

Banks, Markets, and Structure: Implications and Determinants

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COUNTRIES GROW AT STARTLINGLY DIFFERENT RATES. SINCE 1960, REAL PER CAPITA GROSS domestic product (GDP) has grown at more than 5 percent per annum in Japan and Korea, at close to 3 percent in Brazil, but at less than 1 percent in Argentina, El Salvador, Guatemala, Peru, Uruguay, and Venezuela. Given the potential impact on human welfare, economists have suggested a variety of explanations for these growth differences, ranging from macroeconomic stability (Easterly and Rebelo 1993; Fischer 1993), to openness toward international trade (Krueger 1997), to institutional development (Knack and Keefer 1995), and even to ethnic diversity (Easterly and Levine 1997).

Some have also argued that cross-country differences in financial sector development and financial structure help determine cross-country differences in long-run economic growth rates. A growing body of theoretical and empirical work suggests that banks and stock markets are an inextricable part of the growth process (Levine 1997a). Indeed, recent work suggests that financial systems exert a first-order causal impact on economic growth (Demirgüç-Kunt and Maksimovic 1996b; Levine, Loayza, and Beck 1998; Rajan and Zingales 1998). Thus, poorly functioning financial systems have negative implications for economic development.

While economists can confidently inform policy-makers about the importance of well-functioning financial systems for economic development, we are embarrassingly less capable of telling them exactly how to create such well-functioning financial systems. We do not have sufficiently detailed and comprehensive cross-country empirical evidence concerning the core determinants of healthy banks and securities markets. Furthermore, a long debate persists on the proper structure of the financial system, where "structure" refers to the relative importance of banks and markets in the economy. The classic controversy involves comparisons between bank-based financial systems, such as those in Germany and Japan, and market-based systems, such as those in the United Kingdom and the United

States. In terms of financial structure, there exists sparse evidence about the comparative benefits of bank-based or market-based systems for growth. Thus, it is difficult to assess the implications for economic development of having either system.

This paper examines three issues: banks, markets, and financial structure.

Banks. The paper first describes the implications of a sound banking system. Specifically, I discuss why banks emerge, what they do, and how they affect economic performance. Basically, banks acquire and process information about firms and managers, exert corporate control, provide risk-management services, and facilitate resource mobilization. By providing these services to the economy, banks can

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enhance resource allocation and stimulate economic growth. Then I present evidence from Levine, Loayza, and Beck (1998), which suggests that well-functioning banks exert a causal and economically important impact on long-run growth. Finally, I examine some of the legal and accounting determinants of healthy banking development. Following La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1997, 1998), Levine, Loayza, Beck (1998) show that countries with (1) laws that give a high priority to secured creditors' getting the full present value of their claims against firms, (2) legal systems that rigorously enforce contracts, including government contracts, and (3) accounting standards that produce high-quality, comprehensive and comparable corporate financial statements tend to have better-developed financial intermediaries. The evidence suggests that legal and regulatory reforms that strengthen creditor rights, contract enforcement, and accounting practices boost banking sector development and accelerate economic growth.

Stock Markets. The paper examines the implications of well-functioning stock markets on economic development and searches for core determinants of healthy stock market development. Are developing countries' stock markets simply casinos where an increasing number of foreigners are coming to place bets? Or, do the developing countries themselves reap large benefits from well-functioning markets? If markets are important, what can policy-makers do?

Existing evidence suggests that well-developed stock markets foster economic growth. They can enhance incentives to acquire information about firms, because individuals can profit from first obtaining good information and then trading in liquid markets. Furthermore, well-developed markets make it easier to take over firms, which may help discipline managers to act in the best interests of owners. Also, well-developed securities markets lower the costs of custom-designing risk-hedging devices, which can improve welfare and resource allocation. The data support this view. Levine (1997b) and Levine and Zervos (1998) show that liquid stock markets exert a big, positive impact on economic growth. There is also a growing body of research on the legal and accounting determinants of stock market development. Here, I again rely on the pioneering work of La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1997, 1998), along with some of my own extensions by Levine (1997b). Particular characteristics of national legal

and regulatory systems—the protection of minority shareholders and the quality of corporate financial statements—exert a major influence on stock market development. Moreover, Latin America stands out. It has relatively weak accounting standards, and Latin America's legal system is comparatively lax in enforcing the rights of minority shareholders. Once one views the strong empirical connection between the legal and regulatory environment, the financial system, and growth, Latin America's legal and regulatory systems stand out as deserving particularly careful scrutiny as the region looks to promote faster growth.

Financial Structure. Is a bank-based or a market-based financial system better for promoting economic development? Proponents of bank-based systems note that in highly liquid markets, information is quickly revealed to investors at large. This creates a free-rider problem. Individuals may be dissuaded from spending much time and money researching firms and exerting corporate control because the fruits of these labors will be publicly revealed in markets to those who do not undertake the costly activities of researching firms and overseeing managers. Furthermore, proponents of bank-based systems question the real-world ability of small outside investors to exert corporate control. Outsiders generally have less information than insiders, so there is little reason to believe that outsiders can effectively peer over the shoulders of managers and then swoop down to take over firms and fire incompetent managers. Further, the incestuous relationship between boards of directors and management increases the likelihood of golden parachutes, poison pills, and other measures that thwart takeovers and give power to corporate managers. Also, liquid markets make it easy for worried stockholders to simply sell their shares rather than coordinate pressure against management. All of these market failures combine to reduce the efficiency of firm operations with negative implications for long-run growth. Champions of bank-based systems argue that large banks with long-term relationships with particular firms mitigate these market failures.

"Marketeers" counterattack by focusing on the practical failures of big banks. Big banks exert a controlling hand with potentially negative implications for resource allocation, innovation, and growth. In practice, big banks tend to encourage firms to undertake very conservative investment strategies, and big banks extract large rents from firms as shown by Weinstein and Yafeh (1998). Thus,

banks may lower corporate profits and reduce incentives for new and innovative products. Furthermore, Wenger and Kaserer (1996) show that managers of huge banks in a bank-based system (Germany) effectively wrest control of banks from the owners of banks. Because big banks control big industry, once bank managers take control of the banks from bank owners, the managers enjoy excessive control over both banks and industry. This may have deleterious effects on investment and growth. Finally, while bank-based systems may provide inexpensive risk-management services for standardized situations, market-based systems provide a richer array of financial instruments that permit greater customization of risk-management techniques.

Who is right? The truthful answer is we don't know. Although I present some preliminary evidence from a research project I am conducting with Asli Demirgüç-Kunt, there is insufficient empirical evidence to argue confidently that bank-based or market-based systems are better. There is even some evidence that suggests the answer is both: The issue is not banks or markets; rather, both banks and markets provide complementary services to the economy with positive implications for economic performance. Even this answer, however, enjoys scarce empirical support. We need much more research into the underlying determinants of financial structure and the resultant implications for long-run growth.

