanations for convergence and growth, such as openness to international trade and financial development.

Our empirical analysis makes two important contributions to the literature. First, we show that the inclusion of an interaction term of the composition of foreign capital with initial GDP per capita is not only theoretically necessary, but it also clearly improves the empirical results. Studies that do not account for this effect of financial globalization on the rate of convergence suffer from omitted variable bias. Second, we also show that the composition of foreign capital is a crucial factor for the effects of financial globalization on economic growth. Concretely, a greater share of FDI in international financial liabilities leads to a higher speed of convergence and a higher output in the steady state. Results in the baseline estimations for portfolio equity go in the same direction, but are weaker and do not survive the robustness tests. Finally, a greater share of debt in financial liabilities has the opposite effects of FDI, as suggested by the model.

This paper is related to the literature on the growth effects of financial globalization, summarized in recent surveys by Kose et al. (2006) and by Henry (2007). Although the

results are not conclusive in general, there is a notable exception. Bekaert, Harvey and Lundblad (2005) find a positive and robust effect of equity market liberalization on growth of about 1% per year over a five-year period. Our results also point to a direct effect, but the overall impact depends on the convergence effect. Moreover, when using the ratio portfolio equity liabilities over total liabilities we do not reach robust results.

Some authors have emphasized interaction effects, in which foreign direct investment leads to higher growth if the country has a relatively high level of financial development (Alfaro, Chanda, Kalemli-Ozcan and Sayek, 2004) or of human capital (Borensztein, De Gregório and Lee, 1998). In general, these are also more developed countries. We find that most developing countries benefit relatively more in terms of growth because of the convergence effect.

In a calibrated version of the neoclassical growth model, Gourinchas and Jeanne (2006) estimate the welfare gains of financial integration of a small open economy, when compared to an economy in autarky. They provide estimates of the welfare gains for countries beginning out of the steady state. They also calculate the growth gains of this convergence effect. These gains are small, but would improve if an increase of the productivity was associated with the entry of foreign capital in the form of foreign direct investment. Our results, in line with a growth model with credit constraints, in which the composition of foreign capital plays a role, show that both effects lead to gains on growth varying between 0.65 percentage points for the average country and 1 percentage point for the average developing country.

The paper is organized as follows. Section 2 presents a standard small open economy growth model and its predictions. In Section 3 we describe the dataset and the empirical methodology. The empirical results are discussed in Section 4. Finally, concluding remarks are presented in Section 5.

2 A standard small open economy model

This Section presents a neoclassical growth model with credit constraints, following Barro et al. (1995) and derives the implications on growth resulting from changes in the composition of foreign capital.

2.1 The open economy with partial capital mobility

The preferences of the representative agent are given by:

$$U = \int_0^{+\infty} \frac{C^{1-\theta} - 1}{1-\theta} e^{-(\rho-n)t} \tag{1}$$

where C represents per capita consumption, $\theta > 0$ is the inverse of the intertemporal elasticity of substitution. The parameter ρ represents the subjective discount rate and n is the growth rate of the population.

The production function is Cobb-Douglas:

$$Y = AK_C^{\alpha} K_U^{\eta} \left(Le^{gt}\right)^{1-\alpha-\eta}$$

with $\alpha + \eta < 1$. Y is output, L is labor , A is a given parameter of technology, and g is the rate of labor-augmenting technological progress. K_C is a capital that can be used as collateral in the foreign market, and K_U is another capital but can not be used as collateral. Working in units of effective labor ($x = X/Le^{gt}$), the production function in intensive form is given by:

$$y = Ak_C^{\alpha} k_U^{\eta}. \tag{2}$$

The rental price of capitals, R_{kC} and R_{kU}, are given by

$$R_{kC} = \alpha A k_C^{\alpha-1} k_U^{\eta} = \alpha \frac{y}{k_C} \tag{3}$$

$$R_{kU} = \eta A k_C^{\alpha} k_U^{\eta-1} = \eta \frac{y}{k_U}. \tag{4}$$

The budget constraint is

$$\dot{k_C} + \dot{k_U} - \dot{d} = Ak_C^{\alpha}k_U^{\eta} - (\delta + n + g)(k_C + k_U) - (r^* - n - g)\, d - c, \tag{5}$$

where d is debt per units of effective labor, c is consumption per units of effective labor, and r^* is international real interest rate. The depreciation rate is δ.

The planning problem is given by the maximization of (1) subject to equation (5). $k_{C0} > 0$, $k_{U0} > 0$ and d_0 are given.

The economy can borrow abroad, but as stated above only k_C serves as collateral ($d \leq k_C$).

If $k_{C0} + k_{U0} - d_0 \geq k_U^*$, the initial stocks of capitals are higher than the steady state level of the capital that can not be used as collateral and the economy goes directly to the steady state.

But with $k_{C0} + k_{U0} - d_0 < k_U^*$, the borrowing constraint is binding and $d = k_C$. For every period t, we have the rental rate of k_C equal to the international interest rate: $R_k - \delta = r^* = \rho + \theta g$. Notice that steady state real interest rate is the same for the open economy and for a closed economy, corresponding to the value of r^*. Using equation (3):

$$\frac{k_C}{y} = \frac{\alpha}{r^* + \delta}. \tag{6}$$

Inserting equation (6) in equation (2), the production function is written as

$$y = B\,(k_U)^{\varepsilon}, \tag{7}$$

with $\varepsilon = \frac{\eta}{1-\alpha}$ and $B = \left[A\left(\frac{\alpha}{r^*+\delta}\right)^{\alpha}\right]^{\frac{1}{1-\alpha}}$.

Taking into account equations (6) and (7) and that $d = k$, the budget constraint, given by equation (5), takes now the following form:

$$\dot{h_U} = (1 - \alpha)\, B\,(k_U)^{\varepsilon} - (\delta + n + g)\, k_U - c. \tag{8}$$

The planning problem is given by the maximization of (1) subject to equation (8) and $0 < k_{U0} < k_U^*$. The Euler equation is equal to

$$\frac{\dot{c}}{c} = \frac{1}{\theta}\left[(1-\alpha) B\varepsilon \left(k_U\right)^{\varepsilon-1} - \delta - (\rho + \theta g)\right] \tag{9}$$

We characterize now the steady state of this open economy with credit constraints. It follows from (9) that $r^* = \rho + \theta g$ and

$$k_U^* = \left[\frac{(1-\alpha)\varepsilon B}{r^* + \delta}\right]^{\frac{1}{1-\varepsilon}}. \tag{10}$$

With equations (7) and (10), we have

$$y^* = B\left(k_U^*\right)^{\varepsilon} = \overline{A}\left(\alpha^{\alpha}\eta^{\eta}\right)^{\frac{1}{1-(\alpha+\eta)}}, \tag{11}$$

$$\overline{A} = \left[\frac{A}{(r^* + \delta)^{(\alpha+\eta)}}\right]^{\frac{1}{1-(\alpha+\eta)}}.$$

Notice that the steady state values R_k^*, R_h^*, k_C^*, k_U^* and y^* are the same in the closed and the open economy. Linearizing around the steady state the dynamic system given by equations (8) and (9), we can derive the expression of the speed of convergence:

$$2\beta = \left\{\varphi^2 + 4\frac{1-\varepsilon}{\theta}(\delta + \rho + \theta g)\left[\frac{\delta + \rho + \theta g}{\varepsilon} - (\delta + n + g)\right]\right\}^{\frac{1}{2}} - \varphi, \tag{12}$$

and $\varphi = \rho - n - (1-\theta) g > 0$.

