

Does Inequality Matter in the Finance-Growth Nexus?

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Previous studies in the empirical growth literature find a strong positive relationship between financial development and economic growth. This paper argues that the strength of the finance-growth relationship will vary with the degree of inequality in a country. In countries with a highly unequal distribution of resources, financial development may have a weaker impact on economic growth. With a highly unequal initial distribution of assets, individuals that lack collateralizable assets may not gain access to funds to finance their investments in human and physical capital, lowering economic growth. Using cross-sectional data for 65 countries for the period 1960-1995, the paper finds although greater financial development leads to faster economic growth, this positive effect significantly weakens in economies where inequality is high.

JEL Classifications: P50, O40, N20

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1. Introduction

There is a growing body of evidence that indicates that the development of a country's financial sector greatly facilitates its economic growth (King and Levine, 1993a,b; Jayaratne and Strahan, 1996; Demirgic-Kunt and Maksimovic, 1998; Rajan and Zingales, 1998; Beck, Levine et al., 2000a,b). Much of the recent literature has addressed itself to issues of causality (that is, whether finance causes growth or vice-versa), the type of financial system (bank or market-oriented) that is most conducive to economic development and whether the link between financial development and growth is particularly significant for firms and industries that are dependent on external finance (for recent surveys, see Beck et al., 2001; Levine, 1997; and Wachtel, 2001). There has been less attention paid to the conditions under which the relationship between financial development and economic growth may be stronger or weaker, or whether the finance-growth nexus may exist at all for some developing countries.

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Independently, another set of studies emphasise the negative effect that inequality has on economic growth (Deininger and Squire 1998; Aghion, Caroli et al., 1999; Deininger and Olinto, 2000). In contrast to the traditional view that assumes a trade-off between equity and efficiency¹, these studies argue that there may exist a negative long-run relationship between initial income inequality and subsequent growth. Although, the empirical issue is clearly not settled and despite some counterevidence (Barro 1999; Forbes 2000) there is strong evidence to argue that inequality is not a precondition for long-run growth (Persson and Tabellini 1994; Clarke 1995; Benabou 1996; Deininger and Squire 1998). While the explanations for the negative relationship between inequality and growth focus on both political and economic factors, perhaps the most persuasive explanation for this relationship is rooted in capital markets imperfections that are a widespread phenomenon in many developing (and developed) countries. According to this view, capital market imperfections as reflected in credit constraints will prevent the poor from undertaking profitable indivisible investments, implying that a more inegalitarian initial distribution will result in lower aggregate investment and formation of physical or human capital, and consequently, lower economic growth.

This paper draws from the recent literature that finds a negative relationship between inequality and growth to re-examine the finding from previous studies that financial development exerts a positive influence on economic growth. We argue that the positive relationship between financial development and growth that has been obtained in the empirical literature would depend on the degree of inequality in the country in question. In countries with a highly unequal distribution of resources, financial development may have a weaker (or no) positive impact on economic growth. This is because with a highly unequal initial distribution of assets, and with imperfect capital markets, individuals that lack collateralizable assets may not gain access to funds to finance their investments. This would imply that even in the presence of a well-developed financial system, an unequal initial distribution of assets could prove to be a constraint on economic growth.

The contribution of this paper is to analyse the impact of the level of inequality on the relationship between financial development and economic growth. Existing studies focus on analysing the relationship between finance and growth, regardless of the other factors that may have an influence on this relationship.² However, we show in this paper that the effect of financial development on growth can be different from country to country. In particular, the finance-growth nexus may not be observed in countries where there is high inequality of income.

The empirical results are based on cross-sectional regressions for a set of 65 countries for the period 1960-1995. We use two different approaches to examine the role of inequality in the

¹ For example, see Kuznets (1955).

² An exception is Rousseau and Wachtel (2002) which examines whether the strength of the finance-growth relationship varies with the inflation rate.

finance-growth nexus. Firstly, we regress real per capita GDP growth on our measures of financial development and interaction terms between financial development indicators and inequality, controlling for other potential determinants of growth. Secondly, we apply a threshold regression model to the data-set by splitting our sample into two sub-samples using Gini coefficients on income distribution as a threshold variable. Our results suggest that although greater financial development leads to faster economic growth, this positive effect weakens in economies where inequality is high.

The rest of the paper is organised as follows: In the next section, we briefly review the literature on the relationship between financial development, inequality and economic growth, and formulate our main hypothesis. Section 3 presents the empirical methodology and Section 4 details the data employed. Section 5 presents the results while Section 6 concludes.