I. Banks and Economic Growth

In a world with no information, enforcement, or transactions costs, there is no need for financial intermediaries—coalitions of agents—to form and expend resources researching projects, scrutinizing managers, and easing risk management. Because such a world does not exist, financial intermediaries emerge to acquire information, enforce contracts, and make transactions. Thus, as they move to ameliorate market frictions, financial intermediaries may facilitate the efficient allocation of resources across space and time. The first subsection below briefly discusses the emergence of financial intermediaries, what they do, and how they positively affect economic performance. The next subsection will provide empirical evidence on (1) the causal relationship between financial intermediaries and growth and (2) some of the legal and regulatory underpinnings of financial intermediaries. Later sections discuss the potential negative consequences of excessively powerful intermediaries.

A. Concepts: How Banks Affect Economic Performance

Financial intermediaries, first of all, may reduce the costs of acquiring and processing information about firms and managers and thereby produce better information about firm prospects and better corporate control (Diamond 1984; Boyd and Prescott 1986; and Williamson 1986). Specifically, there are large costs associated with evaluating firms and managers (Carosso 1970). Without intermediaries, each investor would face these high costs, which could lead to duplication of effort in terms of acquiring and processing information about firms and managers. Moreover, small investors might attempt to free ride off of large investors, who have greater incentives to pay the large costs associated with evaluating firms and managers. This free-rider problem can lead to too little effort being expended toward acquiring information and monitoring managers, which adversely affects resource allocation. Instead of this inefficient situation, financial intermediaries can evaluate firms and managers for a large group of investors. By reducing duplication and free-rider problems, financial intermediaries promote better information about firms.¹ Because it is particularly difficult to monitor the performance of managers once outsiders have funded firms, financial intermediaries may play a particularly important role in rigorously monitoring managers (Boyd and Prescott 1986; Boot and Thakor 1997). By improving information acquisition, financial intermediaries can affect long-run economic growth (Greenwood and Jovanovic 1990; King and Levine 1993b).

As a crucial addendum to this information role, financial intermediaries may ease cash-flow constraints, facilitate debt renegotiations, and ease private workouts in times of corporate distress. Specifically, once financial intermediaries gain substantial information about firms, they are in a better position than a diffuse set of ill-informed small creditors to distinguish the natural vagaries of market conditions—which may simply require patience and renegotiation—from poor management, which may require more stern intervention (Myers 1977; Gilson, John, and Lang 1990). Thus, corporate investment decisions will be dictated more by expected profits and less by current cash flow (Hoshi, Kashyap, and Scharfstein 1990; Petersen and Rajan 1994; Berger and Udell 1995; Schiantarelli and Sembenelli 1996).²

Second, financial intermediaries may ease risk-sharing and pooling by lowering transaction costs. Traditional

financial theory focuses on cross-sectional risk-sharing, where individuals hold a very small amount of lots of different assets. Financial intermediaries may lower the costs of holding a standardized portfolio of assets if there are fixed costs to each purchase. Moreover, financial intermediaries may facilitate the intertemporal smoothing of risk (Allen and Gale 1997). Risks that cannot be diversified at a particular point in time, such as macroeconomic shocks, can be diversified across generations. Long-lived intermediaries can facilitate intergenerational risk-sharing by investing with a long-run perspective and offering returns that are relatively low in boom times and relatively high in slack times. While this type of risk-sharing is theoretically possible with markets, intermediaries may increase the feasibility of intertemporal risk-sharing by lowering contracting costs.³

Intermediaries also can eliminate liquidity risk (Diamond and Dybvig 1983; Bencivenga and Smith 1991). Many profitable investments require a long-term commitment of capital, but investors are often reluctant to relinquish control of their savings for long periods. Intermediaries make long-term investment more attractive by pooling savings and engaging in liquidity transformation. They provide liquid securities to savers that allow savers to liquidate their investments if they need access to their savings. Although intermediaries do not know exactly which individuals need access to their investments quickly, they have very good information on the fraction of investors who will liquidate their investments quickly. Thus, by pooling lots of resources they can invest just enough in short-term securities to satisfy those with liquidity needs. At the same time, intermediaries can make a long-run commitment of capital to firms. By facilitating longer-term, more profitable investments, well-functioning financial intermediaries improve the allocation of capital and thereby boost productivity growth. In sum, by pooling resources and facilitating contracting both cross-sectionally and intertemporally, financial intermediaries reduce impediments to risk management with beneficial effects on welfare on the efficiency of investment.

Third, financial intermediaries facilitate savings mobilization—pooling—by economizing on the transaction costs associated with mobilizing savings from many disparate agents (Carosso 1970) and by overcoming the informational asymmetries associated with making savers comfortable in relinquishing control of their savings (Sirri and

Tufano 1995; De Long 1991; Lamoreaux 1995). By effectively mobilizing savings, financial intermediaries not only ease capital accumulation, they also improve resource allocation by permitting the exploitation of economies of scale. For example, Bagehot (1873, pp. 3–4) argued that a major difference between England and “all rude countries” was that in England the financial system could mobilize resources for “immense works.” Bagehot was very explicit in noting that it was not the national savings rate per se that allowed this; rather, it was the ability to pool society’s resources and allocate those savings toward the most productive ends.

Thus, existing theory advances intuitively appealing arguments for why better intermediaries—that is, intermediaries that are better at researching firms and exerting corporate control, providing mechanisms for pooling and managing risk, and facilitating the mobilization of savings—will positively influence economic performance. The data support this perspective.

B. Evidence: Intermediaries Exert a First-Order, Causal Impact on Growth⁴

A growing body of evidence suggests that the level of financial intermediary development has a large, causal effect on long-run economic performance. The evidence emerges from firm-level studies (Demirgüç-Kunt and Maksimovic 1996b), industry-level studies (Rajan and Zingales 1998), country-case studies (Cameron 1967; McKinnon 1973; Haber 1991, 1996), time series (Neusser and Kugler 1998; Wachtel and Rousseau 1995), and cross-country studies using an array of econometric methodologies (King and Levine 1993a,b; Levine 1998a,b). Because I have already reviewed much of this literature (Levine 1997a), I will instead focus on a recent paper that rigorously addresses the issue of causality and discusses some underlying causes of cross-country differences in financial intermediary development.

1. Methodology

Levine, Loayza, and Beck (1998), henceforth LLB, use new data and new econometric procedures to shed additional light on the issue of causality and to illuminate the close association between key legal and accounting characteristics and financial intermediary development. In terms of causality, LLB use two econometric procedures. First, they use a pure cross-sectional approach, where data for 71

countries are averaged over the period 1960–1995, 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. The regressors include a variable of particular interest—in this case financial intermediary development, along with a set of conditioning information.

