Bangladesh

Financial Sector Distress and Lost Economic Growth

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by
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1. Introduction

The financial system in Bangladesh has suffered from years of systemic and chronic problems, represented by weak supervision and enforcement, deficient accounting and reporting practices, and more importantly, widespread loan defaults and delinquencies. It is widely perceived that major inadequacies in the financial sector have had a considerable growth restraining effect over the years, by inhibiting private investment activities and productivity growth, as well as promoting misallocation of resources.

It is paramount important that the government takes an urgent policy action to reform the mal-functioning financial sector. The main objective of such reforms is to develop a market oriented, disciplined modern system for mobilization of resources, efficient allocation of resources from both domestic and foreign sources, and reduction of poverty through sustained economic growth.

This study attempts to estimate the impact of financial sector distress on growth in Bangladesh, so as to address to the government the urgency and importance of policy reforms designed to promote financial intermediary development. While there are a number of case studies that analyze Bangladesh’s financial sector problems (for example, Rahim and Sohrabuddin [1988], Hossain and Rashid [1997], World Bank [1998], etc.), these have not yet led to a substantial and comprehensive reform action on the part of the government. The present study attempts to overcome the prior work by quantifying, by means of a formal statistical analysis, the cost of financial sector inefficiency in terms of lost economic growth, and to urge the government to a prompt policy action.

Our regressions analysis has provided empirical evidence that Bangladesh has indeed paid very large costs, measured by lost economic growth, because of its financial sector distress over the last two decades. Our results do not consider the question of how to reform the financial sector so as to promote economic growth. However, it is evident that financial sector reform holds a critical key for Bangladesh’s future.

This paper is organized as follows. Section 2 reviews the recent theoretical and empirical literature on finance and growth. Section 3 summarizes the main findings of our cross-country analysis, conducted to estimate the growth impact of financial sector distress in Bangladesh. Finally, Section 4 concludes the paper.

2. Financial Sector Development and Growth: Some Background

This section first reviews the theoretical and then empirical literature on the link between financial intermediates and economic growth, that is, what the financial system does and how it affects (and is affected by) economic growth.

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1 While providing valuable information, these studies typically rely heavily on subjective evaluations of financial system performance, and fail to estimate its impact on growth by systematically controlling for other elements determining economic development.
In reviewing the literature, we neglect a few important issues here. First, the theoretical review focuses on purely real economies and essentially ignores work on finance and growth in monetary economics. Second, we do not discuss the relationship between international finance and growth. For the sake of simplification, this section narrows its conceptual focus by studying the financial services available to an economy regardless of the origin of these services. Finally, in this paper we pay little attention on stock markets in discussing financial intermediary development, since Bangladesh’s stock market activities are still negligible compared with the banking sector’s, which account for a large proportion of the whole financial services.

2.1 Theoretical Discussion

Economic theory suggests that, by improving information asymmetries and lowering transaction costs, better functioning financial intermediaries mobilize savings, better identify investment opportunities, boost technological innovation and improve risk taking, and hence cause a causal influence on economic growth.

In a frictionless world, capital flows towards the most profitable activities and contracts are easily written that align the interests of managers and owners, while individuals can pool risks and can quickly exchange goods and financial claims at well-known prices. In this uncertain, less-than-perfect environment, however, there are large costs associated with acquiring information to identify profitable investments, monitoring managers and encouraging them to act in the best interest of firm owners, mobilizing capital from disparate savers and setting up the contractual and institutional arrangements for pooling risks and trading goods, services and financial contracts. Such high information and transaction costs may hinder resources being allocated to their highest value use, creating strong incentives for the setting-up of financial intermediation structures to mitigate these frictions.  

Well-functioning financial systems are more effective in reducing these costs associated with mobilizing and allocating resources for investment, consequently affecting long-run economic growth (see Figure 1). First, there is a direct effect of better savings mobilization on faster capital accumulation. This is particularly important in developing countries, where many production processes are typically constrained to economically inefficient scales in the absence of effective savings mobilization. Domestic funds provide a cheap and reliable source of funds for economic take-off, especially when the economy has difficulty in raising capital on international markets (Hellmann, et al. [1996]). Second, by identifying the most productive investment activities, efficient financial intermediaries improve the quality of resource allocation (i.e., generating a

2 See Levine [1997] for a comprehensive review of theoretical literature on financial development and economic growth.
3 In many developing countries a considerable amount of savings are not intermediated through the formal sector. In particular, there exists a significant savings potential in the rural (and/or semi-urban) sector in many developing countries. One of the reasons for the lack of savings mobilization is that banks simply do not cater to significant numbers of households (see Tellmann, et al. [1986]).
4 Also, better mobilization of savings permits the adoption of more efficient technologies that require an initially high level of investment.
higher rate of return on capital), and boost the rate of technological innovation, thereby accelerating long-run growth (Schumpeter [1912], Greenwood and Javanovic [1990], King and Levine [1993b], etc.).

From the microeconomic point of view, this can equivalently be stated that financial markets and institutions help a firm overcome problems of moral hazard and adverse selection that result from information asymmetries, thus reducing the cost of raising funds from sources external to the firm relative to the cost of internally generated cash flows. This is particularly the case for firms or industries that are most reliant on external financing for their growth.