2. Inequality and the Finance-Growth Nexus

How can inequality impact on the relationship between finance and growth? Firstly, consider the finance-growth nexus itself. The degree of financial development can have a positive effect on economic growth both by increasing the volume of investment and its efficiency. Financial development can increase the volume of investment by the greater mobilisation of investible resources in the economy. With respect to the efficiency of investment, the financial sector can improve the allocation of investible funds in four ways. Firstly, the financial sector improves the screening of fund-seekers and the monitoring of the recipients of funds, which improves the allocation of resources. Secondly, in the presence of information and transactions costs, the financial system eases the trading, hedging and pooling of risk. Thirdly, financial markets and intermediaries mitigate the information acquisition and enforcement costs of monitoring managers of firms and exerting corporate control. Finally, financial systems spur technological innovation by encouraging specialisation in the economy via the lowering of transactions costs. There is persuasive empirical evidence both across countries and for individual countries that suggest that countries with better developed financial systems tend to grow faster, controlling for all other determinants of economic growth (these studies are reviewed in Levine (1997)).

Turning to the question of whether level of inequality fosters or hinders economic growth, the traditional view that inequality is growth enhancing was challenged by both theoretical and empirical studies in the 1990s that suggested a negative long-run relationship between income inequality and subsequent growth. In the theoretical literature, there are three sets of models that obtain a negative relationship between inequality and growth.

(1) Redistributive political economy models: the only way in which distribution could affect growth is through determining the pivotal “median voter” and the critical link is through the

impact of such politically motivated redistribution (via fiscal policy) on investment and evolution of the economy's capital stock. Political economy models claim that inequality leads to redistribution, which hurts growth (Banerjee and Duflo, 2000; Galor, 2000; Persson and Tabellini, 1994).

(2) Political and social instability models: these models posit that the link between inequality and growth does not depend on fiscal policy, but rather, inequality fuels social and political discontent, which creates socio-political instability and hence reduces investment and economic growth (Alesina and Perotti 1996).

(3) Capital market imperfections model: in these models, credit constraints will prevent the poor from undertaking profitable indivisible investments, implying that more egalitarian initial "asset" distribution will result in higher aggregate investment and formation of physical or human capital (Deininger and Olinto, 2000; Aghion and Howitt 1998; Galor and Zeira, 1993).

The third set of theories provides us with an understanding of why inequality may matter in the finance-growth nexus. These theories argue that the reason why income distribution is likely to exert an influence on economic efficiency is that productive opportunities might vary along the wealth distribution. Where information is costly and imperfect, equilibrium credit rationing will arise - that is, agents will be able to obtain credit only if they own assets that can be used as collateral. A more unequal distribution of assets would then imply that, for any given level of per capita income, a greater number of people are credit constrained. In an economy where individuals make indivisible investments - in schooling, for example- that have to be financed through borrowing, this would imply lower physical and human capital formation and hence, aggregate growth (Aghion and Howitt, 1998; Deininger and Squire, 1998; Galor and Zeira, 1993).

The above arguments imply that the strength of the finance-growth relationship should vary with the level of inequality. In more unequal societies, financial development should exert a weaker positive effect on economic growth than less unequal societies. Put in another way, for the same level of financial development, countries with a more equitable distribution of wealth will observe a higher rate of human and physical capital formation, and hence, higher economic growth. This is the maintained hypothesis of our empirical work in what follows.

3. Empirical Methodology

Common to the empirical literature on the determinants of economic growth, we use multi-country cross-sectional regressions to examine the relationship between finance, inequality and growth. To test the hypothesis that the impact of financial development on economic growth depends on the degree of inequality, we employ two methods. Firstly, we introduce a

term that interacts financial development with inequality in a conventional growth regression which includes in the explanatory variables the level of financial development along with a conditioning set of other variables that provide robust and widely accepted proxies for growth determinants (Rousseau and Wachtel 2002). The specification that we use is:

$$\text{GROWTH}_i = \alpha + \beta_1 \text{FINANCE}_i + \beta_2 (\text{FINANCE} * \text{INEQUALITY})_i + \gamma (\text{CONDITIONING SET})_i + \varepsilon_i \quad (1)$$

where the dependent variable, Growth, equals real per capita GDP growth, Finance is the measure of the level of financial development, and Finance*Inequality represents the interaction between the measure of financial development and inequality. The conditioning set represent a vector of variables that control for other factors associated with economic growth and ε is the error term.³ According to our hypotheses, β_1 should be positive and β_2 should be negative (and both coefficients are expected to be statistically significant). This would imply that financial development exerts a positive influence on economic growth but that this influence is smaller in magnitude in more unequal societies.