Unlike much of the literature, however, LLB use instrumental variables to extract the exogenous component of financial intermediary development. Specifically, La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1997, 1998; henceforth LLSV) note that most countries can be divided into countries with predominantly English, French, German, or Scandinavian legal origins, and that countries typically obtained their legal systems through occupation or colonization.⁵ Thus, LLB view legal origin as an exogenous “endowment.” After extending the LLSV sample from 49 to 71 countries, LLB use the legal-origin indicators as instrumental variables to extract the exogenous component of financial intermediary development.

The second method for examining causality uses panel data and exploits the cross-country and time-series dimensions of the data. LLB assemble a panel data-set, with data averaged over each of the seven five-year intervals composing the period 1960–1995. LLB use a Generalized Method of Moments (GMM) dynamic panel estimator that corrects some inherent problems with the purely cross-sectional estimator. Specifically, this procedure addresses the econometric problems induced by country-specific effects, endogeneity, and the routine use of lagged dependent variables in growth regressions (Holtz-Eakin, Newey, and Rosen 1990; Arellano and Bond 1991; Arellano and Bover 1995; Alonso-Borrego and Arellano 1996; and Blundell and Bond 1997).

In conducting this research, LLB focus on new measure of financial intermediation called PRIVATE CREDIT, which measures the extent to which financial institutions funnel credit to private-sector activities. PRIVATE CREDIT equals the value of credits by financial intermediaries to the private sector divided by GDP. This measure of financial development is more than a simple measure of financial sector size. PRIVATE CREDIT isolates credit issued to the private sector, as opposed to credit issued to governments, government agencies, and public enterprises. Furthermore, it excludes credits issued by the central bank. PRIVATE CREDIT is LLB’s preferred indicator because it

improves on other measures of financial development used in the literature. For example, King and Levine (1993a,b) use a measure of gross claims on the private sector divided by GDP. But, this measure includes credits issued by the monetary authority and government agencies, whereas PRIVATE CREDIT includes only credits issued by banks and other financial intermediaries. Also, Levine and Zervos (1998) and Levine (1998a,b) use a measure of deposit money bank credits to the private sector divided by GDP over the period 1976–1993. That measure, however, does not include credits to the private sector by non-deposit money banks and it only covers the period 1976–1993. PRIVATE CREDIT is a broader measure of credit-issuing financial intermediation, and its time dimension is twice as long, 1960–1995. While PRIVATE CREDIT does not directly measure the amelioration of information and transaction costs, LLB interpret higher levels of PRIVATE CREDIT as indicating higher levels of financial services and therefore greater financial intermediary development. Moreover, they produce similar conclusions.

2. Causality Results

The simple, cross-sectional instrumental variable procedure and the dynamic-panel econometric technique produce very consistent findings regarding causality: *financial intermediary development exerts a large, causal impact on economic growth*. The results of the LLB causality tests are provided in Tables 1 and 2. Econometrically, the results indicate that the close empirical association between finance and growth is not the result of simultaneity or omitted variable bias. The exogenous component of financial intermediary development is positively correlated with economic growth. Economically, the impact of finance on growth is large. For example, the estimated coefficients suggest that if Argentina had enjoyed the level of financial intermediary development of the average developing country during the 1960–95 period, it would have experienced about one percentage point faster real per capita GDP growth per year.

3. Causes of Intermediary Development

Next, LLB undertake a search of potential legal and accounting determinants of financial intermediary development. LLB use three indicators to characterize differences in national legal and regulatory systems: the legal rights of creditors, the soundness of contract enforcement, and the level of corporate accounting standards.

TABLE 1

Financial Intermediation and Growth: Cross-Section Regressions, 1960-95

Dependent Variable: Real Per Capita GDP Growth, 1960-95

Instrumental Variables: Legal Origin Dummy Variables

Regression Set #1: simple conditioning information set

Explanatory Variable	coefficient	standard error	t-statistic	p-value	number of observations	j-statistic	lm-test OIR
PRIVATE CREDIT	2.515	0.814	3.090	0.003	71	0.001890566	0.13

Regression Set #2: policy conditioning information set

Explanatory Variable	coefficient	standard error	t-statistic	p-value	number of observations	j-statistic	lm-test OIR
PRIVATE CREDIT	3.222	1.245	2.589	0.012	63	0.007993	0.50

Regression Set #3: full conditioning information set

Explanatory Variable	coefficient	standard error	t-statistic	p-value	number of observations	j-statistic	lm-test OIR
PRIVATE CREDIT	2.966	1.409	2.105	0.040	62	0.010466	0.65

Critical values for LM-Test Over Identifying Restrictions (2 d.f.): 10% 4.61; 5%=5.99

Simple conditioning information set: logarithm of initial income per capita and schooling.

Policy conditioning information set: simple set, plus government size, inflation, black market premium, and openness to trade.

Full conditioning information set: policy set, plus indicators of revolutions and coups, civil liberties, political assassinations, and ethnic diversity.

Source: Levine, Loayza, Beck 1998; Table 3.

TABLE 2

Financial Intermediation & Growth: Dynamic Panel Regressions, Summary

ESTIMATOR	CONDITIONING INFORMATION SET	PRIVATE CREDIT	OBSERVATIONS	INSTR. PER VAR.	TOTAL # INSTR.
System	limited	2.237 (0.001) (0.283)	359	all	72
	extended	1.448 (0.001) (0.417)	359	1 instr.	77
Differenced	limited	1.601 (0.001) (0.197)	285	all	69
	extended	0.599 (0.001) (0.342)	285	2 instr.	55
Levels	limited	2.151 (0.001) (0.259)	359	1 instr.	22
	extended	2.063 (0.001) (0.349)	359	1 instr.	42

numbers in parentheses are p-values (1st line) and Sargan-test (2nd line)

Limited conditioning information set: logarithm of initial income per capita, average years of secondary schooling.

Extended conditioning information set: limited set plus government size, openness to trade inflation, black market premium.

PRIVATE CREDIT credit by deposit money banks and other financial institutions to the private sector divided by GDP

Source: Levine, Loayza, Beck 1998; Table 4.

Creditor Rights. LLB use four measures of the legal rights of banks:

AUTOSTAY equals one if a country's laws impose an automatic stay on the assets of firms upon filing a reorganization petition. **AUTOSTAY** equals zero if this restriction does not appear in the nation's legal codes. The restriction would prevent creditors from gaining possession of collateral or liquidating a firm to meet a loan obligation.

MANAGES equals one if firm managers continue to administer the firm's affairs pending the resolution of reorganization processes, and zero otherwise. In some countries, management stays in place until a final decision is made about the resolution of claims. In other countries, management is replaced by a team selected by the creditors. If management stays pending resolution, this reduces pressure on management to pay creditors.

SECURED1 equals one if secured creditors are ranked first in the distribution of the proceeds that result from the disposition of the assets of a bankrupt firm. **SECURED1** equals zero if non-secured creditors, such as the government or workers get paid before secured creditors. In cases where **SECURED1** equals zero, this certainly reduces the attractiveness of lending secured credit.

