International Studies Program

Working Paper 02-07
June 2002

Does One Size Fit All?: A Reexamination of the Finance and Growth Relationship

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Does One Size Fit All? : A Reexamination of the Finance and Growth Relationship

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June 2002

Abstract

The relationship between financial development and economic growth has received a lot of attention in the economic literature in recent years. The consensus finding, which has also become widely accepted by policymakers, is that financial development has a positive, monotonic effect on growth. In this paper, we propose that the relationship between financial development and growth may not be uniform, but varies according to the level of financial development of the country. In particular, we hypothesize that there exist three distinct regions of financial development. In the low region (countries with very low levels of financial development), additional improvements in financial markets have an uncertain effect on growth. In the intermediate region, financial development has a large, positive effect on growth. Finally, in the high region, additional financial improvements have a positive, but smaller effect on growth. We examine a panel of 74 countries using GMM dynamic panel techniques and find support for the different regions.

JEL Classification: O4, G1.
Key words: Financial development, economic growth.

The authors would like to thank the participants at the 2001 AEA meetings in New Orleans for their valuable comments and suggestions and Piriya Pholpirul for his excellent research assistance. Contact information: Department of Economics, Andrew Young School of Policy Studies, Georgia State University, Atlanta, GA 30303. e-mail: prcfkr@langate.gsu.edu (Rioja), nvalev@gsu.edu (Valev).

Does One Size Fit All?: A Reexamination of the Finance and Growth Relationship

I. Introduction

The relationship between financial development and economic growth has received a lot of attention in the economic literature in the last ten years. The predominant view is that the increased availability of financial instruments and institutions reduces transaction and information costs in an economy. Well-developed financial markets, then, help economic agents hedge, trade, and pool risk raising investment and economic growth. While many economic thinkers (e.g., Schumpeter, 1912, Robinson, 1952, Hicks, 1969, McKinnon, 1973, and Fry, 1995) had discussed the relationship between financial development and growth, advances in computing power and the availability of economic data for a large number of countries in the late 1980s launched the large-scale empirical literature on the subject. Specifically, a series of empirical articles by King and Levine (1993a, 1993b, 1993c) brought the discussion to the forefront of economic literature in the 1990s.[1] The usual result from this literature has been that financial development has a positive, monotonic effect on growth.[2] However, we believe this result is not entirely correct when one takes a closer look at the data.

Using a broad sample of 74 countries during the 1960-1995 period, we find that the effect of finance on growth is not uniformly positive and even when positive its size differs. Our results suggest that financial development exerts a strong positive effect on economic growth *only* once it has reached a certain size threshold, i.e., in what we call the "middle" region. In the "low" region (below this threshold), the effect is uncertain as different empirical measures of financial development suggest a negative effect, zero effect or a positive effect. At the other end, in the "high" region, the growth effect of financial development declines once it reaches very high levels.

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[1] Other empirical work in this vein includes Gelb (1989), Roubini and Sala-i-Martin (1992), Pagano (1993), Levine (1997, 1998), Levine, Loayza, and Beck (2000), Beck, Levine, and Loayza (2000).
[2] Some studies have challenged this view. For example, Demetriades and Hussein (1996) and Luintel and Khan (1999) reject the notion of causal relationship from finance to growth.

While precise measures of these effects are important to the academic literature, they are also essential for the policy arena. Financial market reform is high on the agenda of many countries and is frequently addressed in policy prescription packages by the IMF and the World Bank. It is important to know how financial development policies will affect growth. In fact, one of the reasons why financial sector development is interesting as a determinant of growth is that there is much a government can do to foster or restrain it. All dramatic efforts to liberalize financial sectors in recent decades are based on the belief in a strong positive effect of finance on growth. Sometimes, the expected positive growth effects come true. However, in other instances, rapid growth of financial sectors has lead to crises and lower growth. Often financial development policies have been subsequently reversed.[3] Hence, more precise estimates are needed.

The proposition that the effect of finance on growth is not uniform across countries and over time is not new. Demetriades and Hussein (1996), De Gregorio and Guidotti (1995), and Odedokun (1996) point out that finance has a different effect on growth in different countries or time periods. Levine et. al. (2000) and De Gregorio and Guidotti (1995) show that the effect declines as the level of financial development increases.[4] We provide a structure that fits those results by explicitly allowing the effect of finance on growth to differ and by showing that the difference can, at least partially, be attributed to scale and diminishing returns effects in the development of financial sectors.

There are several theoretical justifications for the three regions we propose. Concerning the low region, a number of arguments point to the importance of economies of scale effects. First, larger financial sectors allow greater opportunities for pooling and managing risk.[5] Hence, a large financial market may be more efficient than a small one. Second, the experiences of many countries have decisively shown that expansion in the financial sector produces sound results only if the regulatory and supervisory authorities have enough expertise to manage that expansion.[6] Consequently, since financial sector "expertise" is accumulated in a learning-by-doing manner, the financial sector may have

[3] In a widely cited paper, Diaz-Alejandro (1985) discusses liberalization policies and financial crashes in Latin America.
[4] This is done implicitly in Levine et al. (2000) as their key explanatory variable is the natural logarithm of financial development.
[5] Although econometrically elusive, this is a textbook presumption in the banking literature. See Hughes (1999) for a review of this literature.

to develop to a certain size before the rules of its functioning are sophisticated and regulators are more effective. Third, Lee (1996) shows that a similar process of learning-by-doing takes place with lending decisions as lenders acquire project specific information by making investment decisions. Fourth, Acemoglu and Zilibotti (1997) develop a model where projects with higher rates of return are indivisible and have minimum size requirements. In that environment, the financial sector has to develop a certain minimum size before sufficient funds can be pooled together to finance such larger projects.[7]

Concerning the high region, the theoretical literature guides us to expect that the effect of finance on growth will decline with further improvements. This is due to diminishing returns (Greenwood and Jovanovic, 1990) and because in countries with highly developed financial markets, much of the allocation of savings occurs through non-bank channels (De Gregorio and Guidotti, 1995), which is not readily captured using standard measures for financial development.[8]

In order to test for these differential effects, we use recent generalized method of moments (GMM) dynamic panel data techniques, which can deal with the possible simultaneity between financial development and economic growth, so as to concentrate on the causal effect of the exogenous component of financial development on economic growth. Using panel data also allows us to control for country-specific effects and to incorporate information from individual countries over time.