The speed of convergence is inversely related to the capital share, ε, reflecting the diminishing returns to scale of capital. The capital share is given by

$$\varepsilon = \frac{\eta}{1-\alpha}. \tag{13}$$

The behavior of this credit constrained open economy is similar to that of a closed economy with the same structure of production. The capital share appearing in the speed of convergence of the closed economy is $\alpha + \eta$. As $0 < \alpha + \eta < 1$, it follows that $0 < \varepsilon <$

$\alpha+\eta<1$ and the speed of convergence of the open economy (β_O) is higher than the speed of the closed economy (β_C)[3].

For a given $\alpha+\eta=\overline{\alpha}$, if $\alpha=0$ it follows that $\varepsilon=\overline{\alpha}$ and $\beta_O=\beta_C$. That is, the open economy without capital to be used as collateral becomes a closed economy. If all capital can be used as collateral, $\eta=0$ and $\varepsilon=0$. Then $\beta_O\to\infty$ and the open economy would go instantaneously to its steady state.

Taking into account that $\overline{\alpha}=\alpha+\eta$, then $\frac{\partial(1-\varepsilon)}{\partial\alpha}>0$ and $\frac{\partial\varepsilon}{\partial\alpha}<0$. It follows that $\frac{\partial\beta_O}{\partial\alpha}>0$, as more capital serving as collateral leads to a higher speed of convergence in the credit constrained open economy.

2.2 The open economy and the composition of foreign capital

We have seen that only a part of capital used in production can serve as collateral.

We now assume that the part of capital that serves as collateral changes with the composition of foreign capital. That is, the part of total capital used as collateral is higher with foreign direct investment than with external debt. As a foreign direct investor knows better what happens in firms than a foreign lender, the former can repossess more capital than the latter.

Defining the composition of foreign capital as $S=\frac{FDI_l}{Fin.Liab.}$ and taking as given $\overline{\alpha}=\alpha+\eta$, we have two effects associated with the composition of foreign capital:

1) after equations (12) and (13) $\frac{\partial\beta_O}{\partial\alpha}>0$, as $\alpha=f(S)$. This effect is an increase in the speed of convergence as discussed above.

2) Following equation (11):

$$\frac{\partial\ln y^*}{\partial\alpha}=\frac{1}{1-\overline{\alpha+\eta}}\ln\frac{\alpha}{\eta},$$

and $\frac{\partial\ln y^*}{\partial\alpha}>0$, with $\alpha>\eta$. This effect could be associated with the increase in FDI, as this form of foreign capital can lead to an improvement of steady state output through a transfer of technology.

[3]Notice that $(1-\varepsilon)=\frac{1-(\alpha+\eta)}{1-\alpha}>1-(\alpha+\eta)$ and $\beta_O>\beta_C$.

2.2.1 Implications of the composition of foreign capital on growth

The transitional dynamics of y is represented by

$$\ln y_t - \ln y_0 = \underbrace{\left(1 - e^{-\beta t}\right)}_{\lambda} \left(\ln y^* - \ln y_0\right).$$

The effects of the composition of foreign capital, S, through α on transitional growth are:

$$\frac{\partial \left(\ln y_t - \ln y_0\right)}{\partial \alpha} = \underbrace{\lambda_\alpha \left(\ln y^* - \ln y_0\right)}_{\text{Effect 1}} + \underbrace{\lambda \frac{\partial \ln y^*}{\partial \alpha}}_{\text{Effect 2}} \tag{14}$$

Effect 1 and Effect 2 are as presented above.

- Effect 1: $\lambda_\alpha > 0$. The first effect is an increase in the speed of convergence.
- Effect 2: $\frac{\partial \ln y^*}{\partial \alpha} > 0$. The second effect is also positive ($\alpha > \eta$) and could be associated with a technological improvement following the increase in FDI.

We would like to point out that both effects on growth appear in a neoclassical growth model. That is, both effects are associated with the transitional dynamics of the model.

We can present the effects of the composition of foreign capital on growth in the following proposition:

Proposition 1 *Economies with relatively more FDI in the composition of foreign capital have a higher speed of convergence and a higher output in the steady state.*

Empirically, the first effect can be captured by an interaction term between $\ln y_0$ and S. The second effect appears as an explanation for a direct effect of S on growth, although we are using an exogenous growth model.

The next Sections will analyze empirically the main implications of the model.

2.2.2 Empirical implications

Taking into account the implications derived above, the empirical model can be summarized as follows:

$$y_{i,t} - y_{i,t-1} = (\alpha - 1)\, y_{i,t-1} + \gamma_1 S_{i,t} * y_{i,t-1} + \gamma_2 S_{i,t} + \psi' Z_{i,t} + \kappa_i + \mu_t + \epsilon_{i,t}. \qquad (15)$$

$$i = 1, ..., N \qquad t = 1, ..., T_i$$

where $y_{i,t}$ is the logarithm of real GDP per capita of country i at the end of period t, $S_{i,t}$ is the composition of foreign financial liabilities, $Z_{i,t}$ is a set of variables that may affect economic growth, κ_i are the fixed effects of country i, μ_t are period dummies, and $\epsilon_{i,t}$ is the error term.

The speed of convergence is given by:

$$\begin{aligned} \frac{\partial (y_{i,t} - y_{i,t-1})}{\partial y_{i,t-1}} &= (\alpha - 1) + \gamma_1 S_{i,t} < 0 \\ (\alpha - 1) &< 0, \qquad \gamma_1 < 0. \end{aligned}$$

Following the model, we expect $\gamma_1 < 0$ and that an increase on S , that is, an increase of foreign direct investment in total foreign liabilities, will have a positive effect on the speed of convergence.

We assume $\gamma_2 > 0$, in line with the form that the composition of foreign capital was introduced in the model. The total effect of the composition of foreign capital on growth is as follows:

$$\begin{aligned} \frac{\partial (y_{i,t} - y_{i,t-1})}{\partial S_{i,t}} &= \gamma_1 y_{i,t-1} + \gamma_2 \\ \gamma_2 &> 0 \end{aligned}$$

and

$$\frac{\partial (y_{i,t} - y_{i,t-1})}{\partial S_{i,t}} > 0 \qquad \text{with} \quad y_{t-1} < -\frac{\gamma_2}{\gamma_1}.$$

It follows that countries with lower initial level of GDP have a higher convergence effect and then a higher total effect on growth. Moreover, a country that started with an initial GDP per capita above its steady state level of GDP per capita could also be in a situation of having negative growth if $y_{t-1} > -\frac{\gamma_2}{\gamma_1}$.