While economists have long emphasized the role of financial intermediaries in spurring economic growth, others have argued that the level of economic development may also influence the development and structures of the financial system (for example, Robinson [1952], Lucas [1988]). According to this view, increased economic activities and industrialization create demands for particular types of financial arrangements, and the financial system responds automatically to these demands — that is, financial development is derivative in a Coasian sense. Nevertheless, as pointed out by Levine [1997], there is a comparatively less developed theoretical literature that demonstrates how changes in economic activity may influence financial systems (one of the most recent theoretical contribution is made by Harrison, et al. [1999], who develop an information-based model to show how the feedback between finance and growth operates).

2.2 Empirical Literature

A number of recent studies have tried to test empirically the importance of these theoretical links between financial intermediary development and economic growth. While many gaps still remain, both macro- and micro-level studies — broad cross-country growth regressions (e.g., Levine [1997], Levine, Loayza and Beck [1999], etc.); individual country studies (e.g., McKinnon [1973]); industry-level analyses (e.g., Rajan and Zingales [1998], Harrison, et al. [1999]); and firm-level investigations (e.g., Demirguc-Kunt and Maksimovic [1999]) — all demonstrate a strong, positive link between the level of financial development and economic growth. Specifically, they provide suggestive evidence that the functioning of the financial system, or lack of thereof, exerts a causal influence on the speed and pattern of output growth in the long-run, by raising total factor productivity growth rather than by stimulating private savings, which would be reflected in faster factor accumulation (Lavine and Zervos [1998]).

The issue of causality is central to the recent finance-growth literature. Among those macro-based studies, King and Levin [1993b] and Levine and Zervos [1998] use a broad cross-country regression framework based on the endogenous growth model and show,

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5 The first phase of the empirical cross-country literature on finance-growth started with the seminal work by Goldsmith [1969]. Renewed interests has resulted from the new growth literature. The early contributions to the second phase of the finance-development literature include Greenwood and Javanovic [1990], King and Levine [1993a, b], etc. See Gertler [1988], Pagano [1993] and Levine [1997] for literature surveys.
after systematically controlling for other factors affecting growth, that the predetermined component of financial development is a good predictor of growth over the next 10 to 30 years. Meanwhile, using time-series data, Neusser and Kugler [1998] and Rousseau and Wachtel [1998] find that financial development Granger-causes economic performance. Levine, Loayza and Beck [1999] take these studies a step further to examine causality using a dynamic panel technique, exploiting both the cross-country and time-series dimensions of the data, and conclude that financial intermediary development exerts a large, causal impact on economic growth.

While these macro-level analyses focus on aggregate causal effects of financial development on over-all economic performance, micro-based studies concentrate on the details of theoretical mechanisms through which financial development affects economic growth, thereby attempting to document the direction of causation between finance and growth. For example, Rajan and Zingales [1996] find evidence that US industries that rely more on external finance prosper more in countries with better developed financial markets. This is because under more efficient financial systems firms can enjoy lower cost of external finance (investment minus internal cash flow), and therefore can benefit from more profitable investment opportunities that drive growth. Similarly, Demirgüç-Kunt and Maksimovic [1996], using firms-level data from 30 countries, show that firms in countries with access to better functioning banks and equity markets grow at faster rates than they could have without this access. Hence, using industrial- and firm-level data, recent microeconomic research presents evidence consistent with the view that the level of financial development materially affects the rate and structure of economic development, a result obtained in the aggregate cross-country analyses (for other micro-based studies, see Jayaratne and Strahan [1996], Carlin and Mayer [1999], etc.).

Nevertheless, such empirical results do not necessarily imply that finance is always exogenous to economic growth. Undoubtedly, economic activity and technological innovation affect the structure and quality of financial systems. For example, innovations in telecommunications and computing have undeniably affected the development and structure of the financial services industry (see Harrison, et al. [1999] who, using cross-state US banking data, show that the cost of financial intermediation is decreasing with the level of output, although financial sector has causal effects on the real sector development). Yet the weight of evidence suggests that financial development is a fundamental feature of the process of economic growth and that a satisfactory understanding of the factors underlying economic growth requires a greater understanding of the evolution and structure of financial system (Levine [1997]).
Market frictions
* Information costs
* Transaction costs

Financial markets and intermediaries

Financial functions
* Mobilize savings
* Allocate resources
* Exert corporate control
* Facilitate risk management
* Ease trading of goods, services, contracts

Channels to growth
* Capital accumulation
* Technological innovation

Economic Growth

Figure 1. A Theoretical Approach to Finance and Growth
3. Empirical Analysis

This section summarizes the main findings of our empirical analysis. These findings will serve as a background to highlight the extremely underdeveloped state of Bangladesh’s financial system and its adverse impacts on growth. Although full descriptions are provided in Appendices 1 and 2, here we first explain briefly the methodology and data employed in the analysis.

3.1 Data and Methodology

In view of measuring empirically the growth impact of financial sector performance in the long-run, we run cross-country growth regressions, using two-stage least squares (2SLS). As in much of the recent finance-growth studies, such as La Porta, et al. [1997, 1998] and Levine, Loayza and Beck [1999], we regress the growth rate of real per capita GDP over (i) indicators of financial development (see below); and (ii) a set of conditioning information, which is to control systematically for other factors affecting long-run economic growth. The latter includes the logarithm of initial real per capita GDP and initial years of secondary schooling as proxies for initial level of income and investment in human capital accumulation, as well as the average black market exchange rate premium, which is a standard indicator of policy, price a and trade distortions in the literature (see for example Barro and Lee [1994], Barro and Sala-i-Martin [1995], etc.). To control for potential simultaneity bias, we use the legal origin variables as instrumental variables. See Appendix 1 for details.