The paper proceeds as follows. Section II describes some observations from the data to motivate the analysis. Then, Section III presents the methodology; Section IV describes the results; and Section V concludes.

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[6] See Sundararajan and Balino (1991) for a review of experiences with banking crises.

[7] The existence of scale effects suggests the possibility of "poverty traps," an equilibrium condition of low financial development and low economic development. Lee (1996) and Berthelemy and Varoudakis (1996) study this problem theoretically and empirically. Saint-Paul (1992) similarly proposes a low and a high equilibrium.

[8] Levine and Zervos (1998) discuss the relative growth importance of bank-based versus stock-market-based financial development.

II. Some observations from the data

To begin our discussion, we present several observations that point to the need for a more detailed examination of the standard hypothesis of a positive effect of finance on growth across the board. The Appendix presents real per capita GDP growth rates and financial development data for 74 countries during the 1966-95 period. Three measures of financial development are shown in the Appendix and are later used in the empirical section. However, at this stage we only discuss the Private Credit measure, which is defined as credit issued by deposit money banks and other financial institutions to the private sector as percent of GDP. Private Credit is a commonly used measure in the literature (e.g., Levine et al., 2000).

First, consider countries that had low Private Credit in 1966-70 and did not raise it much by 1991-95; e.g., Haiti. Private Credit in Haiti was 0.02 in the earlier period and 0.11 in the latter period. Notice also that Haiti grew -1.46% per year over 1966-1995. Similarly, Private Credit in Senegal went from 0.15 to 0.22. Senegal's average growth over 1966-95 was also negative at -0.48% per year. In general, we observe that most countries that had low Private Credit, and did not increase it much, had a poor growth performance. These countries would fall in our hypothesized low region.

Second, consider Thailand where Private Credit was a low 0.15 in 1966-70, but increased to 1.01 by 1991-95. Thailand grew a very high 5.18% per year over the 1966-95 period. Similarly, Cyprus increased its Private Credit from 0.43 to 1.00 and grew 5.87% per year. In general, countries that started with moderate levels of Private Credit and increased it significantly grew the most. These countries would fall under our hypothesized middle region.

Third, consider countries like Switzerland that had an already high level of Private Credit, 1.16, in 1966-70. While Switzerland's Private Credit rose from 1.16 to 2.04, their growth performance was only average: 1.47% per year. The U.S. also displays a similar pattern as Private Credit increased from 0.98 to 1.48, but the country grew only an average of 1.84% per year.

While clearly these are only casual observations from the data, they do indicate that there may be more to the financial development-growth relationship than the standard, monotonically increasing relationship espoused in the empirical literature. We now turn to describing the methodology and data for formally testing our hypothesis.

III. Methodology and Data

Following Levine et al. (2000) and Beck et al. (2000), we use recently developed dynamic panel generalized-method-of-moments (GMM) techniques to address potential endogeneity in the data.[9] Let y_{it} be the logarithm of real per capita GDP in country i at time t. We are interested in the following equation:

(1) $$y_{i,t} - y_{i,t-1} = (\alpha - 1)y_{i,t-1} + \beta' X_{i,t} + \eta_i + \varepsilon_{i,t}$$

where $y_{i,t}$ - $y_{i,t-1}$ is the growth rate in real per capita GDP, $X_{i,t}$ is a set of explanatory variables, including our measures for financial development, η_i captures unobserved country-specific effects, and ε_{it} is an error term. Rewrite equation (1) as:

(2) $$y_{i,t} = \alpha y_{i,t-1} + \beta' X_{i,t} + \eta_i + \varepsilon_{i,t},$$

and take first differences to eliminate the country-specific effect:

(3) $$y_{i,t} - y_{i,t-1} = \alpha\left(y_{i,t-1} - y_{i,t-2}\right) + \beta'\left(X_{i,t} - X_{i,t-1}\right) + \left(\varepsilon_{i,t} - \varepsilon_{i,t-1}\right).$$

By construction, in equation (3), the lagged difference in per capita GDP is correlated with the error term, which along with the potential endogeneity of the explanatory variables X, requires the use of instruments. The GMM *difference* estimator uses the lagged levels of the explanatory variables as instruments under the conditions that the error term is not serially correlated and that the lagged levels of the explanatory

[9] This method is fully described in Arellano and Bond (1991), Arellano and Bover (1995), and Blundell and Bond (1998).

variables are weakly exogenous (i.e., they are uncorrelated with future error terms). Then the following moment conditions are used to calculate the difference estimator:

$$(4) \qquad E\left[y_{i,t-s}\left(\varepsilon_{i,t}-\varepsilon_{i,t-1}\right)\right]=0 \quad for \quad s \geq 2; t=3,....,T,$$

$$(5) \qquad E\left[X_{i,t-s}\left(\varepsilon_{i,t}-\varepsilon_{i,t-1}\right)\right]=0 \quad for \quad s \geq 2; t=3,....,T.$$

Since persistence in the explanatory variables may adversely affect the small-sample and asymptotic properties of the difference estimator (Blundell and Bond, 1998), the difference estimator is further combined with an estimator in levels to produce a *system* estimator. The inclusion of a levels equation also allows us to use information on cross-country differences, which is not possible with the *difference* estimator alone.