3 Data and empirical analysis

Annual data, from 1970 to 2004 was gathered for 209 countries, but missing values for several variables reduce the number of countries in the estimations to 96. The data sources were the *Penn World Tables*, *Mark 6.2* (PWT) - for GDP, investment, population, trade openness, and size of government - Barro and Lee (2000) updated educational attainment dataset, Lane and Milesi-Ferretti (2007)'s *External Wealth of Nations Mark II*, the updated version of the *Financial Structure Dataset* of Beck, Demirgüç-Kunt and Levine (2000), and the International Monetary Fund's *International Financial Statistics* (IFS-IMF).

The hypothesis that financial globalization affects economic growth and convergence is tested by estimating dynamic panel data models for average annual real GDP per capita growth on a sample composed of seven consecutive, non-overlapping, 5-year periods from 1970 to 2004 (1970-74, 1975-79, ..., 1995-99, and 2000-04). Our baseline model includes the following explanatory variables:

- *Initial GDP per capita (log)* (PWT). A negative coefficient is expected, indicating the existence of conditional convergence among countries;

- *Investment (% GDP)* (PWT). A positive coefficient is expected, as greater investment shares have been shown to be positively related with economic growth (Mankiw, Romer and Weil, 1992). For a more recent discussion, see Hsieh and Klenow (2007);

- *Initial years of schooling:* secondary years of schooling of the population above 15 years old (Barro and Lee, 2000). This variable is used to control for the level of human capital, which should be positively related to economic growth. A positive coefficient is expected;

- *Population growth* (PWT). All else remaining the same, greater population growth leads to lower GDP per capita growth. Thus, a negative coefficient is expected;

- *Trade openness* (PWT). Assuming that openness to international trade is beneficial to economic growth, a positive coefficient is expected;

- *Composition of Financial Liabilities* (several proxies from Lane and Milesi-Ferretti (2007) will be used). We hypothesize that a greater share of FDI contributes to higher steady state GDP, and thus to higher growth, which is consistent with a positive coefficient;

- *Composition of Financial Liabilities * Initial GDP per capita.* This interaction term is used to test the hypothesis that a greater share of FDI also increases income convergence. Since greater convergence means that poorer countries should grow faster, we expect a negative coefficient.

Descriptive statistics of these and other variables for the 96 countries considered in the baseline estimations are shown in Table 1.

[INSERT TABLE 1 ABOUT HERE]

Equation (15), which summarizes our empirical model, is equivalent to:

$$y_{i,t} = \alpha y_{i,t-1} + \gamma_1 S_{i,t} * y_{i,t-1} + \gamma_2 S_{i,t} + \psi' Z_{i,t} + \kappa_i + \mu_t + \epsilon_{i,t} \tag{16}$$

$$i = 1, ..., N \qquad t = 1, ..., T_i$$

OLS estimates of this baseline model will be inconsistent, both in the fixed and random effects settings, because the lagged value of the dependent variable would be correlated with the error term, $\epsilon_{i,t}$, even if the latter is not serially correlated[4]. Arellano and Bond (1991) developed a Generalized Method of Moments (GMM) estimator that solves this problem. Taking first differences of Equation (16) removes the individual effects (κ_i) and

[4]See Arellano and Bond (1991) and Baltagi (2001).

produces an equation that is estimable by instrumental variables (where D is the first-difference operator):

$$Dy_{i,t} = \alpha Dy_{i,t-1} + \gamma_1 D\left(S_{i,t} * y_{i,t-1}\right) + \gamma_2 DS_{i,t} + \psi' DZ_{i,t} + D\mu_t + D\epsilon_{i,t} \qquad (17)$$

$$i = 1, ..., N \qquad t = 1, ..., T_i$$

The valid instruments are: levels of the dependent variable, lagged two or more periods; levels of the endogenous variables, lagged two or more periods; levels of the pre-determined variables, lagged one or more periods; and the levels of the exogenous variables, current or lagged or, simply, the first differences of the exogenous variables. More moment conditions are available if the explanatory variables are uncorrelated with the individual effects. Then, the first lags of these variables can be used as instruments in the levels equation. This estimation combines the set of moment conditions available for the first-differenced equations with the additional moment conditions implied for the levels equations. If the level of an explanatory variable is correlated with the individual effects but its first-differences are not, lagged values of the first-differences can be used as instruments in the equation in levels (Arellano and Bover, 1995). Lagged differences of the dependent variable may also be valid instruments for the levels equations. According to Blundell and Bond (1998) this system-GMM estimator is preferable to that of Arellano and Bond (1991) when the dependent variable and/or the independent variables are persistent, which corresponds to our case.

4 Empirical Results

The main objective of our empirical analysis is to test the hypothesis, stated in Proposition 1, that a greater share of FDI in foreign financial liabilities leads to faster convergence and economic growth. Then, we check if the share of FDI is still determinant when foreign assets are also considered. The following step of the empirical analysis is to evaluate the sensitivity of the results to alternative samples. Concretely, we estimate the models for

a sample covering only the period 1985-2004, the part of the original sample for which financial globalization is greatest, and for a sample of developing countries, so that we can analyze the effects of the composition of foreign capital in those countries. Finally, we consider alternative explanations for convergence and growth, such as openness to international trade and financial development.

4.1 Composition of foreign capital, convergence and growth

The results of the estimation of the empirical model described above on a sample of seven consecutive and non-overlapping 5-year periods from 1970 to 2004, using the system-GMM methodology, are presented in Table 2[5]. The model of column 1 follows the traditional approach of including a proxy for the stock of capital inflows along with the usual control variables.[6] The ratio of financial liabilities of portfolio equity and foreign direct investment to GDP, $\frac{Equity_l+FDI_l}{GDP}$, is not statistically significant, which could indicate that this type of foreign capital does not affect growth[7]. In column 2, we replace the proxy for the stock of financial liabilities by a proxy of their composition, $\frac{Equity_l+FDI_l}{Fin.Liab.}$. Again, foreign capital does not seem to affect growth.

[INSERT TABLE 2 ABOUT HERE]

According to our theoretical model, the two above-mentioned specifications suffer from omitted variable bias, as they do not account for the effects of foreign capital on the rate of convergence. That is, the models of columns 1 and 2, like many similar ones found in the literature[8], are not correctly specified because they omit the interaction term of foreign

[5] All explanatory variables except the period dummies are treated as endogenous. In order to avoid a number of instruments greater than the number of countries, only the second lags of the dependent and explanatory variables are used as instruments in the first-difference equations, and their once lagged first-differences are used in the levels equation. Two-step results using robust standard errors corrected for finite samples (using Windmeijer (2005)'s correction) are reported in all tables.

[6] See, among others, Edison, Levine, Ricci and Sløk (2002).

[7] The results are similar for $\frac{Equity_l}{GDP}$ and for $\frac{FDI_l}{GDP}$. These results and all other not reported in the paper are available from the authors upon request.