Secondly, we use threshold regressions methods where we split our sample of countries into two sub-samples – one, a sub-sample of countries with high degrees of inequality, and the other a sub-sample of countries with low degrees of inequality. We then test for the relationship between growth and finance separately for these two sub-samples. Thus, the estimated model takes the following form:

$$\text{GROWTH}_{iA} = \alpha_A + \beta_A \text{FINANCE}_i + \gamma_A (\text{CONDITIONING SET})_i + \varepsilon_{iA} \quad \text{for } q_i \leq \mu \quad (2)$$

$$\text{GROWTH}_{iB} = \alpha_B + \beta_B \text{FINANCE}_i + \gamma_B (\text{CONDITIONING SET})_i + \varepsilon_{iB} \quad \text{for } q_i > \mu \quad (3)$$

where q_i is the threshold variable to split the sample into different groups, A and B, and μ is the level of q we use to classify countries into low inequality and high inequality groups. We denote low inequality countries as A and high inequality countries as B. As before, Growth_i is the average annual growth rate of real per capita GDP; Finance is our measure of financial development, and the conditioning set is a vector of regressors which control for other economic phenomena, and ε_i is the error term. In this model, we use inequality as the threshold variable and we split the sample into two inequality groups (low inequality countries and high inequality countries)

³ The set of variables that constitute the conditioning set are discussed in the next section.

If financial development has a stronger positive effect on economic growth in low inequality countries (sub-sample A) as compared to high inequality countries (sub-sample B), we would expect that $\beta_A > \beta_B$.

One potential problem in the estimation process is the possible endogeneity of financial development in the growth regressions. That is, it is possible to argue that it is economic growth that primarily drives financial development, and as the real sectors of the economy grow, the increasing demand for capital will lead to an increase in financial intermediation as entrepreneurs rely more on borrowed funds rather than their own saving (Robinson 1952). In this case, Ordinary Least Squares (OLS) estimates of the growth equations (1), (2) and (3) will be inconsistent. In order to correct for the possibility of endogeneity bias in the regressions, we use a two-stage least squares (TSLS) estimation procedure in estimating equations (1), (2) and (3) to extract the exogenous component of financial development. We postpone the discussion of the appropriate instrumental variables for the level of financial development to the next section.

4. Data

This section first discusses the measures of financial development and inequality used in the empirical analysis. It then discusses the choice of variables used as instrumental variables for the level of financial development, followed by a description of the other control variables used in the growth regressions. Finally, it presents descriptive statistics and correlations for the main variables used in this study.

To evaluate the empirical predictions advanced by a variety of theoretical models regarding the relationship between finance and growth, we need to measure the ability of different financial systems to identify profitable ventures, monitor and control managers, ease risk management and facilitate resource mobilization. We use three indicators of financial development, as a single measure may not be able to adequately capture a country's level of financial development in its entirety. These three indicators have been identified in the literature as being the most robust indicators of financial development (Beck, Levine and Loayza 2000a,b). These indicators are: (1) liquid liabilities of the financial system as a ratio of GDP, denoted Liquid Liabilities (LL); (2) Commercial bank assets as a ratio of commercial bank plus central bank assets – denoted Commercial-Central Bank (CCB); and (3) The value of credits by financial intermediaries to the private sector divided by GDP – denoted Private Credit (PC).

Liquid Liabilities (LLs) is a classic measure of “financial depth” and thus of the overall size of the financial intermediary sector (King and Levine, 1993a, 1993b). LLs, however, does not consider the allocation of capital; it is just an indicator of size. Thus, LLs may not accurately reflect the provision of financial services in an economy (Beck, Levine and Loayza, 2000b).

Commercial bank assets (CCB) measure the degree to which the banks versus the central banks allocate society's savings. The intuition underlying this measure is that banks are more likely to identify profitable investments, monitor managers, facilitate risk management, and mobilize savings than central banks.

Financial intermediaries' credit to the private sector (PC) is more than a simple measure of financial sector size. PC isolates credit issued to the private sector, as opposed to credit issued to governments, government agencies, and public enterprises. Furthermore, it excludes credits issued by the central bank.

Among the three indicators discussed, PC is the most satisfactory measure of financial development and is widely used in the empirical literature on the finance-growth nexus. While PC does not directly measure the amelioration of transaction costs, we interpret higher levels of PC as indicating higher levels of financial services and therefore greater financial intermediary development (Beck, Levine and Loayza, 2000b).