The equation in levels uses the lagged differences of the explanatory variables as instruments under two conditions. First, the error term is not serially correlated. Second, although there may be correlation between the levels of the explanatory variables and the country-specific error term, there is no correlation between the difference in the explanatory variables and the error term. This yields the following stationarity properties:

$$(6) \qquad E\left[y_{i,t+p}\eta_i\right]=E\left[y_{i,t+q}\eta_i\right] \quad and \quad E\left[X_{i,t+p}\eta_i\right]=E\left[X_{i,t+q}\eta_i\right] \quad \text{for all } p \text{ and } q.$$

The additional moment conditions for the regression in levels are:

$$(7) \qquad E\left[\left(y_{i,t-s}-y_{i,t-s-1}\right)\left(\eta_i+\varepsilon_{i,t}\right)\right]=0 \quad for \quad s=1$$

$$(8) \qquad E\left[\left(X_{i,t-s}-X_{i,t-s-1}\right)\left(\eta_i+\varepsilon_{i,t}\right)\right]=0 \quad for \quad s=1.$$

In summary, the GMM *system* estimator is obtained using the moment conditions in equations (4), (5), (7), and (8). Following Blundell and Bond (1998), we use two specifications tests: the Sargan test which tests the validity of the instruments, and a test that the error term of the difference equation is not serially correlated.

Recall that three hypothesized stages of financial development are the essence of this paper. In order to capture these, we first create the dummy variables LR (Low

Region) and HR (High Region) such that LR is equal to 1 if financial development is below a certain lower threshold and zero otherwise. Similarly, HR equals 1 if financial development is greater than a certain upper threshold, zero otherwise. Next, the LR and HR dummies are interacted with the financial development (FD) variable as follows: $\beta_0 FD_{it} + \beta_1 FD_{it} * LR_{it} + \beta_2 FD_{it} * HR_{it}$. With this specification, the effect of financial development on growth in the low region is $\beta_0 + \beta_1$; in the middle region it is β_0; and in the high region it is $\beta_0 + \beta_2$. The estimated effects for each region are reported in the Results section.

Of course, where exactly the thresholds are (if they exist) is not known a priori. Hence, we estimate the model repeatedly varying the location of both thresholds over a wide range of the distribution of each financial development measure.[10] We use three financial development measures, which are commonly adopted in the literature: Private Credit (already described above), Liquid Liabilities, and Commercial vs. Central Bank. Liquid Liabilities is defined as currency plus demand and interest-bearing liabilities of banks and non-bank financial intermediaries as percent of GDP. This is a size or "financial depth" measure that has been used in the literature by Goldsmith (1969) and King and Levine (1993b) among others. Commercial vs. Central Bank is defined as commercial bank assets divided by commercial bank plus central bank assets. This measures the relative importance of commercial banks vs. central banks in allocating savings. Presumably, commercial banks are better at evaluating the potential returns and risks of various projects.

The data set consists of a panel of observations for 74 countries for the period 1961-1995. This is the same data set used by Levine et al. (2000).[11] The data are averaged over five-year intervals: 1961-1965, 1966-1970, …, 1991-1995, so there are seven observations per country when available. Table 1 presents descriptive statistics for all the variables. The control variables are: initial income per capita; average years of schooling; government size (government spending/GDP), openness to trade ((exports + imports)/GDP); the average inflation rate; and the black market premium. This is a list of

[10] This strategy has also been used by Chong and Zanforlin (1999).

control variables commonly used in this literature (e.g., Beck et al., 2000, Levine et al., 2000).[12] We also include time dummies to capture period-specific effects.

IV. Results

In order to ascertain the existence and location of the proposed low and high thresholds, the model is estimated repeatedly varying the thresholds over a wide range. The low threshold is alternatively placed in the 10th, 15th, 20th, 25th, 30th, 35th, 40th , and 45th percentiles of the distribution of each financial development measure. Similarly, the high threshold is placed at the 55th, 60th, 65th,…, and 90th percentiles. Each low threshold is paired with every possible high threshold, so a total of 64 regressions are run for each of our three measures.

For each of the three financial development variables, we present two tables of results. The first table shows estimates without regions (monotonic relationship) and with regions (non-monotonic relationship) for comparison purposes. The estimated coefficients for the control variables are also presented in the first table. In the second table, we only present coefficient estimates for the financial development variables using several different thresholds for the high and low regions. We choose to report nine sets of results for each financial development variable where we see strongest evidence of all three regions.[13] These estimates are obtained using the same control variables as in the first table. Results using Private Credit are reported in Tables 2a and 2b; Liquid Liabilities in Tables 3a and 3b; and Commercial-Central Bank in Tables 4a and 4b.

[11] Levine et al. (2000) use the natural logarithm of the financial development measures in their estimation. Conversely, we do not use logs of the financial development variables since this would smooth out the potential structural breaks in the financial development-growth relationship.

[12] The rationale for including these control variables is as follows. First, the initial level of real per capita GDP controls for the convergence effect implied in the standard Solow-Swan growth theory. Second, average years of secondary schooling is a measure of educational attainment which controls for the level of human capital in the country. Third, government size, the inflation rate, and openness to trade are all controls for policy in the country. Large government sectors and high inflation are presumed to affect growth adversely, while more openness to trade is presumed to affect growth positively.

[13] Results of all 192 (64 x 3) regressions are not reported for brevity, but are available from the authors on request.

Private Credit

In general, Private Credit appears to have a negative effect on growth in the low region, while it has a positive effect in the middle and high regions. In addition, we observe that the positive effect in the middle region is larger than in the high region.

Consider the estimates in Table 2a where the low threshold is placed at the 20th percentile (Private Credit < 0.12) and the high threshold at the 65th percentile (Private Credit > 0.37). As regression (2) shows, the effects are statistically significant and of different size for all three regions. In the low region, the estimated coefficient is -0.152, which means that a 0.10 percentage point increase in Private Credit (for example from 0.01 to 0.11) would *decrease* the growth rate by 1.52 percentage points (e.g., from 2.62% to 1.10% per year).[14] In the middle region (0.12 < Private Credit < 0.37) the coefficient is 0.045, so a 0.10-point increase in Private Credit would lead to a 0.45 percentage points increase in the growth rate. Finally, the coefficient for the high region 0.024, which is about half of that in middle region (0.045).[15]

In comparison, without regions, as it is commonplace in the literature, we obtain a positive, statistically significant and monotonic relationship. As regression (1) shows, the estimated coefficient for Private Credit is 0.033, i.e. a 0.10-point increase in Private Credit raises growth by 0.33 percentage points regardless of the position of the country.