CREDITOR is a cumulative index of these creditor rights indicators.

$$\text{CREDITOR} = \text{SECURED1} - \text{AUTOSTAY} - \text{MANAGES}.$$

CREDITOR takes on values between 1 (best) and -2 (worst). One would expect countries with higher values of **CREDITOR** to have stronger creditor rights and better-developed financial intermediaries, all else equal.

Brazil, Colombia, France, Mexico, Peru, and the Philippines (all countries with a French legal origin) are countries where **CREDITOR** = -2, indicating that their legal systems do not stress the rights of creditors. In contrast, the legal codes of Egypt, Hong Kong, India, Indonesia, Israel, Korea, Malaysia, Nigeria, Pakistan, Singapore, Thailand, United Kingdom, and Zimbabwe stress the rights of creditors, such that **CREDITOR** = 1. **CREDITOR** does not incorporate information regarding enforcement.

Enforcement. The laws governing secured creditors will affect secured creditors only to the extent that the laws are enforced. Consequently, measures of the efficiency of the legal system in enforcing contracts are included from LLSV (1998).

RULELAW is an assessment of the law-and-order tradition of the country that ranges from 10, strong law-and-

order tradition, to 1, weak law-and-order tradition. This measure was constructed by International Country Risk Guide (ICRG) and is an average over the period 1982-1995.

CONRISK is an assessment of the risk that a government will—and therefore can—modify a contract after it has been signed. **CONRISK** ranges from 10, low risk of contract modification, to 1, high risk of contract modification. Specifically, "modification" means either repudiation, postponement, or reducing the government's financial obligation. This measure was constructed by ICRG and is an average over the period 1982-1995.

ENFORCE equals the average of **RULELAW** and **CONRISK**. The empirical analyses focus on this aggregate index of the efficiency of the legal system in enforcing contracts (**ENFORCE**) and the aggregate index of creditor rights (**CREDITOR**).

The countries with very high values of enforcement—values of **ENFORCE** greater than 9—are Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Japan, Netherlands, New Zealand, Norway, Sweden, and Switzerland. In contrast, countries where contract enforcement is poor—values of **ENFORCE** less than 5—include Colombia, Nigeria, Pakistan, Philippines, Peru, and Zimbabwe.

Accounting Standards. Information about corporations is critical for exerting good corporate governance and identifying the best investments. **ACCOUNT** is an index of the comprehensiveness of company reports. The maximum possible value is 90 and the minimum is 0. The Center for International Financial Analysis and Research assessed general accounting information, income statements, balance sheets, funds-flow statements, accounting standards, and stock data in company reports in 1990. Sweden had the highest score, 83, while Egypt, at 24, had the lowest in LLB's sample. The United States scored 71, which is well above the mean value of 61.

Results on Determinants of Intermediary Development. Table 3 (which is Table 7 in LLB) shows that cross-country differences in creditor rights, enforcement quality, and accounting standards help explain cross-country differences in financial intermediary development. The basic message that emerges from Table 3 is that countries with (1) laws that give a high priority to secured creditors, (2) legal systems that rigorously enforce contracts, and (3) accounting standards that produce comprehensive and

TABLE 3

Legal Environment and Financial Intermediary Development

	DEPENDENT VARIABLE					
	LIQUID LIABILITIES		BANK- CENTRAL BANK		PRIVATE CREDIT	
C	3.814 (0.000)	2.600 (0.000)	4.013 (0.000)	3.878 (0.000)	2.668 (0.001)	1.550 (0.000)
CREDITOR	0.096 (0.142)	0.155 (0.007)	-0.016 (0.528)	-0.010 (0.637)	-0.038 (0.526)	0.016 (0.747)
ENFORCE	0.241 (0.000)	0.180 (0.000)	0.042 (0.020)	0.036 (0.004)	0.262 (0.000)	0.206 (0.000)
ACCOUNT	-0.001 (0.900)	-0.001 (0.906)	0.004 (0.027)	0.004 (0.035)	0.011 (0.017)	0.011 (0.030)
INCOME	-0.214 (0.048)		-0.024 (0.551)		-0.197 (0.088)	
Obs.	39	39	37	37	39	39
Prob(F-test)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)

P-values are in parentheses.

Source: Levine, Loayza, Beck 1998; Table 7.

comparable corporate financial statements tend to have better developed financial intermediaries.

Furthermore, Table 4 (which is Table 8 in LLB) shows that creditor rights, enforcement quality, and accounting standards influence financial intermediary development, and that this component of financial intermediary development positively affects economic growth.

LLB's findings (in conjunction with those in LLSV 1998) are consistent with the view that countries with particular legal origins tend to create particular types of

laws, regulations, and enforcement mechanisms. It is these laws, regulations, and enforcement mechanisms that help determine the level of financial intermediary development and thus long-run economic growth. While it is difficult to change legal origin, the results offer a strategy for boosting financial development and accelerating long-run growth. Countries can target reforms that ensure that lenders have confidence that the legal system will quickly, transparently, and effectively enforce their claims against borrowers and that outside investors have easy access to

TABLE 4

Financial Intermediation and Growth: Cross-Section Regressions, 1960-95

Dependent variable: Real Per Capita GDP Growth, 1960-95

Instrumental variables: Legal Environment variables (CREDITOR, ENFORCE, & ACCOUNT)

Regression #1: simple conditioning information set

Explanatory Variable	coefficient	standard error	t-statistic	p-value	number of observations	j-statistic	lm-test OIR
PRIVATE CREDIT	2.248	0.281	8.006	0.000		37	2.55

Regression #2: full conditioning information set

Explanatory Variable	coefficient	standard error	t-statistic	p-value	number of observations	j-statistic	lm-test OIR
PRIVATE CREDIT	2.579	0.709	3.637	0.001		34	2.33

Critical values for LM-Test Over Identifying Restrictions (2 d.f.): 10% 4.61; 5%=5.99

Simple conditioning information set: logarithm of initial income per capita and schooling.

Full conditioning information set: simple set, plus indicators of revolutions and coups, civil liberties, political assassinations, size of government, inflation, black market premium, and openness to trade.

high-quality, comprehensive, and comparable information about firms.

C. *Cautionary Note*

It is important to be clear about what LLB do *not* show. LLB do not show that economic growth does not influence the banking system. The results do not contradict theories by Patrick (1966), Greenwood and Jovanovic (1990), and Greenwood and Smith (1997), which suggest that causality runs in both directions; banking development influences economic growth, and economic growth influences banking sector development. LLB provide evidence for the hypothesis that the exogenous component of banking development promotes economic growth.