Although not without limitations, this macro-based cross-sectional regression approach has two distinctive advantages. First, it allows us to quantify easily the impact of financial intermediary development on long-run economic growth. Second, it is relatively easy to obtain internationally comparable data for a broader set of countries, including countries like Bangladesh, for which reliable micro-level data are scarce. Note that the issue of causality is not specifically addressed in this empirical exercise, owing to the statistical limitation on the part of Bangladesh. As reviewed in Section 2, the empirical literature has more or less settled on the causality issue, and hence here we reasonably assume that reverse causality is not present in our empirical analysis.

As regards both financial and macroeconomic data for the empirical analysis, we draw on Levine Loayza and Beck [1999] for their database. In this database, Levine Loayza and Beck (hereafter, LLB) construct three indicators to measure financial sector development for a broad set of countries: (i) the ratio of liquid liabilities of the financial system to GDP, to capture the financial depth; (ii) the ratio of commercial bank assets to the whole

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6 There are a few drawbacks typical to the Barro-type regression analysis. First, since it is concerned with growth at the national level, it suffers from small numbers of observations, and therefore it can produce results which are too conceptual. For example in our paper, the results cannot, by nature, not consider the question of how to reform the financial sector so as to promote economic growth. Second, it can only provide limited control for the range of other factors such as savings rates and non-financial endowments, which may influence economic performance. One of typical drawbacks of the Barro-type regression analysis is that data are not always comparable across countries, because of the difference in data definition and measurement errors.
banking sector assets, as a proxy for the quality of resource allocation; and (iii) the ratio of the value of credits to the private sector to GDP, to measure the level of financial services available in the economy. Although each of these indicators is still an imperfect measure of how well financial intermediaries reach firms, monitor managers, mobilize savings, pool risk and ease transactions, together they provide a more comprehensive information on financial development, measured from three different angles. See Appendix 2 for further discussions on the measurement of financial sector development.

Comparable data are available for 69 countries as listed in Table A3. The values are averaged over the sample period 1976-95, which is chosen specifically to match the post-independence era of Bangladesh. Summary statistics are provided in Appendix 2.

3.2 Main Findings

The main findings of our cross-country analysis are as follows. The detailed analysis can be found in Appendix 1.

- On average, countries with a more developed financial system experienced faster growth rates of GDP per capita during the period 1976-95. Figures A1-A3 show the partial relationship between three financial development indicators and the growth rate of real per capita GDP, both of which are averaged over the period 1976-95. As in Figures A1-A3, financial development and growth exhibit a positive, non-linear relationship (see Figures A1-A3 for discussions).

- After controlling for initial conditions (income level and educational attainment) and macroeconomic and policy distortions, the empirical results indicate that the level of financial sector development is still positively related to per capita GDP growth rates (see Table A2).

- While other indicators show some reasonably significant results, the overall results concerning COMMERCIAL-CENTRAL BANK (Regressions c and d) do not appear to be significant, even jointly, although the magnitude of the coefficients for COMMERCIAL-CENTRAL BANK are very similar to those found in other papers. These results need to be treated cautiously because the data suffer from some problems. For example, it is difficult to distinguish private from public banks and development banks from commercial banks in many developing countries, including Bangladesh. We therefore do not count on these regression results hereafter.

- Besides being reasonably significant, the link between financial sector development and long-run growth is economically large. For example, the estimated coefficients presented in Table A2 imply a one standard deviation increase in LIQUID LIABILITIES (28.6) would raise per capita growth by 1.5 percent per year (Regression a). Similarly, a one standard deviation increase in PRIVATE CREDIT (34.5) would increase per capita growth by 2.1 percent per year (Regression f).

7 See Table A3 for standard deviations of LIQUID LIABILITIES and PRIVATE CREDIT.
Establishing appropriate financial sector policies is therefore crucial for policy makers because financial intermediaries provide services that are necessary for economic growth.

3.3 Bangladesh: Lost Growth

Our econometric analysis suggests that if Bangladesh's financial sector had been more developed over the period 1976-95, it could have achieved higher level of income per capita by today.

The value of LIQUID LIABILITIES for Bangladesh over the sample period was 25.4 percent of GDP, while the mean value for developing countries was 40.8 percent of GDP. The empirical results suggest that an exogenous increase in Bangladesh's LIQUID LIABILITIES that had brought it up to the sample mean for developing countries would have accelerated Bangladesh's real per capita GDP growth by about 0.72 percent per year. By the same token, a rise in Bangladesh's PRIVATE CREDIT to the developing country mean value for 1976-95, that is, from 14.1 percent to 30.0 percent of GDP, could have brought a 1.59 percent faster per capita GDP growth rate to Bangladesh every year.