While the results discussed above use low and high thresholds at 20th and 65th percentiles, varying these to 15th percentile for low and 60th and 70th percentile for high yield very similar results (Table 2b). Once the thresholds are moved much past these values, some of the regions start to merge together and become not statistically significant (using the 25th percentile as low threshold, for example).

In summarizing these results, the most striking finding is the negative effect in the low region. It is interesting to see how many countries fall in the low region. As data in the Appendix show, in 1966-70, 13 countries out of 65 for which we have data were in

[14] De Gregorio and Guidotti (1995) report similar results of a negative effect of finance on growth in a sample of Latin American countries. Lindh (2000) develops and tests a model where financial development occurs in stages as resources are redirected from the real to the financial sector. In that framework, expansion in the financial sector may lead to a slowdown in economic growth.

[15] Note that Table 2a also presents the estimated coefficients for the control variables. Most of these are statistically significant and of the expected sign, with the exception of openness to trade which was expected to have a positive effect. The Sargan tests are consistent with the instruments being correlated

the low region (defined as Private Credit < 0.12). By 1991-95, there were 11 countries out of 73. [16]

Liquid Liabilities

How different are the results using the Liquid Liabilities measure (presented in Tables 3a and 3b)? One difference is that the effect in the low region is not statistically different from zero. The effects in the middle and high regions, however, are similar to the ones obtained using Private Credit. Consider, for example, the low threshold placed at the 20th percentile (Liquid Liabilities < 0.20) and the high threshold at the 70th percentile (Liquid Liabilities > 0.50). The full results of this specification are presented in Table 3a, regression (2). The coefficient in the low region is 0.025, but is not statistically different from zero. Consequently, raising Liquid Liabilities in this low region appears not to help growth. As the Appendix shows, 20 countries out of 65 for which we have data fell in this low region in 1966-70. In 1991-95, there were 9 countries out of 72 in this region.

Conversely, the effect in the middle region is significantly positive, 0.061. A 0.10-point increase in Liquid Liabilities would lead to a 0.61 percentage points increase in the growth rate. As before, the coefficient for the high region (0.037) is significant, positive, and smaller than that of the middle region.

Commercial vs. Central Bank

Finally, consider the results using the Commercial vs. Central Bank (CCB) measure presented in Tables 4a and 4b. The striking result is that, in the low region (20th percentile), the effect is statistically significant, *positive*, and economically large. The estimate is 0.126, which implies that a 0.10 increase in CCB leads to a 1.26 percentage points increase in the growth rate. In 1991-95, 11 countries out of 74 were in this low region as the Appendix shows. This is very different from the results found for the other two specifications which yielded negative or zero coefficients.[17]

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with the residuals. The Serial Correlation test rejects the null that the errors in the first-difference regression exhibit no serial correlation.

[16] The Appendix can also be used to identify countries in the middle and high regions.

[17] Note from Table 4b that a positive, significant estimate is found for this low region even when changing the low threshold to the 25th percentile, so it is pretty robust.

Concerning the other two regions, Table 4a shows that CCB has a statistically significant and positive effect. As before, the high region's (75^{th} percentile) coefficient (0.086) is lower than the middle region's (0.096). Nevertheless, the effects are the largest in the low region (0.125). Hence, increasing CCB has large payoffs even early.

Discussion of Results

We find evidence of differential effects of financial development on growth depending on the position of a country. For every financial development measured used, we find that there is indeed a large positive effect in a middle region. Also, the effect remains positive, but diminishes as countries reach the high region.

The results for the low region, however, are not uniform for the different financial development measures. The effect is negative when using Private Credit, zero when using Liquid Liabilities, and positive when using Commercial vs. Central Bank. This has important implications for developing countries with still low financial development levels. One explanation is that each of these financial sector proxies measures somewhat different things. For instance, Liquid Liabilities is a size measure, which may not entirely reflect the effectiveness of the financial sector. In developing countries, sometimes cheap and abundant credit has been issued by government directive or by official banks without many questions about the expected productivity of the project. As many of these projects later fail, the increase in Liquid Liabilities may not lead to higher growth rates.

The Commercial vs. Central Bank (CCB) measure is somewhat of an improvement as it measures the importance of commercial bank assets with respect to central bank assets. A larger share of the country's savings being allocated by commercial banks is presumed to be more efficiently allocated. This argument seems to fit the result that increases in CCB have large positive effects on growth in the low region. Consequently, the growth rate rises in countries where commercial banks are becoming more important (i.e., CCB is increasing) relative to the central bank.

Private Credit is the preferred measure of Levine et al. (2000) as it "isolates credit issued to the private sector" (p.38). It includes credit issued by banks and other financial intermediaries, so it is surprising to find it has a negative effect on growth in the low region. A possible explanation is that while the credit is issued to the private sector, some of it may be issued by central banks, government "development" banks, or official directive, not always based on expected future profitability. Hence, project failure and bankruptcies could lead to lower economic growth.

As we pointed out, the low region of financial development is not negligible as a number of developing countries are still there. In light of our results, an important policy question is how a country moves to the middle region where the payoff from financial development appears more certain. The threshold to reach a middle region seems fairly low (e.g., about 0.12 for Private Credit; 0.20 for Liquid Liabilities) suggesting that the effect of finance on growth kicks in fairly early. Nevertheless, papers that study poverty traps (e.g., Saint-Paul, 1992) show that sustained improvements in financial development can be difficult to engineer especially starting from such low levels.

V. Conclusion

A large empirical literature has assumed that the effects of financial development on growth are uniformly positive, and much policy advice has been based on these findings. This paper finds evidence for a differential effect in three distinct regions, which have been suggested in the theoretical literature, but have not been previously tested. The existence and location of such regions are tested using a large panel data set and state-of-the-art econometric procedures (which control for country-specific effects and endogeneity). The paper reconciles two branches in the empirical literature: one branch finds finance affects growth positively, the other finds no effect. Our findings do support economically significant positive effects in the middle and high regions. However, it is not clear what the effect is in countries in the low region. In fact, increasing some measures of financial development in these countries may have negligible or negative effects on economic growth. In this sense, the results suggest caution in forecasting the economic growth effects of financial sector expansion.