Furthermore, we do not yet have good cross-country information on an array of potential issues associated with the development of healthy banking systems. Existing works are not yet able to examine the determinants or the effects of various financial regulations in a cross-country context involving developing countries. Thus, I do not consider the determinants or effects of deposit insurance (Calomiris 1989; Demirgüç-Kunt and Detragiache 1997; Kane 1985), restrictions on banking activities (Kroszner and Rajan 1994; Calomiris 1995; Barth, Caprio, and Levine 1998), or a wide array of supervisory and regulatory issues that may affect bank stability and performance (Barth, Nolle, and Rice 1996; BIS 1997; Calomiris and Gorton 1991; Kroszner and Strahan 1996). Rather, this paper makes a more limited point: The legal environment influences the banking sector, and this component of banking sector development is strongly linked with long-run rates of economic growth.

II. Markets and Economic Growth

A. *Concepts: How Stock Markets Affect Economic Performance*

Well-functioning stock markets may stimulate the acquisition and dissemination of information. As markets become larger (Grossman and Stiglitz 1980) and more liquid (Kyle 1984; Holmstrom and Tirole 1993; Boot and Thakor 1997; and Maug 1998), agents may have greater incentives to expend resources in researching firms because it is easier to profit from this information by trading in big and liquid markets. Moreover, this improved information about firms should improve resource allocation substan-

tially with corresponding implications for economic growth.

Besides influencing the acquisition of information ex ante, well-developed stock markets may help in exerting corporate control ex post, i.e., after financing has occurred. Stock markets may stimulate greater corporate control by facilitating takeovers (Jensen and Meckling 1976; Scharfstein 1988; Stein 1988; and Bolton and von Thadden 1998) and by making it easier to tie managerial compensation to performance (Diamond and Verrecchia 1982; Jensen and Murphy 1990). Thus, if well-functioning stock markets facilitate takeovers, then outsiders can purchase poorly operating firms, change management, and set the stage for greater profitability. Similarly, if well-functioning stock markets make it easier to link managerial compensation with stock price performance, this helps align the interests of managers with those of firm owners.

Well-functioning stock markets ease risk diversification and the ability to avoid liquidity risk. Stock markets are best designed for traditional, cross-sectional risk-sharing, where individuals can create a tailor-made portfolio of assets. In better-developed markets—markets where it is easier to trade securities—it is easier for agents to construct portfolios with a minimum of middlemen. In addition, markets can ease liquidity risk (Levine 1991; Bencivenga, Smith, and Starr 1995). Many profitable investments require a long-term commitment of capital, but investors are often reluctant to relinquish control of their savings for long periods. Liquid equity markets make long-term investment more attractive because they let savers sell equities quickly and cheaply if they need access to their savings. At the same time, companies enjoy permanent access to capital raised through equity issues. By facilitating longer-term, more profitable investments, liquid markets improve the allocation of capital and thereby boost productivity growth.

Well-developed securities markets can assist resource mobilization. Mobilizing the savings of many disparate savers is costly because it involves overcoming the transaction costs associated with collecting savings from different individuals and also overcoming the informational asymmetries associated with making savers comfortable with relinquishing control of their savings. Well-developed securities markets, out of necessity, tend to encourage the development of effective accounting standards, information-disclosure procedures, and contracting systems that lower impediments to resource mobilization. Also, “market makers” are gener-

ally very concerned about establishing stellar reputations, so that savers feel comfortable about entrusting their savings to others (De Long 1991; Lamoreaux 1995).

B. Evidence: Stock Markets Exert a First-Order, Causal Impact on Growth⁶

The body of empirical evidence on the relationship between stock market development and growth is less extensive than that on financial intermediation and growth. Nonetheless, substantial research suggests a positive link between stock market liquidity and growth, whether this analysis is conducted in a pure cross-section of countries (Levine and Zervos 1998), using time-series procedures (Rousseau and Wachtel 1998), or firm-level data (Demirgüç-Kunt and Maksimovic 1996b). Instead of discussing these papers in detail, I will summarize some recent research that I have conducted, which again attempts to evaluate the causal link between stock market development and growth and to identify some of the legal underpinnings of equity markets.

1. Data on Stock Market Liquidity

Levine (1998b) uses the following measure of stock market liquidity: the total value of the trades of domestic stock on domestic stock exchanges divided by GDP and calls this measure **Value Traded**.⁷ While not a direct measure of trading costs or the uncertainty associated with trading on a particular exchange, theoretical models of stock market liquidity and economic growth directly motivate **Value Traded** (Levine 1991; Bencivenga et al. 1995). **Value Traded** measures trading volume as a share of national output and should therefore positively reflect liquidity on an economy-wide basis. The value-traded ratio is likely to vary with the ease of trading: If it is costly and risky to trade, there will tend to be less trading.

2. Data on the Legal Environment

Consider the connection between the legal protection of minority shareholders and the liquidity of equity markets. Conceptually, legal systems that protect shareholders, especially minority shareholders, encourage greater participation. Shareholders exercise their power by voting for directors. Thus, to quantify the legal treatment of shareholders, I use five measures of the voting rights of shareholders.⁸

PROXY equals one if shareholders can vote not just by showing up in person or sending an authorized representa-

tive, but by mailing in their vote. **PROXY** equals zero if shareholders cannot vote by mail; this can impede participation of shareholders, who must either attend the meeting or go through the legal procedure of designating an authorized representative.

CUMULATIVE equals one if the Company Law or Commercial Code allows shareholders to cast all of their vote for one candidate, and zero otherwise. The ability to vote all one's shares for one candidate may make it easier for minority shareholders to put their representatives on boards of directors.

BLOCKED equals one if the Company Law or Commercial Code prohibits firms from requiring that shareholders deposit their shares prior to a General Shareholders Meeting, thus preventing them from selling those shares for a number of days, and zero otherwise. When shares are blocked in this manner, the shares are kept in custody until a few days after the meeting. This practice prevents shareholders who do not bother to go through this arduous exercise from voting.

MINOR equals one if the Company Law or Commercial Code grants minority shareholders either a judicial venue to challenge the management decisions or the right to step out of the company by requiring the company to purchase their shares when they object to certain fundamental changes, such as mergers, the disposition of assets, and changes in the articles of incorporation. The variable equals zero otherwise.

MEETING equals one if the minimum percentage of ownership share capital that entitles a shareholder to call for an Extraordinary Shareholders' Meeting is less than 10 percent, and zero otherwise. The minimum percentage of ownership share capital that entitles a shareholder to call for an Extraordinary Shareholders' Meeting ranges from one to 33 percent, with a median of 10 percent. Mexico has the highest value in the sample of countries. Presumably, the harder it is for minority shareholders to call a meeting and contest management, the less attractive it will be for agents to participate in equity markets.

SRIGHTS aggregates these five indicators into a conglomerate index of shareholder rights.