Put it another way, the annual loss of growth from the less efficient financial sector – less efficient compared with developing country average – can be estimated to range as high as 0.72 – 1.59 percent a year. These figures are not trivial, considering that Bangladesh's per capita growth rate averaged about 2.25 percent per year during this period. Compounding over 20 years, the 0.72 – 1.59 percent additional growth every year indicates that Bangladesh's real GDP per capita would have been over 15.5 – 37.3 percent higher by 1995 than otherwise.

It is very important to emphasize at this point that these figures should not be misinterpreted or misquoted of themselves. The value of a coefficient varies depending on the sample period as well as the countries chosen in the sample. Hence, the figures above should by no means be interpreted as precise estimates of Bangladesh's lost growth due to financial distress. These are produced from a hypothetical calculation based on the cross-country analysis. What is important here is that financial sector inefficiency affects a country's long-run growth negatively, and that this impact can be economically large.

4. Conclusion

This paper has studied the empirical relationship between financial intermediary development and long-run economic growth, so as to quantify the cost of financial sector inefficiency in terms of lost economic growth in Bangladesh. Our regressions analysis

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8 This result follows from ln(40.8) – ln(25.4) = 0.474 (note the regressors are in logs), and 0.474 * 1.52 = 0.72, where 1.52 is the smaller of the two parameter values on LIQUID LIABILITIES from Table A2.

9 Similarly, from ln(30.0) – ln(14.1) = 0.755, and 0.755 * 2.1 = 1.59, where 2.1 is the smaller of the two parameter values on PRIVATE CREDIT from Table A2.

10 These figures are produced in the following way. Exp(0.0072*20) = 1.155, and exp(0.0159*20) = 1.373.
has provided empirical evidence that Bangladesh has indeed paid very large costs, measured by lost economic growth, because of its financial sector distress over the last two decades.

Financial sector reform holds a critical key for Bangladesh's future. It is paramount important that the government takes an urgent policy action to reform the malfunctioning financial sector. In a relatively closed economy like today, a badly functioning financial system has resulted in lower growth to the extent that foreign aid and domestic savings are misallocated. As Bangladesh becomes more open in the future, this effect would be magnified to the extent that (private) capital inflows channeled through the domestic financial system increase the total amount of savings that become misallocated. The government of Bangladesh is strongly urged to take prompt and comprehensive policy reforms. The main objective of such reforms is to develop a market oriented, disciplined modern system for mobilization of resources, efficient allocation of resources from both domestic and foreign sources, and reduction of poverty through sustained economic growth.
Appendix 1. Cross-country Regression Analysis

A1.1 Methodology

Our empirical analysis draws on the methodologies used in the recent studies, such as in La Porta, et al. [1997, 1998] and Levine, Loayza and Beck [1999]. To examine the link between financial development and long-term growth, we run pure cross-country regressions, where data for 69 countries are averaged over the period 1976-95, with one observation per country. As in much of the cross-country growth literature, the dependent variable is the growth rate of the real per capita GDP, also averaged over the period 1976-95.\(^\text{11}\)

It is possible to use panel data and exploit the causality issue, for example, using a GMM (Generalized Method-of-Moments) dynamic panel technique. However, as reported in LLB, a pure cross-sectional and a GMM dynamic panel estimators produce very consistent findings causality, i.e., financial intermediary development exerts a large, causal impact on economic growth. Since the panel data for Bangladesh are rather sketchy, our analysis relies only on a cross-sectional approach this time.

The explanatory variables are (i) the indicators of financial intermediary development; and (ii) a set of conditioning information, which is to control systematically for other factors affecting long-run economic growth. Specifically, we include the logarithm of initial real per capita GDP and the initial years of secondary schooling as proxies for initial level of income and investment in human capital accumulation, respectively. In addition, we include the average black market exchange rate premium, which is frequently used as a general indicator of policy, price and trade distortions in the standard cross-country growth literature (see for example Barro and Lee [1994], Barro and Sala-i-Martin [1995], etc.).

Following La Porta, et al. [1998] we use the legal origin variables as instrumental variables to control for potential simultaneity bias, thereby extracting the exogenous component of financial intermediary development. The legal origin indicators developed by La Porta, et al. [1998] are based on Reynolds and Flores [1996], who classify legal systems with European origins into four major legal families: the English common law, and the French, German and Scandinavian civil laws. These legal systems spread mainly through occupation and colonialism. Specifically, legal origin variables enter the cross-country regressions as dummies. The legal origin variables qualify appropriate instruments for financial development for two reasons. First, they are exogenous to economic growth during the sample period. Second, there is a strong reason to believe that the legal origin variables are strongly correlated with financial intermediary development. Naturally, a legal origin has a strong influence on a country’s legal treatment of shareholders, the laws governing creditor rights, the efficiency of contract enforcement and accounting standards. In other words, legal origin is strongly linked to

\(^1\) Besides examining the relationship between financial development and long-run real per capita GDP, Levin and Zervos [1998] also use three other growth indicators: the rates of real per capita physical stock growth, productivity growth and private saving.
legal, regulatory and informational characteristics, which define financial intermediary services (see La Porta, et al. [1997], Levine [1998], and LLB [1999]).

Table A1 shows regressions of the financial intermediary development indicators on the dummy variables for English, French and German legal origins, relative to Scandinavian origin which is captured by the constant. Some of these regressions also control for the level of real per capita GDP. As one can see, the statistical evidence indicates that financial sector development of a country is strongly linked to its legal origin.