Bibliography

ACEMOGLU, DARON AND ZILIBOTTI, FABRIZIO, "Was Prometheus Unbound by Chance? Risk, Diversification, and Growth." *Journal of Political Economy*, 1997, 105(4), pp. 709-751.

ARELLANO, M. AND STEPHEN BOND, "Some Tests of Specification for Panel Data: Monte Carlo Evidence with an Application for Employment Equations," *Review of Economic Studies*, 1991, 58, 277-97.

ARELLANO, M. AND OLYMPIA BOVER, "Another Look at the Instrumental Variable Estimation of Error-Component Models," *Journal of Econometrics*, 1995, 68, 29-51.

BECK, THORSTEN, LEVINE, ROSS, AND LOAYZA, NORMAN, "Finance and the Sources of Growth", *Journal of Financial Economics*, 2000, 58(1,2), pp. 261-300.

BERTHELEMY, JEAN-CLAUDE AND VAROUDAKIS, ARITOMENE. "Economic Growth, Convergence Clubs, and the Role of Financial Development," *Oxford Economic Papers*, Apr 1996, 48(2), pp. 300-28.

BLUNDELL, R. and STEPHEN BOND, "Initial Conditions and Moment Restrictions in Dynamic Panel Data Models," *Journal of Econometrics*, 1998, 87, 115-143.

CHONG, ALBERTO AND LUISA ZANFORLIN, "Technology and Epidemics," IMF Working Paper 99/125, September 1999.

DE GREGORIO, J. AND PABLO GUIDOTTI, "Financial Development and Economic Growth," *World Development*, 1995, 23(3), 433-448.

DEMETRIADES, PANICOS AND KHALED HUSSEIN, "Does Financial Development Cause Economic Growth?" *Journal of Development Economics*, 1996, 51(2), 385-409.

DIAZ-ALEJANDRO, CARLOS, "Good-Bye Financial Repression, Hello Financial Crash," *Journal of Development Economics*, 1985, 19, 1-24.

FRY, MAXWELL J. *Money, interest, and banking in economic development*. Baltimore: John Hopkins U. Press, 1995.

GELB, ALAN H. "Financial Policies, Growth, and Efficiency", *World Bank PPR Working Paper*. No. 202, June 1989

GOLDSMITH, R.W. *Financial Structure and Development.* Yale University Press, New Haven, CT, 1969.

GREENWOOD, JEREMY and BOYAN JOVANOVIC, "Financial Development, Growth, and the Distribution of Income," *Journal of Political Economy*, Oct 1990, 98(5), 1076-1107.

HICKS, JOHN. *A Theory of Economic History*. Oxford: Clarendon Press, 1969.

HUGHES, JOSEPH, "Incorporating Risk into the Analysis of Production," *Atlantic Economic Journal*, 1999, 27(1), 1-23.

KING, ROBERT G. AND ROSS LEVINE, "Financial Intermediation and Economic Development," in *Financial intermediation in the construction of Europe*. Eds: COLIN MAYER AND XAVIER VIVES. London: Centre of Economic Policy Research, 1993a, 156-89

KING, ROBERT G. AND ROSS LEVINE, "Finance and Growth: Schumpeter Might Be Right," *Quarterly Journal Economics*, Aug 1993b, 108(3), 717-37

KING, ROBERT G. AND ROSS LEVINE, "Finance, Entrepreneurship, and Growth: Theory and Evidence," *Journal of Monetary Economics*, Dec. 1993c, 32(3), 513-42.

LEE, JAEWOO, "Financial Development by Learning," *Journal of Development Economics*, 1996, 50(1), 147-164.

LEVINE, ROSS, "Financial Development and Economic Growth: Views and Agenda" *Journal of Economic Literature*, 1997, 35(2), 688-726.

LEVINE, ROSS, "The Legal Environment, Banks, and Long-Run Economic Growth", *Journal of Money, Credit, and Banking*, Aug 1998, 30(3), 596-613.

LEVINE, ROSS, NORMAN LOAYZA, AND THORSTEN BECK, "Financial Intermediation and Growth: Causality and Causes," *Journal of Monetary Economics,* 2000, 46(1), 31-77.

LEVINE, ROSS AND SARA ZERVOS, "Stock Markets, Banks, and Economic Growth," *American Economic Review*, 1998, 88(3), 537-58.

LINDH, THOMAS, "Short-Run Costs of Financial Market Development in Industrialized Economies*," Eastern Economic Journal*, 2000, 26(2), 221-39

LUINTEL, KUL AND MOSAHID KHAN, "A Quantitative Reassessment of the Finance-Growth Nexus: Evidence From a Multivariate VAR," *Journal of Development Economics*, 1999, 60(2), 381-405.

MCKINNON, ROBERT I. *Money and capital in economic development*. Washington, D.C.: Brookings Institution, 1973.

ODEDOKUN, M.O., "Alternative Econometric Approaches for Analyzing the Role of the Financial Sector in Economic Growth: Time Series Evidence from LDC's," *Journal of Development Economics*, 1996, 50(1), 119-146.

PAGANO, MARCO. "Financial Markets and Growth: An Overview*,"* *European Economic Review*, Apr. 1993, 37(2-3), 613-22.

ROBINSON, JOAN, "The Generalizations of the General Theory," in *The rate of interest, and other essays*. London: Macmillan, 1952, pp. 67-142.

ROUBINI, NOURIEL AND XAVIER SALA-I-MARTIN, "Financial Repression and Economic Growth, " *Journal of Development Economics*, July 1992, 29(1) 5-30.

SAINT-PAUL, GILLES. "Technological Choice, Financial Markets, and Economic Development," *European Economic Review*, May 1992, 36(4), 763-81

SCHUMPETER, JOSEPH A. *Theorie der wirtschaftlichen Enwicklung [The Theory of economic development]*. Leipzig: Dunker & Humblot, 1912; translated by REDVERS OPIE. Cambridge, MA: Harvard U. Press, 1934

SUNDARARAJAN, V. AND THOMAS BALINO (edts.). "Banking Crises: Cases and Issues." International Monetary Fund: Washington, D.C., 1991.