[8] See Edison, Klein, Ricci and Sløk (2004), Henry (2007), and Kose et al. (2006) for surveys. Henry (2007) argues that most studies do not really address the theory they set out to test, as the neoclassical growth model predicts just a temporary increase in the rate of economic growth (faster convergence to the steady state) as the result of current account liberalization.

capital with initial GDP. This problem is accounted for in column 3, which corresponds to our baseline model of equation (15). Now, both the proxy for the composition of financial liabilities and its interaction with initial GDP are highly statistically significant and have the expected signs. The effects of the shares of portfolio equity and FDI on financial liabilities are analyzed in columns 4 and 5, respectively. Both support the main hypotheses of our model, but results are much stronger for the share of FDI than for the share of Equity, as both the estimated coefficients and the t-statistics are of greater magnitude for $\frac{FDI_l}{Fin.Liab.}$[9]. Finally, the effects of the share of external debt are shown in column 6. These indicate that a greater weight of external debt on the total stocks of financial liabilities is detrimental to growth and convergence, as the signs of the estimated coefficients are exactly the opposite of those for the other proxies. This result is also in line with the predictions of the model.

Overall, these results clearly support Proposition 1, which states that economies with relatively more FDI in the composition of foreign capital have a higher speed of convergence (the interaction term with initial GDP is negative and statistically significant) and a higher output in the steady state (the proxy for the composition of financial liabilities is positive and statistically significant). We can illustrate these effects on growth with column 5 of Table 2. Increasing the share of FDI in total liabilities, $\frac{FDI_l}{Fin.Liab.}$, by one standard deviation would lead to an annual growth rate increase of 0.65 percentage points during a five-year period. The total effect on growth is measured as $(\gamma_1 * \overline{y} + \gamma_2) * \sigma_{FDI}$, where $\overline{y}$ is the mean of the log of initial GDP and σ_{FDI} is the standard deviation of the share of FDI in total liabilities. Taking also into account Table 1, it follows $(-0.0312 * 8.496 + 0.304) * 0.167 = 0.0065$.

The results concerning the control variables generally conform to our priors, with the exception that *Initial Years of Schooling* is never statistically significant. *Investment (%GDP)* and *Trade Openness* have positive coefficients, although the latter is only weakly

[9]When $\frac{FDI_l}{GDP}$ and $\frac{Equity_l}{GDP}$ are used instead, the coefficients of interest are only weakly statistically significant. Thus, results improve when the interaction with initial GDP is included, but they are weaker for these proxies of FDI than for those of the share of FDI. Furthermore, $\frac{FDI_l}{GDP}$ and $\frac{Equity_l}{GDP}$, and their interactions with *InitialGDP* are generally not statistically significant when included in the robustness and sensitivity tests of tables 3-7.

statistically significant in columns 1 and 4, and *Population Growth* has the expected negative coefficient.

A common concern to all empirical studies of economic growth is the possibility that most, or all, explanatory variables are endogenous. The system-GMM estimator used here controls for the potential endogeneity of all explanatory variables by using their lagged instruments in the first-difference and level equations. Additionally, it accounts for the dynamic bias that results of the inclusion of initial GDP in the regressions.

Nevertheless, the problem may not completely go away, as this estimation method assumes weak exogeneity of the explanatory variables, meaning that they can be affected by past and current growth rates but must be uncorrelated with future realizations of the error term. That is, future unanticipated shocks to GDP growth should not affect the current value of the explanatory variables. The statistical validity of this assumption is supported by the results of the Hansen test, reported at the foot of Table 2, which never rejects the validity of the overidentifying restrictions. Furthermore, Difference-in-Hansen tests were used to assess the validity of the instruments of each explanatory variable individually and of subsets of instruments. Their validity was never rejected. Finally, the tests for autocorrelation of the differenced residuals, also reported at the foot of Table 2, clearly reject second order autocorrelation, further testing the validity of the instruments used.

4.2 Composition of total foreign assets and liabilities

In order to check if results change when foreign assets are also considered, we used the composition of International Financial Integration (IFI) - total stocks of foreign financial assets and liabilities - instead of just financial liabilities, in the estimations whose results are reported in Table 3. The results are very similar to those reported in Table 2, providing further support for Proposition 1. In fact, the estimated coefficients and the t-statistics associated with the composition of IFI are larger in absolute value, indicating slightly greater effects on growth and convergence. Thus, the results are robust to the inclusion of

information on stocks of international financial assets.

[INSERT TABLE 3 ABOUT HERE]

4.3 Restricted samples: Period 1985-2004, and developing countries

The next steps of the empirical analysis were to check the sensitiveness of the results to sample changes. First, we reduced the time period under analysis to 1985-2004, so that only the last 20 years, over which financial globalization grew considerably (Lane and Milesi-Ferretti, 2007), would be considered. The results reported in Table 4 are similar to those of the previous tables, except that the share of portfolio Equity in financial liabilities and its interaction with initial GDP are no longer statistically significant.

[INSERT TABLE 4 ABOUT HERE]

Second, we restricted the sample by considering only developing countries (from 1970 to 2004). Again, as shown in Table 5, the share of Equity does not seem to affect growth and convergence, while that of FDI remains highly statistically significant. These results further strengthen our hypothesis that a greater share of FDI fosters growth and convergence. Moreover, these results provide evidence of benefits of financial globalization for developing countries. For those countries, increasing the share of FDI in total liabilities, $\frac{FDI_l}{Fin.Liab.}$, by one standard deviation would lead to an annual growth rate increase of 0.97 percentage points during a five-year period[10]. This effect is higher than the effect found above for all countries.

[INSERT TABLE 5 ABOUT HERE]

[10] The total effect on growth is again measured as $(\gamma_1 * \overline{y} + \gamma_2) * \sigma_{FDI}$, where $\overline{y}$ is the mean of the log of initial GDP and σ_{FDI} is the standard deviation of the share of FDI in total liabilities. Taking into account that $\overline{y}$ and σ_{FDI} are now computed only for developing countries, it follows $(-0.0371 * 8.118 + 0.355) * 0.181 = 0.0097$.

4.4 Alternative explanations of convergence and growth: trade and financial development

It is possible that it is trade openness, and not financial globalization, that generate greater effects on growth and convergence[11]. That possibility was accounted for in the estimations of table 6, which add an interaction term of trade openness with initial GDP to the models of columns 3 to 6 of Table 2. Since the interaction of openness with initial GDP is never statistically significant, trade does not seem to affect convergence, and it has only modest effects on steady state growth. The results regarding the composition of financial liabilities are similar to those reported in the previous two tables, as only the share of Equity does not seem to affect growth and convergence.

[INSERT TABLE 6 ABOUT HERE]

Table 7 reports the results of robustness tests in which we control for macroeconomic stability, proxied by the size of government and inflation[12] as in Levine, Loayza and Beck (2000), and for financial development. Since presenting results for the four shares of financial liabilities used in the previous tables would lead to 4 additional tables, we only report the results for $\frac{FDI_l}{Fin.Liab.}$. As shown in column 1, our results are not sensitive to the inclusion of controls for macroeconomic stability. Of these, a greater government is detrimental to growth, while inflation is not statistically significant.

[INSERT TABLE 7 ABOUT HERE]

Several studies following Levine et al. (2000) have concluded that financial intermediation/development is an important determinant of economic growth. In order to test the robustness of our results to the inclusion of proxies for financial development, we included them in the estimations of columns 2-7. In columns 2, 4 and 6, the ratios of Liquid Liabilities, Deposit Money Bank Assets, and Private Credit to GDP (all taken from Beck et al., 2007) were added to the model of column 1.