The basic regression takes the form:

\[ GROWTH = \alpha + \beta \text{FINANCE} + \gamma' \text{[CONDITIONING SET]} + \varepsilon, \]

where the dependent variable, GROWTH, equals real per capita GDP growth, FINANCE is one of the financial intermediary indicators described in Appendix 2, and CONDITIONING SET represents a vector of conditioning information that controls for other factors related to economic growth. \( \varepsilon \) is the white noise error term. We use natural logarithms for all the explanatory variables to reflect a potential non-linear relationship between economic growth and various indicators. As explained above, the legal origin dummies enter the regressions as instrumental variables for FINANCE to examine whether cross-country variations in the exogenous component of financial intermediary development explain cross-country variations in the rate of economic growth.

A1.2 Regression Results

Table A2 presents six cross-country regressions, where the dependent variable is real per capita GDP growth rate, averaged over the 1976-95 period.

• On average, countries with a more developed financial system experienced faster growth rates of GDP per capita during the period 1976-95. Figures A1-A3 show the partial relationship between financial development indicator and the growth rate of real per capita GDP are averaged over the period 1976-95. As in Figures A1-A3, financial development and growth exhibit a positive, no-linear relationship (see Figures A1-A3 for discussions).

• After controlling for initial conditions (income level and educational attainment) and macroeconomic and policy distortions, the empirical results indicate that the level of financial sector development is still positively related to per capita GDP growth rates (see Table A2). The estimated coefficients of financial development indicators are very similar to those found in other studies (for example, LLB [1998, 1999]).

• While other indicators show some reasonably significant results, the overall results concerning COMMERCIAL-CENTRAL BANK (Regressions c and d) do not appear to be significant, even jointly, although the magnitude of the coefficients for COMMERCIAL-CENTRAL BANK are very similar to those found in other papers. These results need to be treated cautiously because the data suffer from some
problems. For example, it is difficult to distinguish private from public banks and development banks from commercial banks in many countries, including Bangladesh (for other drawbacks, see the discussion in Appendix 2).

• Besides being reasonably significant, the link between financial sector development and long-run growth is economically large. For example, the estimated coefficients presented in Table A2 imply a one standard deviation increase in LIQUID LIABILITIES (28.6) would raise per capita growth by 1.5 percent per year (Regression a). Similarly, a one standard deviation increase in PRIVATE CREDIT (34.5) would increase per capita growth by 2.1 percent per year (Regression f).

• Initial income enters with a significantly negative coefficient, and the size of the convergence coefficient is very similar to other studies. Average years of secondary schooling enters all the growth regression positively and significantly.

• We find support for the conditional-convergence hypothesis: we find a robust, negative correlation between the initial level income and growth over the 1976-95 period when the equation includes a measure of the initial level of investment in human capital.

• In the sample of countries and with the extensive set of control variables, the black market premium does not enter the growth regressions significantly, which confirms Levine and Renelt [1992]. Also, including the black market premium as an additional control variable does not significantly affect the results on the relationship between financial development and growth.

• We have used other economic and political indicators such as the size of the government, openness to trade, etc. for the conditioning information set. However, none of them appear robustly correlated with growth in the regressions in our specification.

• We have also run regressions using the initial value of each financial development indicator, instead of the period average. But our results are not statistically significant when our sample period (1976-95) is chosen (King and Levin's sample period is 1960-90).

• In sum, we find that financial intermediary development has a relatively, statistically significant relationship with economic growth, even after controlling for other factors associated with long-run economic performances. These results are consistent with the view that services provided by financial sectors are important for long-run economic growth.
Table A1. Legal Environment and Financial Intermediary Development

Financial Intermediary Development Indicators

<table>
<thead>
<tr>
<th>Dependent Variables</th>
<th>Liquid Liabilities</th>
<th>Commercial-Central Bank</th>
<th>Private Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reg. no.</td>
<td>(a)</td>
<td>(b)</td>
<td>(c)</td>
</tr>
<tr>
<td>Constant</td>
<td>-0.981</td>
<td>0.468</td>
<td>-0.007</td>
</tr>
<tr>
<td></td>
<td>(0.264)</td>
<td>(0.116)</td>
<td>(0.162)</td>
</tr>
<tr>
<td>English</td>
<td>0.226</td>
<td>-0.002</td>
<td>0.015</td>
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<tr>
<td></td>
<td>(0.108)</td>
<td>(0.125)</td>
<td>(0.067)</td>
</tr>
<tr>
<td>French</td>
<td>0.212</td>
<td>-0.017</td>
<td>-0.022</td>
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<tr>
<td></td>
<td>(0.108)</td>
<td>(0.125)</td>
<td>(0.067)</td>
</tr>
<tr>
<td>German</td>
<td>0.646</td>
<td>0.504</td>
<td>0.082</td>
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<tr>
<td></td>
<td>(0.141)</td>
<td>(0.164)</td>
<td>(0.087)</td>
</tr>
<tr>
<td>Income</td>
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<td></td>
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<tr>
<td></td>
<td>(0.027)</td>
<td></td>
<td>(0.016)</td>
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<tr>
<td>Obs. no.</td>
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<td>71</td>
<td>71</td>
</tr>
<tr>
<td>Prob (F-test)</td>
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<td>0.001</td>
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<tr>
<td>R-squared</td>
<td>0.50</td>
<td>0.21</td>
<td>0.49</td>
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</table>

Notes:
The coefficient standard errors are in parentheses.