Table 1
Descriptive statistics, 1961-1995, 74 countries.

Variable	GDP growth	Initial income per capita	Average years of secondary schooling	Private credit	Commercial-central bank	Liquid liabilities	Govern-ment size	Openness to trade	Inflation rate	Black market premium
Mean	0.017	3883	1.12	0.37	0.76	0.41	0.14	0.55	0.16	0.6
Maximum	0.13	20134	5.15	2.05	1.00	1.91	0.45	2.00	3.44	109.9
Minimum	-0.10	107	0.00	0.003	0.12	0.05	0.04	0.09	-0.03	-0.05
Standard deviation	0.03	4792	0.94	0.23	0.20	0.25	0.06	0.30	0.32	5.52
Correlations										
GDP growth	1.00									
Initial income per capita	0.10	1.00								
Average years of secondary schooling	0.15	0.69	1.00							
Private credit	0.07	0.76	0.61	1.00						
Commercial-central bank	0.28	0.51	0.32	0.58	1.00					
Liquid liabilities	0.21	0.62	0.50	0.84	0.49	1.00				
Government size	-0.01	0.44	0.26	0.23	0.25	0.23	1.00			
Openness to trade	0.07	0.01	0.03	0.05	0.18	0.10	0.19	1.00		
Inflation rate	-0.27	-0.15	-0.05	-0.21	-0.24	-0.21	0.03	-0.19	1.00	
Black market premium	-0.18	-0.07	-0.05	-0.07	-0.10	-0.02	0.09	-0.08	0.53	1.00

Table 2a
Financial Development and Growth: Dynamic Panel Regression, System Estimator.
Dependent variable: growth rate of real per-capita GDP.

Regressors	(1)	(2)
Low Region (Private Credit < 0.12)	- -	-0.152 *(0.001)*
Private Credit	0.033 *(0.001)*	0.045 *(0.030)*
High Region (Private Credit > 0.37)	- -	0.024 *(0.025)*
Initial income per capita[a]	-0.010 *(0.002)*	-0.005 *(0.345)*
Government size	-0.060 *(0.052)*	-0.075 *(0.094)*
Openness to trade	-0.025 *(0.001)*	-0.019 *(0.095)*
Inflation[b]	-0.001 *(0.902)*	-0.010 *(0.372)*
Average years of secondary school	0.005 *(0.024)*	0.005 *(0.237)*
Black market premium[b]	-0.023 *(0.001)*	-0.019 *(0.001)*
Dummy 65-70	0.002 *(0.129)*	0.002 *(0.507)*
Dummy 71-75	-0.004 *(0.044)*	-0.003 *(0.247)*
Dummy 76-80	-0.005 *(0.012)*	-0.008 *(0.009)*
Dummy 81-85	-0.024 *(0.001)*	-0.025 *(0.001)*
Dummy 86-90	-0.015 *(0.001)*	-0.016 *(0.001)*
Dummy 91-95	-0.021 *(0.001)*	-0.023 *(0.001)*
Constant	0.011 *(0.001)*	0.078 *(0.028)*
Number of observations	456	456
Sargan test[c] *(p-value)*	*0.97*	*0.99*
Serial correlation test[d] *(p-value)*	*0.54*	*0.67*

Note: Numbers in parenthesis are p-values.
[a] In the regression, this variable is included as log (variable).
[b] In the regression, this variable is included as log (1+variable).
[c] The null hypothesis is that the instruments used are not correlated with the residuals.
[d] The null hypothesis is that the errors in the first-difference regression exhibit no second-order serial correlation.

Table 2b
Financial Development Growth Effects with Regions: Private Credit (PC)

	High Region PC>0.30 (60th percentile)	High Region PC>0.37 (65th percentile)	High Region PC>0.43 (70th percentile)
Low Region PC<0.10 (15th percentile)	-0.131 *(0.050)* 0.067 *(0.001)* 0.028 *(0.001)*	-0.074 *(0.025)* 0.080 *(0.001)* 0.037 *(0.001)*	-0.203 *(0.010)* 0.011 *(0.586)* 0.034 *(0.001)*
Low Region PC<0.12 (20th percentile)	-0.106 *(0.010)* 0.053 *(0.005)* 0.020 *(0.025)*	-0.152 *(0.001)* 0.045 *(0.030)* 0.024 *(0.025)*	-0.197 *(0.001)* 0.007 *(0.383)* 0.026 *(0.010)*
Low Region PC<0.14 (25th percentile)	0.016 *(0.750)* 0.044 *(0.100)* 0.019 *(0.100)*	0.088 *(0.100)* 0.073 *(0.010)* 0.033 *(0.005)*	-0.019 *(0.750)* 0.016 *(0.480)* 0.033 *(0.001)*

Note: Estimates are for Low, Middle and High Regions respectively. Numbers in parenthesis are p-values.

Table 3a
Financial Development and Growth: Dynamic Panel Regression, System Estimator.
Dependent variable: growth rate of real per-capita GDP.

Regressors	(1)	(2)
Low Region (LL <0.20)	- -	0.025 *(0.500)*
Liquidity Liabilities (LL)	0.016 *(0.030)*	0.061 *(0.001)*
High Region (LL > 0.50)	- -	0.037 *(0.001)*
Initial income per capita[a]	-0.005 *(0.266)*	-0.009 *(0.076)*
Government size	-0.109 *(0.003)*	-0.128 *(0.007)*
Openness to trade	-0.025 *(0.001)*	-0.016 *(0.092)*
Inflation[b]	-0.034 *(0.001)*	-0.016 *(0.053)*
Average years of secondary school	0.006 *(0.150)*	0.009 *(0.050)*
Black market premium[b]	-0.021 *(0.001)*	-0.023 *(0.001)*
Dummy 65-70	0.004 *(0.031)*	0.004 *(0.150)*
Dummy 71-75	-0.001 *(0.948)*	-0.003 *(0.256)*
Dummy 76-80	-0.001 *(0.786)*	-0.005 *(0.075)*
Dummy 81-85	-0.017 *(0.001)*	-0.023 *(0.001)*
Dummy 86-90	-0.007 *(0.001)*	-0.014 *(0.001)*
Dummy 91-95	-0.012 *(0.001)*	-0.021 *(0.001)*
Constant	0.089 *(0.016)*	0.102 *(0.013)*
Number of observations	456	456
Sargan test[c] *(p-value)*	*0.99*	*0.99*
Serial correlation test[d] *(p-value)*	*0.53*	*0.49*

Note: Numbers in parenthesis are p-values.
[a] In the regression, this variable is included as log (variable).
[b] In the regression, this variable is included as log (1+variable).
[c] The null hypothesis is that the instruments used are not correlated with the residuals.
[d] The null hypothesis is that the errors in the first-difference regression exhibit no second-order serial correlation.