[11] For a model deriving a positive effect of trade openness on the speed of convergence and on the steady state GDP, see Acemoglu and Ventura (2002).

[12] Inflation was defined as *log(1+Inf/100)*.

Then, in columns 3, 5, and 7, interaction terms of these proxies with initial GDP were also included[13]. While these proxies and their interactions with initial GDP are never statistically significant, $\frac{FDI_l}{Fin.Liab.}$ is always statistically significant, and its interaction term with initial GDP is significant in all estimations except that of column 5. Thus, we can safely conclude that our results are robust to the inclusion of the most widely used proxies of financial development.

5 Conclusion

The lack of robust empirical evidence in the literature of the growth benefits of financial liberalization may result from the fact that most studies do not really address the theory they set out to test (Henry, 2007), and also from a near absence of emphasis on the composition of foreign capital, when compared to the large number of studies focusing on measures of the magnitude of foreign capital flows or stocks.

Using a standard open-economy growth model with credit constraints, we show that the composition of foreign capital should affect the rate of convergence to the steady state, an effect that has not been accounted for in most of the empirical studies dealing with issues of financial globalization, and should also affect the steady state GDP.

Our empirical analysis makes two important contributions to the literature. First, we show that the inclusion of an interaction term of the composition of foreign capital with initial GDP per capita clearly improves the results. This implies that the failure of previous studies to find robust evidence of the benefits of financial globalization on growth may in part be due to a problem of omitted variable bias, as they do not account for the effects on the rate of convergence to the steady state.

Second, we also show that the composition of foreign capital is a crucial factor for the effects of financial globalization on economic growth. Concretely, we present robust evidence that economies with a greater share of foreign direct investment in international

[13] Aghion, Howitt and Mayer-Foulkes (2005) provide evidence that financial development increases the speed of convergence in cross-country growth regressions, using an interaction term composed of proxies of financial development and initial GDP.

financial liabilities have a higher speed of convergence and a higher output in the steady state. Results for portfolio equity go in the same direction, but are weaker and not robust to alternative samples and alternative explanations of convergence and growth. Finally, a greater share of debt in financial liabilities has the opposite effects, a result also in line with the predictions of the model. Since we found stronger effects of the composition than of the size of foreign capital, it is possible that previous studies did not find robust effects of financial globalization on growth also because they did not pay enough attention to the composition of foreign capital.

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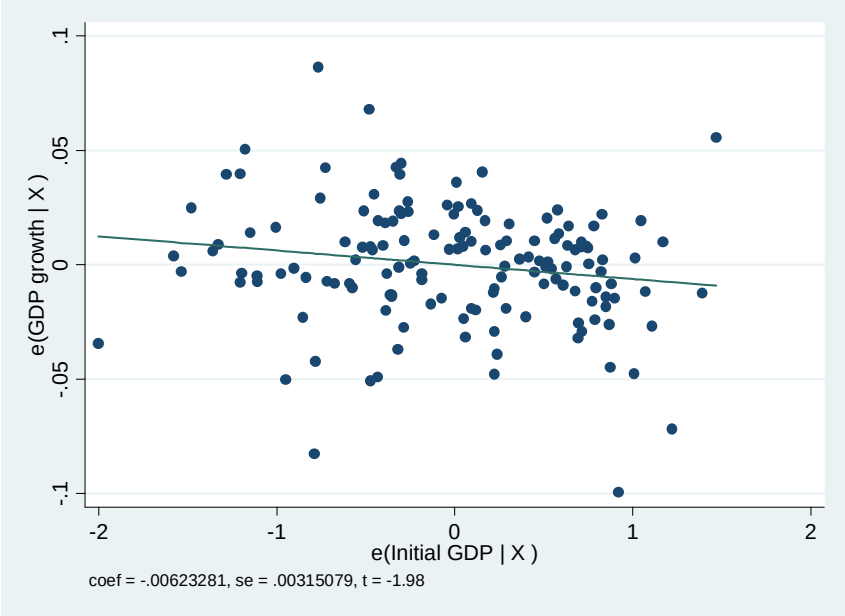
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Figure 1:

Effect of the composition of foreign capital on the speed of convergence

(Added Variable Plots)

Lower Quartile of $\frac{FDI_liab}{Fin.Liab.}$



Upper Quartile of $\frac{FDI_liab}{Fin.Liab.}$

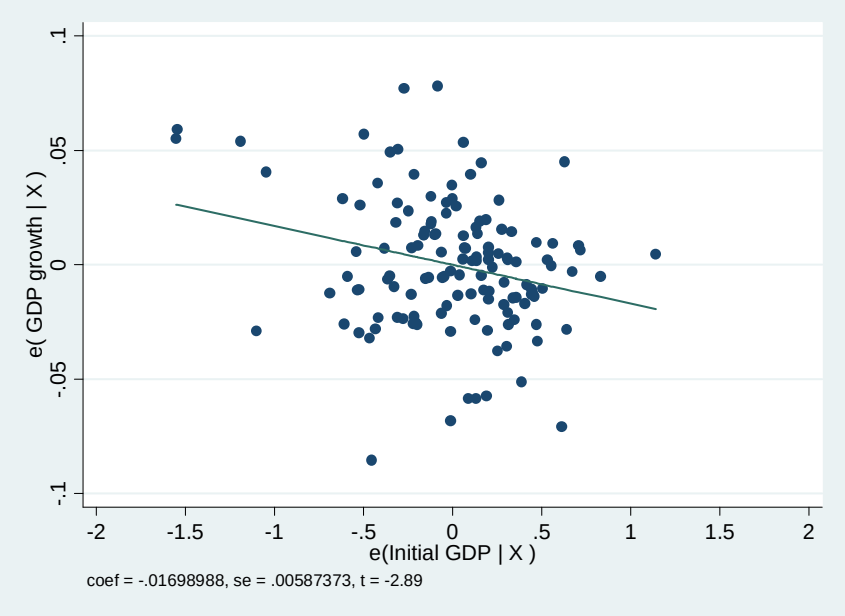


Table 1 – Descriptive Statistics

Variable	Obs.	Mean	Std. Dev.	Min.	Max.	Source
GDP growth rate	619	0.017	0.033	-0.169	0.347	PWT
Initial GDP per capita (log)	662	8.496	1.094	6.014	10.736	PWT
Investment (%GDP)	679	16.329	8.948	1.024	91.964	PWT
Initial Years of Schooling	567	1.611	1.197	0.027	5.742	BL
Population Growth	686	0.094	0.070	-0.281	0.732	PWT
Trade Openness	679	70.084	48.337	7.558	387.423	PWT
Government (%GDP)	679	20.579	8.726	3.230	67.428	PWT
Inflation (log)	624	0.175	0.388	-0.056	4.178	IFS-IMF
$(Equity_l + FDI_l)/GDP$	656	0.220	0.331	0.000	4.251	LMF
$(Equity_l + FDI_l)/Fin.Liabilities$	656	0.244	0.181	0.000	0.897	LMF
$Equity_l/Fin.Liabilities$	657	0.033	0.063	0.000	0.405	LMF
$FDI_l/Fin.Liabilities$	657	0.209	0.167	0.000	0.897	LMF
$Debt_l/Fin.Liabilities$	668	0.756	0.181	0.102	1.000	LMF
$(Equity + FDI)/GDP$	638	0.332	0.572	0.000	6.221	LMF
$(Equity + FDI)/IFI$	637	0.205	0.149	0.000	0.833	LMF
$Equity/IFI$	646	0.033	0.061	0.000	0.491	LMF
FDI/IFI	656	0.169	0.126	0.000	0.833	LMF
$Debt/IFI$	667	0.699	0.176	0.136	1.000	LMF
Liquid Liabilities / GDP	502	0.424	0.297	0.000	2.434	BDKL
Dep. Money Bank Assets / GDP	575	0.440	0.343	0.000	1.766	BDKL
Private Credit / GDP	575	0.426	0.371	0.000	2.067	BDKL