With respect to the measure of inequality, the Gini coefficient of the distribution of assets would be the preferred indicator from a theoretical standpoint. However, there is not enough data on asset distribution for a sufficiently large number of countries. We use instead Deininger and Squire (1996)'s carefully constructed data-set on income inequality, which has become the staple data-set for much of the empirical work on inequality and growth, measuring inequality in our sample of countries by the Gini coefficient of income distribution.⁴ For the inequality variable, 1960 values were taken as initial variables, where these data are not available we employed the data of the closest year possible.⁵

To address the endogeneity of financial development, we follow the strategy of Carlin and Mayer (2003) and Beck, Levine and Loayza (2000a, 2000b) in using the origin of the legal system as an instrument of the level of financial development. La Porta et al. (1998) argue that common law countries generally have the best legal protections of investors while French civil law countries have the worst (German and Scandinavian civil law countries located in the middle). While the legal system is clearly exogenous to economic growth, exogeneity is not a sufficient condition for economically meaningful instrumental variables. It must also be the case there are good reasons for believing that legal origin is closely connected to factors that directly affect the behaviour of financial intermediaries. It can be argued that the origin of the legal system is connected to legal and regulatory characteristics defining financial intermediary activities through to differences in the legal rules covering secured creditors, the efficiency of contract enforcement, and the quality of accounting

⁴ The Gini coefficient can vary from 0 to 1. Higher values of the Gini coefficient correspond to higher inequality in the distribution of income.

⁵ The data on Gini coefficients used in this paper is a slightly updated version of the data available in Deininger and Squire (1996). Compared to the earlier version, a number of African countries for which additional data have recently become available have been added.

standards. Legal origin can therefore have a profound impact on financial intermediary development.

We use three conditioning sets to control for other factors associated with economic growth:

(1) The simple conditioning set includes a constant term, the logarithm of initial per capita GDP and initial level of educational attainment. Both theory and evidence suggest an important link between long-run growth and initial income and investment in human capital accumulation. The initial income variable is used to capture the convergence effect and school attainment is used to capture the initial level of human capital (Barro and Sala-i-Martin 1995, Barro 1997).

(2) The policy conditioning set includes the simple conditioning set plus measures of government size, inflation, the black market exchange rate premium and openness to international trade. The government consumption expenditures to GDP, the rate of inflation and openness to international trade are included because theory and some evidence suggest a negative relationship between macroeconomic instability and economic activity, and a positive relationship between open-ness and economic growth (Edwards, 1998; Fisher, 1993; Sachs and Warner, 1995). Similarly, black market exchange rate premium is a general indicator of policy distortions and therefore is a useful variable to use in assessing the independent relationship between the growth indicators and measures of financial sector development (Easterly 1993).

(3) The full conditioning set includes the policy conditioning set plus measures of political stability: the number of revolutions and coups and the number of assassinations per thousand inhabitants and ethnic diversity. These are included since many authors find that political instability and ethnic fractionalisation are negatively associated with economic growth (Barro, 1997; Easterly and Levine, 1997).

For each of the three financial intermediary development indicators, we present regression results for the simple, policy, and full conditioning sets.

Data on the three indicators of financial development, on economic growth and on the variables that constitute the conditioning sets are taken from Beck, Levine and Loayza's (2000a,2000b) cross-country data set, which covers 71 countries over the period 1960-1995 (available online). We use data for 65 countries are averaged over the period 1960-1995, with one observation per country, as data on Gini coefficients was not available for the remaining countries (the list of countries, and the description of the main variables used in the regressions are provided in Tables A1 and A2 in the Appendix).

Table 1 presents summary statistics on financial development indicators, inequality measure and economic growth. The table shows the substantial variance among countries in the growth and financial development indicators. There is a considerable variation in financial intermediaries' credit to the Private sector across countries, ranging from a low of 5% in Sierra Leone to a high of 141% in Switzerland. GDP per capita growth also shows significant variation. Korea has the highest real per capita GDP growth rate with 7% while Nigeria has the lowest with -2.75%.

Table 1: Summary Statistics: Annual Averages 1960-1995^a

Descriptive Statistics	Growth	PC	LLs	CCB	Gini
Mean	1.899	39.900	43.012	79.689	43.473
Median	1.973	27.505	38.675	83.887	42.79
Std Deviation	1.720	29.101	23.191	15.983	9.638
Minimum	-2.751	5.066	9.734	31.597	25.3
Maximum	7.156	141.294	125.939	98.987	67.83
Observations	65	65	65	65	65

Note: a) all variables are in percentages.