Table 3b
Financial Development Growth Effects with Regions: Liquid Liabilities (LL)

	High Region LL>0.47 (65th percentile)	High Region LL>0.50 (70th percentile)	High Region LL>0.55 (75th percentile)
Low Region LL<0.20 (20th percentile)	-0.037 *(0.250)* 0.034 *(0.010)* 0.017 *(0.120)*	0.025 *(0.500)* 0.061 *(0.001)* 0.037 *(0.001)*	0.011 *(0.750)* 0.060 *(0.001)* 0.028 *(0.005)*
Low Region LL<0.21 (25th percentile)	0.011 *(0.750)* 0.048 *(0.001)* 0.022 *(0.050)*	0.058 *(0.120)* 0.064 *(0.001)* 0.038 *(0.001)*	0.039 *(0.250)* 0.063 *(0.001)* 0.026 *(0.010)*
Low Region LL<0.23 (30th percentile)	-0.032 *(0.400)* 0.046 *(0.015)* 0.024 *(0.053)*	-0.016 *(0.700)* 0.053 *(0.001)* 0.029 *(0.009)*	0.001 *(0.990)* 0.070 *(0.001)* 0.036 *(0.007)*

Note: Estimates are for Low, Middle and High Regions respectively. Numbers in parenthesis are p-values.

Table 4a
Financial Development and Growth: Dynamic Panel Regression, System Estimator.
Dependent variable: growth rate of real per-capita GDP.

Regressors	(1)	(2)
Low Region (CCB<0.60)	- -	0.126 *(0.001)*
Comm. vs. Central Bank (CCB)	0.049 *(0.001)*	0.096 *(0.001)*
High Region (CCB>0.94)	- -	0.086 *(0.001)*
Initial income per capita[a]	-0.019 *(0.001)*	-0.034 *(0.001)*
Government size	-0.061 *(0.019)*	-0.094 *(0.053)*
Openness to trade	-0.019 *(0.002)*	-0.029 *(0.002)*
Inflation[b]	-0.029 *(0.001)*	-0.044 *(0.001)*
Average years of secondary school	0.016 *(0.001)*	0.025 *(0.001)*
Black market premium[b]	-0.013 *(0.001)*	-0.007 *(0.018)*
Dummy 65-70	0.008 *(0.002)*	0.011 *(0.001)*
Dummy 71-75	0.003 *(0.266)*	0.007 *(0.024)*
Dummy 76-80	0.002 *(0.464)*	0.005 *(0.218)*
Dummy 81-85	-0.015 *(0.001)*	-0.010 *(0.015)*
Dummy 86-90	-0.008 *(0.001)*	-0.003 *(0.455)*
Dummy 91-95	-0.016 *(0.001)*	-0.008 *(0.057)*
Constant	0.137 *(0.001)*	0.206 *(0.001)*
Number of observations	475	475
Sargan test[c] *(p-value)*	*0.99*	*0.99*
Serial correlation test[d] *(p-value)*	*0.25*	*0.39*

Note: Numbers in parenthesis are p-values.
[a] In the regression, this variable is included as log (variable).
[b] In the regression, this variable is included as log (1+variable).
[c] The null hypothesis is that the instruments used are not correlated with the residuals.
[d] The null hypothesis is that the errors in the first-difference regression exhibit no second-order serial correlation.

Table 4b
Financial Development Growth Effects with Regions: Commercial Central Bank (CCB)

	High Region CCB>0.92 (70th percentile)	High Region CCB>0.94 (75th percentile)	High Region CCB>0.95 (80th percentile)
Low Region CCB<0.53 (15th percentile)	0.001	0.012	-0.011
	(0.006)	*(0.650)*	*(0.600)*
	0.041	0.045	0.035
	(0.005)	*(0.001)*	*(0.001)*
	0.044	0.042	0.036
	(0.001)	*(0.001)*	*(0.001)*
Low Region CCB<0.60 (20th percentile)	0.091	0.126	0.081
	(0.005)	*(0.001)*	*(0.010)*
	0.075	0.096	0.070
	(0.001)	*(0.001)*	*(0.001)*
	0.074	0.086	0.064
	(0.001)	*(0.001)*	*(0.001)*
Low Region CCB<0.65 (25th percentile)	0.088	0.087	0.084
	(0.001)	*(0.001)*	*(0.001)*
	0.079	0.080	0.072
	(0.001)	*(0.001)*	*(0.001)*
	0.082	0.073	0.065
	(0.001)	*(0.001)*	*(0.001)*

Note: Estimates are for Low, Middle and High Regions respectively. Numbers in parenthesis are p-values.