Sources:

BDKL: Beck, Demirgüç-Kunt and Levine (2000) – updated on September 14, 2006.
BL: Barro and Lee (2000).
IFS-IMF: International Financial Statistics - International Monetary Fund.
LMF: Lane and Milesi-Ferretti (2007).
PWT: Penn World Tables (Mark 6.2).

Notes:

Sample of consecutive, non-overlapping, 5-year periods from 1970 to 2004, comprising the 96 countries considered in the baseline regressions.
The suffix '*_l*' means that only stocks of financial liabilities are considered.
'*Fin.Liabilities*' stands for total stocks of financial liabilities.
'*IFI*', international financial integration, stands for total stocks of international financial assets and liabilities.

Table 2 – Composition of Financial Liabilities

COEFFICIENT	(1) $\frac{Equity_l + FDI_l}{GDP}$	(2) $\frac{Equity_l + FDI_l}{Fin.Liabilities}$	(3) $\frac{Equity_l + FDI_l}{Fin.Liabilities}$	(4) $\frac{Equity_l}{Fin.Liab.}$	(5) $\frac{FDI_l}{Fin.Liab.}$	(6) $\frac{Debt_l}{Fin.Liab.}$
Initial GDP per capita (log)	-0.00493	-0.00569	-0.00135	-0.00115	-0.00404	-0.0334***
	(-0.66)	(-0.77)	(-0.21)	(-0.16)	(-0.65)	(-2.59)
Investment (%GDP)	0.00101**	0.000980**	0.00123***	0.000892***	0.00111***	0.00108***
	(2.17)	(2.40)	(3.03)	(2.72)	(3.06)	(2.73)
Initial Years of Schooling	0.00135	0.00130	0.000763	-0.000781	0.00237	0.00136
	(0.21)	(0.20)	(0.19)	(-0.12)	(0.51)	(0.30)
Population Growth	-0.141**	-0.157***	-0.175**	-0.147**	-0.187**	-0.159**
	(-2.13)	(-2.61)	(-2.57)	(-2.08)	(-2.31)	(-2.53)
Trade Openness	0.000163*	0.000131	0.000126	0.000154*	0.000143	0.000119
	(1.83)	(1.54)	(1.64)	(1.75)	(1.53)	(1.60)
(Equity_liab + FDI_liab) / GDP	-0.00831					
	(-1.05)					
Composition of Liabilities		0.0274	0.370***	1.020*	0.304**	-0.327***
		(1.45)	(3.75)	(1.79)	(2.27)	(-2.95)
*Comp. of Liabilities * Initial GDP*			-0.0386***	-0.105*	-0.0312**	0.0337***
			(-3.34)	(-1.78)	(-1.96)	(2.63)
# Observations	585	584	584	584	594	594
# Countries	96	96	96	96	96	96
Hansen test (p-value)	0.284	0.238	0.534	0.241	0.452	0.442
AR1 test (p-value)	0.00166	0.00223	0.00269	0.00214	0.00237	0.00217
AR2 test (p-value)	0.450	0.624	0.763	0.544	0.863	0.699

Sources: See Table 1.

Notes:
- System-GMM estimations for dynamic panel-data models, including a constant and time dummies for 5-year periods.
- Sample composed of non-overlapping 5-year periods from 1970 to 2004 (1970-74, 1975-99, …, 1995-99, and 2000-04).
- The dependent variable is the average annual growth rate over a 5-year period.
- The proxy for the Composition of Financial Liabilities used (columns 2-6) is indicated below the respective column number.
- In each estimation, the second lag of the dependent and of the explanatory variables (all treated as endogenous) were used as instruments in the first-difference equations and their once lagged first-differences were used in the levels equation.
- Two-step results using robust standard errors corrected for finite samples (using Windmeijer's, 2005, correction).
- T-statistics are in parenthesis. Significance level at which the null hypothesis is rejected: ***, 1%; **, 5%, and *, 10%.

Table 3 – Composition of International Financial Integration (IFI)

COEFFICIENT	(1) $\frac{Equity + FDI}{GDP}$	(2) $\frac{Equity + FDI}{IFI}$	(3) $\frac{Equity + FDI}{IFI}$	(4) $\frac{Equity}{IFI}$	(5) $\frac{FDI}{IFI}$	(6) $\frac{Debt}{IFI}$
Initial GDP per capita (log)	-0.00116	-0.00144	0.00336	-0.00172	0.000596	-0.0311**
	(-0.16)	(-0.19)	(0.54)	(-0.27)	(0.079)	(-2.34)
Investment (%GDP)	0.00118**	0.00119**	0.00134***	0.00110***	0.00102***	0.000831**
	(2.09)	(2.36)	(2.99)	(2.72)	(2.73)	(2.19)
Initial Years of Schooling	-0.000255	-0.00205	-0.00118	0.000541	0.00163	0.000763
	(-0.039)	(-0.32)	(-0.21)	(0.095)	(0.25)	(0.15)
Population Growth	-0.0725	-0.0945	-0.132**	-0.115*	-0.181**	-0.164**
	(-1.05)	(-1.43)	(-2.04)	(-1.73)	(-2.32)	(-2.54)
Trade Openness	0.000123	0.000109	0.000115	0.000104	0.000177*	0.000119*
	(1.47)	(1.23)	(1.55)	(1.39)	(1.93)	(1.65)
(Equity + FDI) / GDP	-0.00669					
	(-1.45)					
Composition of IFI		0.0154	0.486***	1.105**	0.552***	-0.353***
		(0.64)	(4.00)	(2.22)	(3.01)	(-2.90)
*Comp. of IFI * Initial GDP*			-0.0524***	-0.116**	-0.0608***	0.0353**
			(-3.72)	(-2.21)	(-2.85)	(2.51)
# Observations	568	567	567	575	584	594
# Countries	94	94	94	95	95	96
Hansen test (p-value)	0.277	0.211	0.379	0.411	0.269	0.371
AR1 test (p-value)	0.00182	0.00235	0.00360	0.00236	0.00326	0.00208
AR2 test (p-value)	0.133	0.180	0.259	0.255	0.667	0.776

Sources: See Table 1.