Table 2 presents correlations for economic growth and finance indicators together with inequality. The table reveals that while gini coefficient is negatively correlated with per capita GDP growth and indicators of finance, growth is positively correlated with all three measures of finance. All three indicators of financial development are strongly correlated with each other, with correlation coefficients ranging from 0.65 to 0.87.

Table 2: Correlation between Key Variables

Correlations	Growth	PC	LL	CCB
Growth				
Private Credit	0.435			
Liquid Liabilities	0.501	0.870		
Com-Central Bank	0.395	0.648	0.649	
Gini	-0.357	-0.450	-0.472	-0.376

5. Empirical Results

Table 3 presents estimates of equation 1. The equation is estimated using the TSLS estimation method. We present estimates of equation (1) with the three different conditioning sets in turn, each estimated with one of the three different measures of financial development

– LL, CB-C and PC. There are nine estimates in all. For brevity, we report only the coefficients on the financial development indicators and interaction variables.⁶

Each of the three financial development indicators is significant at the one per cent significance level in the simple, policy and full conditioning set regressions. Although the results suggest that a higher degree of financial development causes faster economic growth, the negative coefficient on the interaction term of “finance-inequality” indicates that this positive effect may weaken in economies where inequality is high. The negative coefficient on the interaction term of “private credit*inequality” enters significantly at the five per cent level in the regressions with full and policy conditioning sets, but the result is weaker with the simple conditioning set, with a level of significance at the margin of ten percent (Columns 1, 2 and 3).

We introduce two more interaction variables with two other indicators of financial development, liquid liabilities and commercial-central bank interacted with our measure of inequality. The coefficient on the interaction term of “commercial-central bank*inequality” is negative and enters significantly at five per cent level in regressions with full and policy conditioning sets, though the result is weaker with the simple conditioning set (Columns 4 to 6). For the “liquid liabilities*inequality” variable, the coefficient is significant at the ten percent level in the regression with the full conditioning set, but the results with two other conditioning sets are not significant (Columns 7 to 9).

We also undertook two more robustness tests (results available on request). We divided the sample of countries into four quartiles by their level of financial development (credit to the private sector as a ratio of GDP), and re-run the two stage least squares regressions using dummy variables for the top three quartiles (the lowest quartile was excluded as it would be collinear with the other quartile dummies), and interacting these quartile dummies with the gini coefficient (with the full conditioning set). We found as expected that the coefficients on the quartile dummies are positive and increase from the lowest to the highest quartile (as measured by level of financial development) and that the interaction dummy of the gini with the highest and second highest quartile is negative and significant. When we construct quartile dummies based on the gini (lowest to highest inequality), and use these instead of the gini in the interaction dummies along with financial development (credit to the private sector as a ratio of GDP) as explanatory variables (we use two stage least square methods and include the full conditioning set), we obtain similar results.

The results indicate a very strong connection between the exogenous component of financial development and long-run growth. However our results suggest that the effect of financial development on economic growth weakens, the higher the degree of inequality in a particular country. This relationship is depicted in Figure 1. It shows that the greater the Gini

⁶ Detailed regression results are available from the author on request.

coefficient, the lower the magnitude of the positive effect of finance on growth. The impact of finance on growth is more than six times larger when a country has a Gini coefficient of 10 per cent as compared to when a country has a Gini coefficient of 90 per cent.

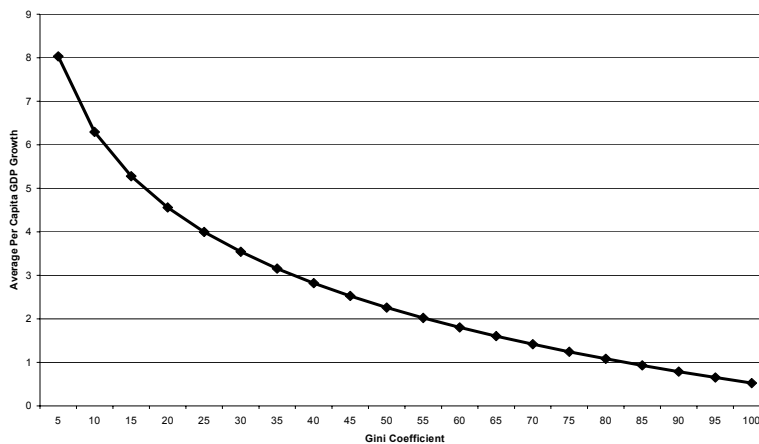
Table 3: Regressions Results with Interaction Variables