Appendix
Financial development variables,
1965-70 and 1990-95, 74 countries

Country	Real per capital GDP growth rate 1965-1995 average	Private sector credit / GDP 1965-1970 average	Private sector credit / GDP 1990-1995 average	Liquid Lia-bilities / GDP 1965-1970 average	Liquid Lia-bilities / GDP 1990-1995 average	Commercial bank/Central bank loans 1965-1970 average	Commercial bank/Central bank loans 1990-1995 average
Algeria	0.52		0.14		0.46	0.70	0.70
Argentina	0.95	0.15	0.14	0.22	0.14	0.69	0.83
Australia	2.11	0.31	0.79	0.48	0.60	0.91	0.96
Austria	2.84	0.45	0.92	0.52	0.89	0.96	0.99
Belgium	2.70	0.15	0.57	0.45	0.69	0.89	0.99
Bolivia	0.73	0.06	0.36	0.14	0.34	0.25	0.61
Brazil	2.66	0.11	0.26	0.17	0.22	0.59	0.69
Cameroon	0.36	0.14	0.16	0.15	0.19		0.67
Canada	2.31	0.45	0.80	0.48	0.76	0.86	0.94
Central Afr. Rep.	-0.50		0.05		0.18	0.90	0.48
Chile	1.86	0.07	0.54	0.12	0.35	0.46	0.69
Colombia	2.35	0.17	0.30	0.19	0.30	0.70	0.89
Costa Rica	1.70	0.25	0.14	0.19	0.36	0.78	0.67
Cyprus	5.87	0.43	1.00	0.55	1.25	0.99	0.87
Denmark	2.36	0.44	0.39	0.46	0.60	0.86	0.96
Dominican	2.21	0.08	0.21	0.15	0.23	0.60	0.89
Ecuador	2.28	0.17	0.18	0.18	0.22	0.60	0.62
Egypt	2.98	0.17	0.27	0.35	0.82	0.63	0.65
El Salvador	0.21	0.21	0.23	0.21	0.34	0.79	0.70
Finland	2.67	0.38	0.83	0.41	0.60	0.95	0.98
France	2.52	0.59	0.91	0.58	0.61	0.93	0.98
Gambia, The	1.00	0.19	0.11	0.22	0.26	0.94	0.68
Germany	2.36	0.63	0.96	0.53	0.65	0.96	0.99
Ghana	-0.49	0.08	0.04	0.19	0.16	0.46	0.24
Greece	3.43	0.29	0.31	0.39	0.58	0.77	0.65
Guatemala	1.07	0.13	0.13	0.17	0.22	0.78	0.97
Haiti	-1.46	0.02	0.11	0.09	0.35	0.14	0.35
Honduras	0.71	0.18	0.24	0.17	0.28	0.83	0.79
India	1.97	0.12	0.24	0.23	0.44	0.57	0.73
Indonesia	4.38		0.46	0.07	0.41		0.96
Iran	-1.96	0.22	0.26	0.26	0.42	0.62	0.48
Ireland	3.64	0.30	0.70	0.59	0.50	0.94	0.97
Israel	3.07	0.24	0.57	0.43	0.65	0.76	0.94
Italy	3.01	0.67	0.54	0.84	0.66	0.95	0.87
Jamaica	0.89	0.20	0.26	0.28	0.42	0.97	0.84
Japan	4.57	0.73	2.05	0.72	1.91	0.96	0.96
Kenya	1.44	0.12	0.30	0.24	0.46	0.95	0.69
Korea, South	6.77		1.06		0.62	0.82	0.98

Country	Real per capital GDP growth rate 1965-1995 average	Private sector credit / GDP 1965-1970 average	Private sector credit / GDP 1990-1995 average	Liquid liabilities / GDP 1965-1970 average	Liquid liabilities / GDP 1990-1995 average	Commercial bank/Central bank loans 1965-1970 average	Commercial bank/Central bank loans 1990-1995 average
Lesotho	3.68		0.19		0.38		0.70
Malawi	1.04		0.13		0.20	0.89	0.56
Malaysia	4.23	0.16	0.99	0.32	0.96	0.95	0.98
Mauritius	5.05	0.19	0.38	0.36	0.68	0.89	0.94
Mexico	1.73	0.28	0.33	0.28	0.27	0.75	0.97
Netherlands	2.29	0.57	1.40	0.58	0.83	0.95	0.99
New Zealand	1.26	0.27	0.82	0.55	0.74	0.75	0.96
Nicaragua	-1.31					0.88	0.22
Niger	-2.62	0.10	0.09	0.08	0.17	0.70	0.66
Norway	3.13	0.70	0.92	0.54	0.57	0.84	0.97
Pakistan	2.69	0.21	0.22	0.38	0.40	0.67	0.72
Panama	2.39	0.20	0.54	0.21	0.53	0.71	0.75
Papua New G.	1.73		0.25		0.32		0.78
Paraguay	1.98	0.14	0.20	0.15	0.25	0.49	0.71
Peru	0.60	0.16	0.08	0.20	0.13	0.78	0.97
Philippine	1.17	0.24	0.28	0.24	0.42	0.82	0.77
Portugal	3.77	0.56	0.49	0.80	0.74	0.97	0.97
Rwanda	-1.29	0.01	0.08	0.06	0.16	0.36	0.43
Senegal	-0.48	0.15	0.22	0.14	0.22	0.99	0.68
Sierra Leo	-0.86	0.05	0.02	0.13	0.11	0.81	0.22
South Africa	0.51	0.66	1.16	0.58	0.45	0.94	0.95
Spain	3.34	0.56	0.74	0.64	0.77	0.92	0.96
Sri Lanka	2.79	0.10	0.27	0.24	0.36	0.47	0.76
Sudan	0.06	0.11	0.06	0.18	0.27	0.93	0.25
Sweden	1.99	0.77	1.35	0.57	0.46	0.89	0.88
Switzerland	1.47	1.16	2.04	1.06	1.42	0.98	0.99
Syria	2.47	0.12	0.09	0.30	0.56	0.43	0.52
Thailand	5.18	0.15	1.01	0.28	0.76	0.82	0.98
Togo	0.53		0.23		0.32	0.99	0.71
Trinidad and T.	1.30	0.14	0.46	0.24	0.51	0.91	0.81
United Kingdom	1.94	0.19	1.11	0.34	0.93	0.60	0.97
United States	1.84	0.98	1.48	0.61	0.60	0.91	0.93
Uruguay	1.24	0.07	0.22	0.18	0.36	0.41	0.66
Venezuela	-0.63	0.24	0.18	0.24	0.31	0.93	0.71
Zaire	-2.25	0.03	0.01	0.21	0.04	0.27	0.21
Zimbabwe	0.61		0.27		0.43		0.70