3. Summary Statistics on the Legal and Accounting Environment

Belgium, Italy, and Mexico (all countries with a French legal origin) are countries where **SRIGHTS** equals the minimum value of zero, indicating that their legal systems do not stress the rights of minority shareholders. In contrast,

the legal codes of the United States stress the rights of shareholders, such that $SRIGHTS = 5$. The French legal tradition is clearly evident in Latin America. This region's legal system places comparatively less emphasis on the legal rights of shareholders, particularly minority shareholders, than other regions. It is also important to note the cross-Latin America variation. The legal codes of Argentina, Brazil, and Chile actually place a comparatively high priority on minority shareholder rights, while Colombia, Mexico, and Venezuela are far below the international average.

Latin America also tends to provide less comprehensive and comparable information about corporations to investors as measured by the low value of $ACCOUNT$. Moreover, Latin America's (overall) comparatively weak legal protection of shareholders and its relatively uninformative accounting systems have a price: comparatively poor stock markets.

4. Regression of Stock Market Liquidity on Legal and Accounting Variables

My analysis (Levine 1997b) also indicates a strong link between stock market liquidity and the availability of high quality information about firms. As shown in Table 5 (which is Table 4 of Levine 1997b), there is a statistically significant relationship between $ACCOUNT$ and the measure of stock market liquidity, Value Traded, when controlling for the legal rights of shareholders. In contrast, shareholder rights do not have a very robust link with stock market liquidity. $SRIGHTS$ is strongly linked with market size. Thus, good information, $ACCOUNT$, is strongly linked with both market size and liquidity, while $SRIGHTS$ is strongly associated with overall market size, but not with market activity. These findings stress the importance of good regulations governing information disclosure.⁹ Furthermore, the relationship between $ACCOUNT$ and liquidity is economically meaningful. For example, an increase of one standard deviation in $ACCOUNT$ (12) increases Value Traded by 0.058 ($0.058 = 0.0048 * 12$), which is about the median value of Value Traded in the sample (0.054). Although the R-squares in these regressions are low, about 10 percent, the legal and accounting variables do help account for cross-country variations in stock market size and liquidity.

Before continuing, it is critical to note that $SRIGHTS$ is not simply a proxy for the overall quality of a country's legal system. As shown by Levine (1998a,b), legal variables

TABLE 5

The Legal Determinants of Market Liquidity

INDEPENDENT VARIABLE	DEPENDENT VARIABLE: VALUE TRADED		
	(1)	(2)	(3)
c	-0.32 (0.172) {0.074}	-0.05 (0.320) {0.884}	-0.11 (0.308) {0.731}
Income	0.04 (0.021) {0.058}	-0.02 (0.044) {0.651}	-0.01 (0.043) {0.765}
Srights	0.04 (0.017) {0.037}		0.02 (0.017) {0.194}
Account		0.01 (0.002) {0.005}	0.00 (0.002) {0.013}
observations:	45	40	40
R-Squared	0.08	0.1	0.12

(standard errors in parentheses)

{P-values in brackets}

Note: Income = logarithm of real per capita GDP in 1976; Srights = an index of the legal rights of shareholders, especially minority shareholders, that takes values between 0 and 5.

Account = an index of the comprehensiveness and comparability of corporate financial statements.

Value Traded = total value of shares traded divided by GDP; Turnover = total value of shares traded divided by Capitalization.

Source: Levine, Loayza, Beck 1998; Table 4.

that define the rights of creditors are closely connected to banking sector development. But, $SRIGHTS$ is not highly correlated with banking sector development. Also, the legal rights of creditors are not highly correlated with stock market development. Thus, the legal variables are capturing particular aspects of the legal environment. They are not proxies for overall legal efficiency.

5. Linking Legal and Regulatory Environment to Stock Market and Then to Growth

Levine (1997b) also uses instrumental variables procedures to determine whether the exogenous component of stock market development is linked with long-run growth. The basic regression takes the form:

$$(1) \quad GROWTH = \alpha + \beta SMI + \gamma X + \epsilon,$$

where the dependent variable, $GROWTH$, is real per capita GDP growth over the 1976–93 period, SMI is Value Traded, and X represents a matrix of conditioning information that controls for other factors associated with economic growth. I use $SRIGHTS$ and $ACCOUNT$ as instru-

mental variables for each of the SMI indicators and use a GMM estimator.

To control for "other factors," I include three different conditioning information sets. Conditioning Information Set No. 1 includes a constant, the logarithm of initial per capita GDP, the logarithm of initial secondary school enrollment, and the number of revolutions and coups. Conditioning Information Set No. 2 includes these variables plus government spending to GDP, inflation, and the black market exchange-rate premium. Conditioning Information Set No. 3 includes all the control variables in Conditioning Information Set No. 2 plus BANK, which equals bank credit to the private sector divided by GDP.

The results indicate a strong, positive relationship between the exogenous component of stock market development and economic growth. Table 6 (which is Table 5 of Levine 1997b) summarizes the results. After controlling for a wide array of factors, the exogenous component of Value Traded enters the growth regression with a significant coefficient (at the 0.05 level). Moreover, the strong link between the exogenous component of stock market development and growth holds using alternative instrumental variables. Specifically, I also used the dummy variables for legal origin—English, French, or German—as instrumental variables without using SRIGHTS and ACCOUNT. I did this because some may view the legal origin variables as better instruments

than SRIGHTS and ACCOUNT because legal origin is less prone to endogeneity problems. The results with these alternative instruments are very similar to those reported in Table 5: The stock market indicators are robustly correlated with economic growth. The exogenous component of stock market development—the component of stock market development defined by the legal and accounting regime—is positively associated with long-run economic growth.¹⁰

The linkages from the regulatory regime through stock market liquidity to long-run growth are economically meaningful. For example, the results imply that if Argentina implemented regulatory changes that improved the quality of corporate financial statements from the recorded value of 45 to the average for OECD countries (65), the growth would be 0.6 percentage points faster per year. This is large, considering that Argentina's real per capita GDP growth averaged only about 0.2 percentage points per year over this period. Furthermore, after a decade, 0.6 percentage points faster per capita GDP growth implies that each Argentinean would be earning 6 percent more *per year*. This is meant to be illustrative. Because the analysis does not consider any country in detail, the coefficients should not be applied to any individual country. Instead, the example serves to demonstrate the large potential costs, in terms of slower long-run growth, of permitting poor information disclosure to persist.

TABLE 6

Stock Markets and Growth: Using Instrumental Variables

$$\text{Growth} = a + B[\text{Matrix of Conditioning Information}] + c(\text{SMI})$$

Instruments: Matrix of conditioning information, plus *srights* and *account*

SMI is alternatively Value Traded, Turnover, Capitalization, and IPO

SMI	CONDITIONING INFORMATION set #1	CONDITIONING INFORMATION set #2	CONDITIONING INFORMATION set #3
	Value Traded	0.056 ** (0.023)	0.056 ** (0.023)
Turnover	0.059 * (0.031)	0.060 * (0.033)	0.059 * (0.030)
Capitalization	0.031 ** (0.011)	0.032 ** (0.001)	0.033 ** (0.011)
IPO	0.005 * (0.002)	0.005 ** (0.002)	0.006 ** (0.002)

Conditioning information set #1: logarithm of initial income per capita, logarithm of initial secondary school enrollment, and number of revolutions and coups.