Method: Two-Stage Least Squares White Heteroskedasticity-Consistent Standard Errors Instrument list: Legal Origin Dummy Variables; English, French, German and Scandinavian Dependent Variable: Growth			
	(1)	(2)	(3)
Private Credit(P value)	3.039 (0.005)	4.313 (0.001)	4.133 (0.001)
Interaction (P value)	-0.462 (0.10)	-0.651 (0.032)	-0.679 (0.012)
Prob(F-Statistic)	0.0000	0.0001	0.0000
	(4)	(5)	(6)
Liquid Liabilities (P value)	3.064 (0.003)	3.495 (0.003)	3.465 (0.001)
Interaction (P value)	-0.368 (0.21)	-0.383 (0.19)	-0.422 (0.091)
Prob(F-Statistic)	0.0000	0.0001	0.0000
	(7)	(8)	(9)
Commercial-Central (P value)	4.154 (0.002)	5.314 (0.003)	4.852 (0.003)
Interaction (P value)	-0.447 (0.060)	-0.534 (0.041)	-0.546 (0.022)
Prob(F-Statistic)	0.0000	0.0001	0.0000

Notes: a) Regressions 1,4 and 7 with simple conditioning set; Regressions 2, 5 and 8 with policy conditioning set; Regressions 3, 6 and 9 with full conditioning set.

b) Prob(F Statistic) is the probability value of the F-Statistic for the whole regression.

Figure 1: The Net Effect of Finance on Growth at Different Levels of Inequality



Notes: a) The measure of finance used is Private Credit. b) The Full Conditioning set of variables is used. c) The Gini coefficient is in percentage form.

In sum, our findings so far suggest that the effect of financial development, when measured by private credit or commercial-central bank or liquid liabilities, on economic growth may weaken in countries where inequality is high. Our results are robust to the measure of financial development used with the full conditioning set, which is superior to the rest since it includes all possible factors that might be associated with growth.

Next, we turn to the estimates of equations (2) and (3) where we use a split-sample approach, using inequality in the distribution of income as the threshold variable. In Tables 4, 5 and 6, we first present results for the whole sample and then the two sub-samples – high inequality and low inequality countries with the simple, policy and full conditioning sets respectively, and for each of our three measures of financial development. For brevity, we only report the coefficient value and t-ratio only for the three measures of financial development. We experiment with three different values of the threshold for the gini coefficient –40 per cent, 42 per cent and 44 per cent, and report results for all three values of the threshold. In the regressions with the whole sample, each of the three financial development indicators is statistically significant at the one per cent significance level set in with simple and policy conditioning sets, except commercial-central bank which is significant at 5 per cent level with the policy and full conditioning set.⁷

The results in the threshold regressions strongly support the view that the level of financial development has a positive and significant effect on economic growth in countries where low inequality prevails. For each of the three value of the threshold that we have considered, the coefficient of the financial development variable for countries with a gini coefficient below the threshold is higher in magnitude than for those countries with the gini coefficient above the threshold (the comparisons are between columns (2) and (3), between columns (4) and (5), and between columns (6) and (7) in Tables 4, 5 and 6). The results are robust to the different indicators of financial development chosen and the conditioning set used. Moreover, in several cases, the coefficient on the financial development measure is not statistically significant (and sometimes of the wrong sign) for countries with the gini coefficient above the threshold.

Our results suggest that the positive relationship between the level of financial development and growth that is commonly found in the literature holds only in countries with low inequality in income distribution. In countries with high level of inequality, we seem to find that there is no significant relationship between financial development and economic growth.

⁷ We have also tested the robustness of the results using a wider range of values for the Gini coefficient, and did not find a change in the results.

Table 4: Threshold Regression Results with Simple Conditioning Set

Method: Two-Stage Least Squares- White Heteroskedasticity-Consistent Standard Errors Instrument list: Legal Origin Dummy Variables; English, French, German and Scandinavian Dependent Variable: Growth							
	(1) Whole Sample	(2) Gini<=40	(3) Gini>40	(4) Gini<=42	(5) Gini>42	(6) Gini<=44	(7) Gini>44
Private Credit	1.503	1.585	1.102	1.713	0.652	1.695	0.048
P Values	(0.000)	(0.000)	(0.024)	(0.000)	(0.188)	(0.000)	(0.928)
Prob(F-Stats)	(0.0000)	(0.0000)	(0.0097)	(0.0000)	(0.0590)	(0.0000)	(0.1721)
Liquid Liabilit	1.910	2.572	1.292	2.739	0.824	2.234	-0.030
P Values	(0.000)	(0.004)	(0.027)	(0.000)	(0.160)	(0.000)	(0.963)
Prob(F-Stats)	(0.0000)	(0.0000)	(0.0064)	(0.0000)	(0.044)	(0.0000)	(0.1726)
Commer-CB	2.838	2.909	2.077	3.365	1.466	3.337	0.515
P Values	(0.001)	(0.092)	(0.012)	(0.051)	(0.062)	(0.007)	(0.555)
Prob(F-Stats)	(0.0000)	(0.0002)	(0.0172)	(0.0001)	(0.041)	(0.0000)	(0.151)
Observations	59	26	33	28	31	33	26