It appears from the above regression results that while countries with a German legal origin have better developed financial intermediaries, those with a French legal origin tend to have less well-developed institutions than other countries.

According to La Porta, et al. [1998], countries with particular legal origins tend to create particular types of laws governing creditor rights and enforcement mechanisms, and accounting standards. For instance, English legal tradition countries have laws that emphasize the rights of creditors to a greater degree than the French, German and Scandinavian countries. In terms of enforcement quality, countries with a French legal heritage have the lowest quality of law enforcement, while countries with German and Scandinavian legal traditions tend to be the best at enforcing contracts. Furthermore, they show that countries with an English legal tradition tend to have much better accounting standards than French or German civil law countries.
Table A2. Financial Intermediary Development and Growth

Dependent variable: Real per capita GDP growth rate, averaged over 1976-95
Instrumental variables: Legal origin dummy variables

<table>
<thead>
<tr>
<th>Reg. no.</th>
<th>(a)</th>
<th>(b)</th>
<th>(c)</th>
<th>(d)</th>
<th>(e)</th>
<th>(f)</th>
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<td></td>
<td>(3.855)</td>
<td>(3.466)</td>
<td>(11.218)</td>
<td>(6.409)</td>
<td>(5.574)</td>
<td>(4.607)</td>
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<td>Liquid Liabilities</td>
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<td></td>
<td>(1.298)</td>
<td>(1.122)</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>Commercial-Central Bank</td>
<td>10.018</td>
<td>9.462</td>
<td>(7.888)</td>
<td>(8.325)</td>
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<tr>
<td>Private Credit</td>
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<td></td>
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<td></td>
<td>2.201</td>
<td>2.103</td>
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<tr>
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</tr>
<tr>
<td>Initial Income</td>
<td>-0.821</td>
<td>-0.955</td>
<td>-1.846</td>
<td>-1.189</td>
<td>-1.338</td>
<td>-1.230</td>
</tr>
<tr>
<td></td>
<td>(0.380)</td>
<td>(0.342)</td>
<td>(1.201)</td>
<td>(0.796)</td>
<td>(0.577)</td>
<td>(0.474)</td>
</tr>
<tr>
<td>Secondary Schooling</td>
<td>1.128</td>
<td>1.246</td>
<td>1.976</td>
<td>1.634</td>
<td>1.063</td>
<td>1.035</td>
</tr>
<tr>
<td></td>
<td>(0.348)</td>
<td>(0.648)</td>
<td>(0.812)</td>
<td>(0.542)</td>
<td>(0.369)</td>
<td>(0.432)</td>
</tr>
<tr>
<td>Black market premium</td>
<td>-2.321</td>
<td>1.877</td>
<td>(7.135)</td>
<td>(2.938)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(-2.113)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prob (F-test)</td>
<td>0.001</td>
<td>0.000</td>
<td>0.037</td>
<td>0.002</td>
<td>0.001</td>
<td>0.000</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.41</td>
<td>0.46</td>
<td>0.22</td>
<td>0.22</td>
<td>0.35</td>
<td>0.37</td>
</tr>
</tbody>
</table>

Notes:
Estimated with two-stage least squares. The coefficient standard errors are in parentheses. Note that all explanatory variables are in logarithm.

Liquid Liabilities = liquid liabilities of the financial system (currency plus demand and interest-bearing liabilities of banks and non-bank financial intermediaries) divided by GDP. Enters as period averaged over 1976-95
Commercial-Central Liabilities = the ratio of commercial bank assets to commercial bank plus central bank assets. Enters as period averaged over 1976-95
Private Credit = the value of credits by financial intermediaries to the private sector, divided by GDP. Enters as period averaged over 1976-95
Initial Income = real per capita GDP in 1976.
Secondary Schooling = the years of secondary schooling as of 1976.
Black market premium = one plus black market exchange rate premium averaged over 1976-95.
Appendix 2. Measuring Financial Development

In assessing the relationship between financial intermediary development and economic growth, the first hurdle researchers come up against is to construct adequate indicators for the amount and quality of financial services which are produced within the economy. Computing synthetic financial development indicators is a really difficult task, because of the diversity of services the financial sector offers – identifying profitable activities, exerting corporate governance, mobilizing and allocating resources, managing risk and facilitating transactions, etc. – and the public good character of some of them (system of payments and project assessment).

Economists had traditionally measured the overall size of the banking sector as a proxy for financial depth, such as the ratio of the stock of broad money M2 to GDP.12 This is based on the assumption that the size of a financial system is positively correlated with the provision and quality of financial services. While it is relatively easy to compute the M2 to GDP ratio for a broader cross-section of countries, however, this type of financial depth indicator cannot, of itself, measure whether the liabilities are those of banks, the central bank or other financial intermediaries, nor can it identify where the financial system allocates capital (King and Levine [1993b]).