Conditioning information set #2: conditioning information set #1, plus the initial values of government spending divided by GDP, inflation, and black market exchange rate premium.

Conditioning information set #3: set #2, plus initial value of bank credit to the private sector divided by GDP.

Note: Estimated using Generalized Method of Moments.

Source: Levine, (1997b); Table 5.

C. *Cautionary Note*

It is important to be clear about what these results do not show.

First, the results in Levine and Zervos (1998) and Levine (1997b) do *not* show that economic growth does not influence stock markets. The results do not contradict the argument that causality runs in both directions: Financial development influences economic growth, and economic growth influences financial sector development. Rather, existing work provides evidence consistent with the hypothesis that the exogenous component of stock market development promotes economic growth.

Second, Levine (1997b) and LLSV (1997) do not examine a slew of factors that may influence the operation of stock markets. For instance, a wide range of regulations influence stock market activity beyond those summarized by SRIGHTS and ACCOUNT. These range from listing requirements, to requirements governing the trading of securities, to supervision of broker/dealers, etc. Market microstructure may importantly influence stock market development. These factors were omitted due to a lack of data availability, not to potential relevance. Rather, LLSV (1997) and Levine (1997b) make more limited points: Legal heritage is closely linked to the legal rights of shareholders and the quality of corporate financial statements; legal and accounting characteristics influence stock market size and liquidity; and the exogenous component of stock market development is strongly linked with long-run rates of economic growth.

Third, the empirical results in conjunction with the theoretical overview do not imply that every country needs its own active bourse. Conceptually, firms and savers benefit from easy access to liquid stock markets. It is the ability to trade and issue securities easily that facilitates long-term growth, not the geographical location of the market. Thus, capital control liberalization may improve the ability of firms to raise capital both by improving the liquidity of domestic exchanges and by providing greater access to foreign exchanges.

Fourth, these analyses use cross-country comparisons. They do not examine any single country in depth. Thus, while LLSV (1997) and Levine (1997b) have very clear policy implications, these must be viewed as illuminating a reform strategy. These papers do not offer a precise blueprint. Nonetheless, the results—and therefore the policy implications—jump out. Particular characteristics of the

legal and regulatory environment are strongly linked with how well the stock exchange operates, with important spillovers for economic development.

III. Is a Bank-Based or Market-Based Financial System Better?

The classic controversy about financial structure involves comparisons between the bank-based systems of Germany and Japan versus the more market-based financial systems of England and the United States. In this section I first discuss arguments in favor of the bank-based system. Then, I review arguments that contradict this view. Next, I present some very preliminary evidence on the implications and determinants of financial structure from a research project with Asli Demirgüç-Kunt (1997). Finally, I conclude by arguing that (1) there exists considerable debate, with sparse evidence, about the relationship between financial structure and economic growth; and (2) there are good reasons for believing that the issue is not banks or stock markets, but that both banks and stock markets provide services to the economy that promote economic progress.

A. *The Case for a Bank-Based System*

As noted above, financial intermediaries can improve the acquisition of information on firms, the intensity with which creditors exert corporate control, provision of risk-reducing instruments, and mobilization of capital by reducing information and transaction costs. In contrast, market-based systems might not provide these financial services as well as bank-based systems.

Stiglitz (1985) argues that because well-developed markets quickly reveal information to investors at large, individual investors will be dissuaded from spending much time and money researching firms. There is a basic free-rider problem that reduces incentives for investors to expend resource acquiring information when this information is revealed in the market to others who have not spent time and money carefully investigating investment opportunities. This problem is less severe in bank-based systems since banks can make investments without revealing their decisions immediately in public markets.

Furthermore, many argue that the threat of outsiders' taking over the firm is a poor way of exerting corporate control and convincing managers to act in the best interests of firm owners. First, insiders probably have better information about the corporation than outsiders. This

informational asymmetry mitigates the potential effectiveness of takeovers because it is less likely that ill-informed outsiders will outbid relatively well-informed insiders for control of firms (unless they pay too much!) (Myers and Majluf 1984; Stiglitz 1985). Second, liquid equity markets may facilitate takeovers that, while profiting the raiders, may actually be socially harmful (Shleifer and Summers 1988). Third, more liquidity may reduce incentives to undertake careful—and expensive—corporate governance. By reducing exit costs, stock market liquidity encourages more diffuse ownership, such that each owner has fewer incentives to oversee managers actively (Bhide 1993; Shleifer and Vishny 1986). Fourth, if an outsider expends lots of resources obtaining information, the results of this research will be observed by other market participants when the outsider bids for shares of the firm. This will induce others to bid for shares, so that the price rises. Thus, the original outside firm that expended resources to obtain information must, therefore, pay a higher price for the firm than it would have to pay if “free-riding” firms could not observe its bidding. The rapid public dissemination of costly information reduces incentives for obtaining information and making effective takeover bids (Stiglitz 1985). Fifth, existing managers often take action—poison pills—that deter takeovers and thereby weaken the market as an effective disciplining device (Stiglitz 1985). There is some evidence that, in the United States, the legal system hinders takeovers and grants considerable power to management (Jensen 1991; Roe 1990; Szewczyk and Tsetsekos 1992).

Shareholders should be able to control management through boards of directors. However, an incestuous relationship may blossom between boards of directors and management. Members of a board enjoy their lucrative fees and owe those fees to nomination by management, so they are more likely to approve golden parachutes to managers and poison pills that reduce the attractiveness of takeovers. Thus, this incestuous link may further reduce the effectiveness of the market for corporate control (Allen and Gale 1997).

In sum, proponents of bank-based systems argue that there are fundamental reasons for believing that market-based systems will not do a good job of acquiring information about firms and overseeing managers. This will hurt resource allocation and economic performance. Banks do not suffer from the same fundamental shortcomings as markets; they will do a correspondingly better job at

researching firms and overseeing managers. Furthermore, while markets may potentially provide the best tailor-made products for hedging risk, markets are imperfect and incomplete. Thus, in some circumstances—particularly those involving intertemporal risk-sharing—bank-based systems may offer better risk-ameliorating services than market-based systems (Allen and Gale 1997).