Notes:
- System-GMM estimations for dynamic panel-data models, including a constant and time dummies for 5-year periods.
- Sample composed of non-overlapping 5-year periods from 1970 to 2004 (1970-74, 1975-99, …, 1995-99, and 2000-04).
- The dependent variable is the average annual growth rate over a 5-year period.
- The proxy for the Composition of IFI used (columns 2-6) is indicated below the respective column number.
- In each estimation, the second lag of the dependent and of the explanatory variables (all treated as endogenous) were used as instruments in the first-difference equations and their once lagged first-differences were used in the levels equation.
- Two-step results using robust standard errors corrected for finite samples (using Windmeijer's, 2005, correction).
- T-statistics are in parenthesis. Significance level at which the null hypothesis is rejected: ***, 1%; **, 5%, and *, 10%.

Table 4 – Restricted Sample (1985-2004)

COEFFICIENT	(1) *Equity _ l + FDI _ l* / *Fin.Liabilities*	(2) *Equity _ l* / *Fin.Liab.*	(3) *FDI _ l* / *Fin.Liab.*	(4) *Debt _ l* / *Fin.Liab.*
Initial GDP per capita (log)	-0.0120**	-0.0117*	-0.0125**	-0.0503**
	(-1.98)	(-1.91)	(-2.16)	(-2.54)
Investment (%GDP)	0.00119**	0.000691	0.00141***	0.000993
	(2.04)	(1.26)	(2.95)	(1.63)
Initial Years of Schooling	0.00304	0.00203	0.00827*	0.00773
	(0.48)	(0.32)	(1.72)	(0.96)
Population Growth	-0.275***	-0.321***	-0.300***	-0.231***
	(-4.48)	(-5.28)	(-4.44)	(-3.69)
Trade Openness	0.000160*	0.000245**	0.0000724	0.000125
	(1.69)	(2.31)	(0.80)	(1.08)
Composition of Liabilities	0.297**	0.750	0.402**	-0.423**
	(2.01)	(1.63)	(2.03)	(-2.45)
*Comp. of Liabilities * Initial GDP*	-0.0279*	-0.0754	-0.0424*	0.0424**
	(-1.69)	(-1.58)	(-1.89)	(2.14)
# Observations	336	336	337	337
# Countries	95	95	95	95
Hansen test (p-value)	0.814	0.377	0.353	0.742
AR1 test (p-value)	0.0370	0.0389	0.0312	0.0324
AR2 test (p-value)	0.480	0.578	0.612	0.340

Sources: See Table 1.

Notes:
- System-GMM estimations for dynamic panel-data models, including a constant and time dummies for 5-year periods.
- Sample composed of non-overlapping 5-year periods from 1970 to 2004 (1970-74, 1975-99, …, 1995-99, and 2000-04).
- The dependent variable is the average annual growth rate over a 5-year period.
- The proxy for the Composition of Financial Liabilities used is indicated below the respective column number.
- In each estimation, the second lag of the dependent and of the explanatory variables (all treated as endogenous) were used as instruments in the first-difference equations and their once lagged first-differences were used in the levels equation.
- Two-step results using robust standard errors corrected for finite samples (using Windmeijer's, 2005, correction).
- T-statistics are in parenthesis. Significance level at which the null hypothesis is rejected: ***, 1%; **, 5%, and *, 10%.

Table 5 – Restricted Sample (Developing Countries)

COEFFICIENT	(1) *Equity _ l + FDI _ l* / *Fin.Liabilities*	(2) *Equity _ l* / *Fin.Liab.*	(3) *FDI _ l* / *Fin.Liab.*	(4) *Debt _ l* / *Fin.Liab.*
Initial GDP per capita (log)	-0.0110	-0.000975	-0.0133	-0.0521***
	(-1.37)	(-0.083)	(-1.64)	(-3.61)
Investment (%GDP)	0.00132**	0.00114**	0.00122**	0.00139**
	(2.35)	(2.49)	(2.30)	(2.21)
Initial Years of Schooling	0.00818	-0.000458	0.00988	0.00339
	(1.32)	(-0.052)	(1.47)	(0.42)
Population Growth	-0.167**	-0.145**	-0.159*	-0.168**
	(-1.99)	(-2.13)	(-1.93)	(-2.42)
Trade Openness	0.000123	0.000111	0.000160*	0.000123*
	(1.37)	(1.09)	(1.77)	(1.74)
Composition of Liabilities	0.348***	0.902	0.355***	-0.445***
	(3.55)	(1.42)	(3.08)	(-4.10)
*Comp. of Liabilities * Initial GDP*	-0.0357***	-0.0982	-0.0371***	0.0469***
	(-3.14)	(-1.44)	(-2.63)	(3.98)
# Observations	434	434	441	441
# Countries	74	74	74	74
Hansen test (p-value)	0.974	0.891	0.990	0.982
AR1 test (p-value)	0.00693	0.00505	0.00682	0.00592
AR2 test (p-value)	0.817	0.598	0.783	0.866

Sources: See Table 1.

Notes:
- System-GMM estimations for dynamic panel-data models, including a constant and time dummies for 5-year periods.
- Sample composed of non-overlapping 5-year periods from 1970 to 2004 (1970-74, 1975-99, …, 1995-99, and 2000-04).
- The dependent variable is the average annual growth rate over a 5-year period.
- The proxy for the Composition of Financial Liabilities used is indicated below the respective column number.
- In each estimation, the second lag of the dependent and of the explanatory variables (all treated as endogenous) were used as instruments in the first-difference equations and their once lagged first-differences were used in the levels equation.
- Two-step results using robust standard errors corrected for finite samples (using Windmeijer's, 2005, correction).
- T-statistics are in parenthesis. Significance level at which the null hypothesis is rejected: ***, 1%; **, 5%, and *, 10%.

Table 6 – Controlling for Trade Openness interacted with initial GDP

COEFFICIENT	(1) *Equity _ l + FDI _ l* / *Fin.Liabilities*	(2) *Equity _ l* / *Fin.Liab.*	(3) *FDI _ l* / *Fin.Liab.*	(4) *Debt _ l* / *Fin.Liab.*
Initial GDP per capita (log)	-0.00224	0.00277	0.00326	-0.0240
	(-0.36)	(0.42)	(0.56)	(-1.55)
Investment (%GDP)	0.00128***	0.000814*	0.000988***	0.00107**
	(2.80)	(1.91)	(2.80)	(2.24)
Initial Years of Schooling	0.00132	-0.00395	0.000361	0.00167
	(0.29)	(-0.75)	(0.075)	(0.39)
Population Growth	-0.177**	-0.177**	-0.160**	-0.168**
	(-2.57)	(-2.46)	(-2.11)	(-2.45)
Trade Openness	0.000413	0.000944*	0.000713	0.000679
	(0.72)	(1.67)	(1.09)	(1.31)
*Trade Openness * Initial GDP*	-0.0000348	-0.0000863	-0.0000628	-0.0000625
	(-0.60)	(-1.53)	(-0.95)	(-1.22)
Composition of Liabilities	0.283***	0.545	0.280*	-0.253**
	(2.70)	(1.13)	(1.96)	(-2.07)
*Comp. of Liabilities * Initial GDP*	-0.0279**	-0.0523	-0.0285*	0.0252*
	(-2.31)	(-1.05)	(-1.77)	(1.79)
# Observations	584	584	594	594
# Countries	96	96	96	96
Hansen test (p-value)	0.619	0.719	0.531	0.801
AR1 test (p-value)	0.00282	0.00284	0.00230	0.00225
AR2 test (p-value)	0.775	0.711	0.751	0.765

Sources: See Table 1.