To combat these shortcomings, the recent macro-based empirical studies typically employ a few indicators that measure financial intermediation activities from different angles such as depth, efficiency, soundness, competitiveness (King and Levine [1993a, b], King and Zervos [1998], LLB [1999], etc.). For our empirical analysis, we take the financial development indicators from the database compiled by LLB [1999].13,14 Using the IMF IFS data, LLB construct three indicators of financial intermediary development, to measure (i) the overall size (depth) of the financial sector; (ii) whether commercial banking institutions or the central bank is conducting the intermediation; and (iii) the extent to which financial institutions funnel credit to private sector activities. While each of these indicators is still an imperfect measure of how well financial intermediaries reach firms, monitor managers, mobilize savings, pool risk and ease transactions, it provides better information about financial intermediary development than the past measures, and together they provide a more accurate picture than if we used only a single indicator.

12 By financial depth, we have a precise concept in mind: a deposit market has not achieved its full depth (i.e., has not been fully penetrated) if there exist households that are not depositing their wealth in banks, even though the deposit rate exceeds the return of their chosen alternative form of investment. This definition reflects the commonly observed phenomena in developing countries that although financial institutions are present, a significant proportion of households does not utilize their services.

13 This database can be downloaded from the following web site.
14 Other than M2/GDP (as a proxy for the size/depth) some other variables can be considered as a measurement of financial sector development, such as NPL ratios (to measure the sector’s soundness), interest rate spreads (to measure efficiency), etc. However, it is a very difficult task to obtain comparable data for these variables across a broad set of countries particularly over a long period of time, although they can be a good indicator in other context such as in case studies. Moreover, it is likely that the information that NPL ratios and interest rates (deposit rates) carry are reflected in the financial depth indicator (in this paper, Liquid Liabilities).
The first indicator, LIQUID LIABILITIES, equals liquid liabilities of the financial system (currency plus demand and interest-bearing liabilities of banks and non-bank financial intermediaries) divided by GDP. It measures financial depth and thus the overall size of the financial sector. Like the M2/GDP ratio, however, LIQUID LIABILITIES is merely an indicator of size, and hence does not take into account the quality of resource allocation directly.

The second indicator is COMMERCIAL-CENTRAL BANK. COMMERCIAL-CENTRAL BANK equals the ratio of commercial bank assets to commercial bank plus central bank assets. This indicator measures the degree to which the central bank versus commercial banks are allocating society’s credit. The intuition behind this indicator is that commercial banks are more likely to identify profitable investments, monitor managers, facilitate risk management and hence mobilize savings more efficiently than central banks. However, this measure still suffers from some disadvantages. As noted earlier, in many developing countries it is difficult to distinguish private from public banks, and development banks from commercial banks. For example in Bangladesh, the banking system is principally in the government’s hands. The government directs credits to itself as well as to SOEs both from the central bank and nationalized private banks. Hence, the value of COMMERCIAL-CENTRAL BANK can be misleading. Another notable drawback is that COMMERCIAL-CENTRAL BANK cannot capture whether commercial banks allocate capital to the private sector, or simply lend to the government or public enterprises.

The third measure, PRIVATE CREDIT, particularly addresses the this concern about the destination of credit allocation. It equals the value of credits by financial intermediaries to the private sector, divided by GDP. PRIVATE CREDIT is more than a simple measure of financial sector size. It improves the traditional financial depth measure by isolating credit issued to the private sector, from credit issued to governments, government agencies and state-owned enterprises. Furthermore, it excludes credits issued by the central bank. Hence, PRIVATE CREDIT is a broader measure of the efficiency of credit issuing financial intermediation within the private sector. The assumption underlying this measure is that financial systems that allocate more credit to private firms are more engaged in researching firms, exerting corporate control, providing risk management services, mobilizing savings and facilitating transactions than these systems that simply funnel credit to the government or state owned enterprises. A higher value of PRIVATE CREDIT can be interpreted as indicating a higher level of financial services, and hence greater financial intermediary development.

Comparable data for LIQUID LIABILITIES, COMMERCIAL-CENTRAL BANK and PRIVATE CREDIT are available for 69 countries. The values are averaged over the period 1976-95. Table A3 provides summary statistics and the list of countries included in the analysis. There is a considerable variation across countries. For example,

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15 This is probably the reason why the value of COMMERCIAL-CENTRAL BANK is very high for Bangladesh, while interestingly the values of LIQUID LIABILITIES and PRIVATE CREDIT are low, indicating a frail financial sector. In our sample, Niger also have a higher value of COMMERCIAL-CENTRAL BANK, while other indicators have low values. This highlights that one needs to treat COMMERCIAL-CENTRAL BANK very carefully.
PRIVATE CREDIT ranges from 3 percent of GDP in Ghana to a high end of 164 percent in Switzerland.
Table A3. Summary Statistics: Indicators of Financial Intermediary Development  
(Period average: 1976-95)