Note: Prob(F Statistic) is the probability value of the F-Statistic for the whole regression.

Table 5: Threshold Regressions Results with Policy Conditioning Set

Method: Two-Stage Least Squares -White Heteroskedasticity-Consistent Standard Errors Instrument list: Legal Origin Dummy Variables; English, French, German and Scandinavian Dependent Variable: Growth							
Samples used	(1) Whole Sample	(2) Gini<=40	(3) Gini>40	(4) Gini<=42	(5) Gini>42	(6) Gini<=44	(7) Gini>44
Private Credit	1.857	2.140	0.251	2.323	-0.833	2.555	-1.513
P Values	(0.000)	(0.001)	(0.817)	(0.000)	(0.348)	(0.000)	(0.041)
Prob(F-Stats)	(0.0000)	(0.0002)	(0.143)	(0.0000)	(0.353)	(0.0000)	(0.488)
Liquid Liabili	2.216	2.828	1.422	3.044	0.466	2.695	-0.385
P Values	(0.000)	(0.002)	(0.115)	(0.000)	(0.717)	(0.000)	(0.726)
Prob(F-Stats)	(0.0000)	(0.0002)	(0.054)	(0.0000)	(0.416)	(0.0000)	(0.782)
Commer-CB	2.914	5.338	0.795	6.971	0.219	4.959	-0.497
P Values	(0.033)	(0.084)	(0.636)	(0.004)	(0.890)	(0.002)	(0.775)
Prob(F-Stats)	(0.0005)	(0.0087)	(0.135)	(0.0042)	(0.434)	(0.0001)	(0.783)
Observations	59	26	33	28	31	33	26

Note: Prob(F Statistic) is the probability value of the F-Statistic for the whole regression.

Table 6: Threshold Regressions Results with Full Conditioning Set

Method: Two-Stage Least Squares -White Heteroskedasticity-Consistent Standard Errors Instrument list: Legal Origin Dummy Variables; English, French, German and Scandinavian Dependent Variable: Growth							
Sample used	(1) Whole Sample	(2) Gini<=40	(3) Gini>40	(4) Gini<=42	(5) Gini>42	(6) Gini<=44	(7) Gini>44
Private Credit	1.579	1.356	0.027	1.526	-0.991	1.561	-1.453
P Values	(0.011)	(0.033)	(0.976)	(0.006)	(0.240)	(0.002)	(0.06)
Prob(F-Stats)	(0.0000)	(0.0001)	(0.176)	(0.0000)	(0.370)	(0.0000)	(0.473)
Liquid Liab	2.087	1.970	1.369	2.166	-0.505	2.051	-0.117
P Values	(0.000)	(0.034)	(0.113)	(0.005)	(0.727)	(0.002)	(0.93)
Prob(F-Stats)	(0.0000)	(0.0001)	(0.075)	(0.0000)	(0.455)	(0.0000)	(0.715)
Commer-CB	2.483	1.363	0.998	3.225	-0.144	1.308	-1.320
P Values	(0.048)	(0.69)	(0.53)	(0.02)	(0.92)	(0.392)	(0.34)
Prob(F-Stats)	(0.0004)	(0.0013)	(0.157)	(0.000)	(0.475)	(0.000)	(0.655)
Observations	59	26	33	28	31	33	26

Note: Prob(F Statistic) is the probability value of the F-Statistic for the whole regression.

6. Conclusions

This paper contributes to the literature on the empirics of economic growth by bringing together two theoretical strands of the literature on the determinants of economic growth. The first set of studies posits a positive relationship between financial development and economic growth. In particular, financial development is critical in pooling large sums of funds, hedging the risk in high-return but risky projects thereby stimulating investment and achieving higher rates of productivity and growth. The second theoretical strand of the literature argues, in contrast to the traditional view that inequality is growth enhancing, that more unequal societies may observe lower rates of per capita income growth if unequal distribution of initial income or assets adversely affects the poor's ability to invest in physical and human capital, thereby thwarting the possibilities of many entrepreneurs to realise their full potential.