Notes:
- System-GMM estimations for dynamic panel-data models, including a constant and time dummies for 5-year periods.
- Sample composed of non-overlapping 5-year periods from 1970 to 2004 (1970-74, 1975-99, …, 1995-99, and 2000-04).
- The dependent variable is the average annual growth rate over a 5-year period.
- The proxy for the Composition of Financial Liabilities used is indicated below the respective column number.
- In each estimation, the second lag of the dependent and of the explanatory variables (all treated as endogenous) were used as instruments in the first-difference equations and their once lagged first-differences were used in the levels equation.
- Two-step results using robust standard errors corrected for finite samples (using Windmeijer's, 2005, correction).
- T-statistics are in parenthesis. Significance level at which the null hypothesis is rejected: ***, 1%; **, 5%, and *, 10%.

Table 7 – Controlling for Macroeconomic Stability and Financial Development

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
		Liquid Liabilities / GDP		***D. Mon. Bank Assets / GDP***		***Private Credit / GDP***	
Initial GDP per capita (log)	-0.000808	0.000842	0.00736	0.00655	0.00683	0.00254	0.00327
	(-0.16)	(0.079)	(0.61)	(0.51)	(0.51)	(0.23)	(0.31)
Investment (% GDP)	0.00111***	0.000760	0.000587	0.00104*	0.000856	0.000950*	0.000995*
	(2.72)	(1.54)	(1.24)	(1.73)	(1.36)	(1.68)	(1.80)
Initial Years of Schooling	0.00344	-0.00171	-0.000556	-0.00249	0.00192	-0.00272	0.00107
	(0.77)	(-0.23)	(-0.077)	(-0.23)	(0.18)	(-0.28)	(0.11)
Population Growth	-0.159**	-0.300***	-0.257**	-0.253***	-0.199**	-0.277***	-0.241***
	(-2.25)	(-3.57)	(-2.56)	(-3.40)	(-2.05)	(-3.95)	(-2.71)
Trade Openness	0.000106	0.000245*	0.000206*	0.000260**	0.000210*	0.000256**	0.000219**
	(1.36)	(1.96)	(1.78)	(2.18)	(1.75)	(2.34)	(2.00)
FDI_liab / Fin.Liabilities	0.376**	0.590*	0.570*	0.706**	0.606*	0.677**	0.616*
	(2.38)	(1.72)	(1.75)	(2.26)	(1.74)	(2.22)	(1.92)
*(FDI_liab / Fin.Liabilities) * Initial GDP*	-0.0409**	-0.0662*	-0.0637*	-0.0779**	-0.0661	-0.0764**	-0.0687*
	(-2.29)	(-1.65)	(-1.65)	(-2.10)	(-1.60)	(-2.13)	(-1.83)
Government (% GDP)	-0.000933**	-0.000983	-0.000989	-0.000572	-0.000681	-0.000721	-0.000695
	(-2.03)	(-1.49)	(-1.49)	(-0.75)	(-0.97)	(-0.96)	(-1.03)
Inflation (log)	0.000335	-0.0107	-0.00714	-0.00584	-0.00242	-0.00621	-0.00465
	(0.16)	(-1.37)	(-0.95)	(-0.70)	(-0.28)	(-0.73)	(-0.49)
Financial Development		-0.00163	0.166	-0.0199	0.146	-0.00553	0.0589
		(-0.15)	(0.97)	(-1.59)	(0.82)	(-0.50)	(0.40)
*Financial Development * Initial GDP*			-0.0176		-0.0165		-0.00703
			(-0.97)		(-0.92)		(-0.47)
# Observations	546	449	449	521	521	521	521
# Countries	94	81	81	92	92	92	92
Hansen test (p-value)	0.901	0.774	0.842	0.698	0.598	0.709	0.557
AR1 test (p-value)	0.00372	0.0132	0.0122	0.0123	0.0110	0.0105	0.0103
AR2 test (p-value)	0.351	0.639	0.809	0.908	0.838	0.867	0.982

Notes: System-GMM estimations for dynamic panel-data models, including a constant and time dummies. Sample composed of non-overlapping 5-year periods from 1970 to 2004. The dependent variable is the average annual growth rate over a 5-year period. The proxy for Financial Development used (columns 2-7) is indicated below the respective column number. In each estimation, the second lag of the dependent and of the explanatory variables (all treated as endogenous) were used as instruments in the first-difference equations and their once lagged first-differences were used in the levels equation. The option "collapse" of *xtabond2* was used to avoid a number of instruments much greater than the number of countries. Two-step results using robust standard errors corrected for finite samples (using Windmeijer's, 2005, correction). T-statistics are in parenthesis. Significance level at which the null hypothesis is rejected: ***, 1%; **, 5%, and *, 10%.

Appendix

The 96 countries considered in the estimation of Table 2

ALGERIA	HAITI	PARAGUAY
ARGENTINA	HONDURAS	PERU
AUSTRALIA	HONG KONG	PHILIPPINES
AUSTRIA	HUNGARY	POLAND
BAHRAIN	ICELAND	PORTUGAL
BANGLADESH	INDIA	RWANDA
BELGIUM	INDONESIA	SENEGAL
BENIN	IRAN	SINGAPORE
BOLIVIA	IRELAND	SOUTH AFRICA
BOTSWANA	ISRAEL	SPAIN
BRAZIL	ITALY	SRI LANKA
CAMEROON	JAMAICA	SUDAN
CANADA	JAPAN	SWAZILAND
CHILE	JORDAN	SWEDEN
CHINA	KENYA	SWITZERLAND
COLOMBIA	KUWAIT	SYRIAN ARAB REPUBLIC
CONGO, DEM.REP.	MALAWI	TAIWAN
CONGO, REPUBLIC OF	MALAYSIA	TANZANIA
COSTA RICA	MALI	THAILAND
CYPRUS	MAURITIUS	TOGO
DENMARK	MEXICO	TRINIDAD AND TOBAGO
DOMINICAN REPUBLIC	MOZAMBIQUE	TUNISIA
ECUADOR	NEPAL	TURKEY
EGYPT	NETHERLANDS	UGANDA
EL SALVADOR	NEW ZEALAND	UNITED ARAB EMIRATES
FIJI	NICARAGUA	UNITED KINGDOM
FINLAND	NIGER	UNITED STATES
FRANCE	NORWAY	URUGUAY
GERMANY	OREA	VENEZUELA
GHANA	PAKISTAN	YEMEN
GREECE	PANAMA	ZAMBIA
GUATEMALA	PAPUA NEW GUINEA	ZIMBABWE

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