<table>
<thead>
<tr>
<th></th>
<th>Liquid Liabilities</th>
<th>Commercial-Central Bank</th>
<th>Private Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>All countries</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>49.5</td>
<td>79.7</td>
<td>44.5</td>
</tr>
<tr>
<td>Median</td>
<td>45.8</td>
<td>84.8</td>
<td>30.7</td>
</tr>
<tr>
<td>Maximum</td>
<td>161.9 (Japan)</td>
<td>99.8 (France)</td>
<td>164.4 (Switzerland)</td>
</tr>
<tr>
<td>Minimum</td>
<td>14.4 (Rwanda)</td>
<td>27.3 (Ghana)</td>
<td>3.4 (Ghana)</td>
</tr>
<tr>
<td>Std. Dev.</td>
<td>28.6</td>
<td>16.9</td>
<td>34.5</td>
</tr>
<tr>
<td>Observations</td>
<td>69</td>
<td>69</td>
<td>69</td>
</tr>
<tr>
<td><strong>Developing Countries</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>40.8</td>
<td>73.8</td>
<td>30.0</td>
</tr>
<tr>
<td>Median</td>
<td>34.8</td>
<td>76.8</td>
<td>25.0</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>25.4</td>
<td>88.1</td>
<td>14.1</td>
</tr>
<tr>
<td>Std. Dev.</td>
<td>23.0</td>
<td>16.4</td>
<td>18.9</td>
</tr>
<tr>
<td>Observations</td>
<td>51</td>
<td>51</td>
<td>51</td>
</tr>
</tbody>
</table>

Countries Included in the Growth Regressions

Australia, Austria, Belgium, Bangladesh, the Bahamas, Belize, Central African Republic, Canada, Switzerland, Chile, Cote d'Ivoire, Cameroon, Costa Rica, Cyprus, Germany, Denmark, Ecuador, Egypt, Spain, Ethiopia, Finland, France, United Kingdom, Ghana, the Gambia, Greece, Guatemala, Honduras, Indonesia, India, Ireland, Iceland, Italy, Jamaica, Jordan, Japan, Kenya, Korea, Sri Lanka, Lesotho, Luxembourg, Morocco, Madagascar, Malta, Mauritius, Malawi, Malaysia, Niger, Nigeria, the Netherlands, Norway, Nepal, New Zealand, Pakistan, the Philippines, Papua New Guinea, Portugal, Rwanda, Senegal, Sierra Leone, El Salvador, Sweden, Swaziland, Syrian Arab Republic, Togo, Thailand, Trinidad and Tobago, United States, Venezuela, South Africa, Zimbabwe
Table A4. Ranking Bangladesh’s Financial System  
(Rankings are based on period average data.)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Rank</td>
<td># Obs.</td>
<td>Quintile</td>
</tr>
<tr>
<td>Liquid Liabilities</td>
<td>57</td>
<td>69</td>
<td>5</td>
</tr>
<tr>
<td>Commercial + Central Bank</td>
<td>28</td>
<td>69</td>
<td>2</td>
</tr>
<tr>
<td>Private Credit</td>
<td>61</td>
<td>69</td>
<td>5</td>
</tr>
</tbody>
</table>

Note: Except COMMERCIAL-CENTRAL BANK, the two other financial development indicators suggest Bangladesh’s financial sector is still severely underdeveloped relative to other countries in the world. However, it has shown some improvement over the last two decades.
Figure A1. Partial Scatter Plot: Growth vs Liquid Liabilities

Note:
Both Growth and Liquid Liabilities are the period average figures (1976-95). For data definitions, see Appendix 2.

Discussion:
The relationship between Growth and Liquid Liabilities suggests a strong positive, non-linear relationship:

\[ \text{Growth} = 3.15 + 1.99 \times \ln(\text{Liquid Liabilities}) \]

(7.84) (4.88)

R-squared : 0.29 \hspace{1cm} \text{Prob(F-statistic)} : 0.000

The partial scatter plot indicates that Switzerland and Japan as potential outliers. Removing these countries improves the results. The new coefficient estimate on \( \ln(\text{Liquid Liabilities}) \) is 2.36 and it enters with a t-statistic of 5.33 (R-squared: 0.34).
Figure A2. Partial Scatter Plot: Growth vs Commercial-Central Bank

Note:
Both Growth and Commercial-Central Bank are the period average figures (1976-95). For definitions of these variables, see Appendix 2.

Discussion:
The relationship between Growth and Commercial-Central Bank is not as smooth, and not as strong as the relationship between Growth and other financial indicators (as in Figures A1 and A3). While each explanatory variables are statistically significant, the R-squared and F-statistics indicate that the overall regression results are not good:

\[
\text{Growth} = 2.13 + 2.48 \times \ln(\text{Commercial-Central Bank})
\]

\[
(6.12) \quad (4.88)
\]

R-squared : 0.10 \quad \text{Prob(F-statistic)} : 0.013
Figure A3. Partial Scatter Plot: Growth vs Private Credit

Note:
Both Growth and Private Credit are the period average figures (1976-95). For data definitions, see Appendix 2.

Discussion:
The partial relationship between Growth and Private Credit show a strong positive relationship. Figure A3 appears similar to Figure A1:

\[
\text{Growth} = 2.58 + 1.01 \times \ln(\text{Private Credit})
\]

(6.88) (3.67)

R-squared : 0.19  Prob(F-statistic) : 0.000

One interesting observation is that there seems to be some breakpoint in the series, around the value 0.75 of Private Credit. While countries with Private Credit below 0.75 exhibit strong GDP growth over 1976-95, countries with Private Credit over 0.75 have grown by minus 0.5 – 2.8 percent during the same period and the trend it not clear. Removing countries with Private Credit above produces an estimated coefficient of 1.54 on Private Credit, with a t-statistic of 4.16, and the R-squared improves to 0.29.
References


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