In this paper, we argue that inequality in income or asset distribution may weaken the positive effect of financial development on economic growth, thus implying that more equal income or asset distribution may result in higher aggregate investment and formation of physical and human capital. We use two different empirical methods to find support for our hypothesis. Firstly, using interaction variables between the indicators of financial development and inequality, we show that the higher the inequality in income distribution, the less the positive effect of financial development on growth. Secondly, splitting our sample of countries into two sub-samples – low inequality countries and high inequality countries - using the Gini coefficient as the threshold variable, we find that the positive

relationship between the level of financial development and growth holds only in countries where low inequality prevails but tends to disappear in countries where inequality is high. This finding suggests that the growth effect of financial development is strongly associated with the level of inequality in the country in question.

Much of the previous literature on the finance-growth nexus has emphasised the importance of strengthening financial systems as a precursor to economic growth. One important policy implication of this literature is that governments in developing countries should attempt to increase the availability of credit to households and firms to promote economic growth. However, our results suggest that such a policy may not be sufficient in societies that are characterised by a high degree of inequality in the initial distribution of wealth. If in such societies, some entrepreneurs lack access to credit markets precisely because they do not possess collateralizable assets, then to increase the level of investment in the economy, redistributive policies targeting a more equal distribution of collateralizable assets would need to be implemented. Since initial inequality has adverse effects on growth, redistributive policies may create investment opportunities and eliminate the financial constraints on the entrepreneurial process, thereby fostering economic growth.

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Appendix

Table A1: Countries in the sample set^a

High Income	Upper Middle Income	Lower Middle Income	Low Income
Australia	Argentina	Bolivia	Bangladesh
Austria	Barbados	Colombia	Ghana
Belgium	Brazil	Costa Rica	India
Canada	Chile	Dominican Republic	Kenya
Cyprus	Malaysia	Ecuador	Liberia
Denmark	Mauritius	El Salvador	Nepal
Finland	Mexico	Fiji	Niger
France	Panama	Guatemala	Pakistan
Germany	South Africa	Guyana	Senegal
Greece	Trinidad and Tobago	Honduras	Sierra Leone
Ireland	Uruguay	Jamaica	Togo
Israel	Venezuela	Paraguay	Zimbabwe
Italy		Peru	
Japan		Philippines	
Korea, Republic of		Sri Lanka	
Netherlands		Thailand	
New Zealand			
Norway			
Portugal			
Spain			
Sweden			
Switzerland			
Taiwan, China			
United Kingdom			
United States			

Note: a) Countries are classified according to per capita income, with the classification corresponding to Classification of Economies by Income in the *World Development Report 2000/2001*, World Bank.

Table A2: Description of Main Variables

Growth	Average annual growth rate of real per capita GDP
Private Credit (PC)	Credit by deposit money banks and other financial institutions to the private sector divided by GDP, times 100 (average over the 1960-1995 period; in natural logarithms in regressions).
Liquid Liabilities (LL)	Liquid liabilities of the financial system (currency plus demand and interest-bearing liabilities of banks and nonblank financial intermediaries divided by GDP, times 100 (average over the 1960-1995 period; in natural logarithms in regressions).
Commercial-Central Bank (CCB)	Assets of deposit money banks plus central bank assets, times 100 (average over the 1960-1995 period; in natural logarithms in regressions).
Inequality (Gini)	Gini Coefficient on Income Distribution, in natural logarithms in regressions.
Initial Income per capita	Logarithm of real per capita GDP in 1960.
Average years of schooling	The log of 1 + Average years of schooling in total population in 1960.
Government size	Share of government expenditure in GDP, times 100, period average, in natural logarithms in regressions.
Openness to Trade	Trade share in GDP, times 100, period average, in natural logarithms in regressions.
Black Market Premium (period average)	Ratio of black market exchange rate and official exchange rate minus one, times 100, in natural logarithms in regressions.
Inflation Rate, period average	Inflation rate, times 100, in natural logarithms in regressions.
Number of revolutions	average number of revolution and coup d'etats
Number of assassinations	average number of assassinations per million population
Ethnic Diversity	index of ethnic fractionalization
English	English legal origin
French	Napoleonic legal origin
German	German legal origin
Scandinavian	Scandinavian legal origin, which is the omitted category

Source of Data: Beck, Levine and Loayza (2000a,b) and Deininger and Squire (1996).