B. The Case for a Market-Based System

The case for a market-based system is essentially a counterattack that focuses on the practical efficacy of bank-based systems. Bank-based systems may involve intermediaries with a huge influence over firms, and this influence may manifest itself in negative ways. For instance, once banks acquire substantial, inside information about firms, this allows banks to ease financing constraints but it also allows banks to extract rents from firms; firms must pay for their greater access to capital. In terms of new investments or debt renegotiations, banks with power can extract more of the expected future profits from the firm (than in a market-based system). This ability to extract part of the expected payoff to potentially profitable investments may reduce the effort extended by firms to undertake innovative, profitable ventures (Rajan 1992). Also, banks (as debt issuers) have an inherent bias toward prudence, so that bank-based systems may stymie corporate growth. Weinstein and Yafeh (1998) find evidence of this in Japan. While firms with close ties to a “main bank” have greater access to capital and are less cash constrained than firms without a main bank, the main bank firms tend (1) to employ conservative, slow growth strategies and do not grow faster than firms without a “main bank,” (2) to use more capital-intensive processes than non-main bank firms holding other features constant, and (3) to produce lower profits, which is consistent with how the powerful banks extract rents from the relationship. Allen and Gale (1997) further note that although banks may be effective at eliminating duplication of information-gathering and -processing, which is likely to be helpful when people agree about what needs to be gathered and how it should be processed, banks may be ineffective in non-standard environments. Thus, banks may not be effective gatherers and processors of information in new, uncertain situations involving innovative products and processes.

Another line of attack on the efficacy of bank-based systems involves corporate governance. Bankers will act in

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Another line of attack on the efficacy of bank-based systems involves corporate governance. Bankers will act in

their own best interests. Bankers may become captured by the firm, or collude with firms against other creditors. Thus, influential banks may prevent outsiders from removing inefficient managers, thereby eliminating one avenue of corporate control (Black and Moersch 1998). Wenger and Kaserer (1998) provide convincing evidence for the case of Germany. In Germany, bank managers voted the shares of a larger number of small stockholders. For instance, in 1992 bank managers exercised on average 61 percent of the voting rights of the 24 largest companies, and in 11 companies this share was higher than 75 percent. This control of corporations by bank management extends to the banks themselves. In the shareholder meetings of the three largest German banks, the percentage of proxy votes was higher than 80 percent, much of this voted by the banks themselves. For example, Deutsche Bank held voting rights for 47 percent of its own shares, while Dresdner votes 59 percent of its own shares (Charkham 1994). Thus, the bank management has wrested control of the banks from the owners of the banks and also exerts a huge influence on the country's major corporations. Wenger and Kaserer (1998) also provide examples in which banks misrepresent the accounts of firms to the public and systematically fail to discipline management.

Finally, market-based financial systems provide a richer set of risk-management tools that permit greater customization of risk-ameliorating instruments. While bank-based systems may provide inexpensive, basic risk-management services for standardized situations, market-based systems provide greater flexibility to tailor products. Thus, as economies mature and need a richer set of risk-management tools and vehicles for raising capital, they may concomitantly benefit from a legal and regulatory environment that supports the evolution of market-based activities, or overall growth may be retarded.

C. Some Very Preliminary Evidence

First, it is worth observing that there are noticeable changes in financial structure as countries develop. As first noted by Goldsmith (1969) and then shown by Demirgüç-Kunt and Levine (1998), the financial structure of countries varies with income. When moving from poorer to richer countries, commercial banks and non-banks grow in importance, while the role of central banks diminishes. Furthermore, the financial system allocates more credit to the private sector (as opposed to public enterprises and

governments) in richer countries. Finally, richer countries tend to have larger and more active stock markets as shares of GDP than poorer countries. The data suggest that as countries grow richer, specialized financial intermediaries and equity markets grow in importance.

To illustrate further how financial structure differs across countries, consider Table 7 (source: Demirgüç-Kunt and Levine 1998), which reports a measure of a financial structure. RELATIVE SIZE equals the ratio of stock market cap-

TABLE 7

Measures of Financial Structure 1980-1990

GDP/CAP is the real GDP per capita in US \$. Relative Size is defined as the ratio of stock market capitalization to liquid liabilities of financial intermediaries. All figures are 1980-1990 averages.

	GDP/CAP (US \$)	RELATIVE SIZE
Japan	19140	0.51
Denmark	19043	0.39
Norway	18509	0.25
Sweden	18494	0.76
United States	17884	0.86
Germany	17756	0.31
Finland	17295	0.33
France	15788	0.25
Canada	15347	0.68
Austria	15295	0.09
Netherlands	14655	0.48
Belgium	14065	0.56
Italy	12877	0.17
Australia	12340	0.83
United Kingdom	11491	1.36
New Zealand	10822	0.86
Israel	8539	0.41
Singapore	7744	1.25
Hong Kong	7561	0.69
Spain	7332	0.24
Greece	4610	0.09
Portugal	3614	0.12
Argentina	3396	0.18
Korea	2840	0.55
Venezuela	2652	0.11
S. Africa	2403	2.32
Malaysia	1957	0.87
Brazil	1933	0.57
Mexico	1800	0.28
Jordan	1632	0.46
Chile	1614	0.67
Turkey	1209	0.19
Colombia	1172	0.11
Thailand	930	0.18
Zimbabwe	655	0.28
Indonesia	430	0.03
India	322	0.16
Pakistan	313	0.14
Nigeria	292	0.12

italization to the liquid liabilities of financial intermediaries. While a very imperfect indicator of financial structure, RELATIVE SIZE provides some potentially useful comparisons. As illustrated, the United States and United Kingdom have relatively big markets, which is consistent with their being classified as market-based. Similarly, Germany and (to a lesser degree) Japan have stock markets that are small relative to the size of their banking systems. This is consistent with the classification of Germany and Japan as bank-based. It is also interesting to note that countries with larger values of RELATIVE SIZE—values greater than 0.80—are overwhelmingly countries with English (common law) legal origins, which are legal systems that tend to emphasize the rights of minority shareholders.

Turning to the determinants of financial structure, Table 8 (source: Demirgüç-Kunt and Levine 1998) presents correlations between RELATIVE SIZE and some potential determinants of market structure, including indicators of legal codes, legal enforcement, accounting regulations, and tax issues. Countries that provide greater

protection to shareholders tend to have market-based systems (big RELATIVE SIZE). It is also interesting to note that countries with greater protection of minority shareholders also tend to have lower bank interest-rate spreads. Furthermore, legal system efficiency in terms of contract enforcement is also particularly important for the development of market-based systems.

Finally, I conducted a preliminary analysis of the growth implications of market structure. Specifically, I examined the partial correlation between RELATIVE SIZE and long-run economic growth in a cross-section of countries after controlling for other country characteristics. Thus, I followed the same procedures discussed above for examining the link between measures of financial intermediary development and long-run growth. Basically, I could not get RELATIVE SIZE to be significant (with either a positive or negative coefficient). Using this simple measure of the size of the domestic equity markets relative to the size of the banking sector, I could not find a significant link between financial structure and growth.

TABLE 8

Correlations of Financial Structure with Legal, Accounting, Regulatory, and Tax Factors

Common Law is a dummy variable that takes the value 1 for common law countries and the value 0 for others. Shareholder rights is an index that ranges from 0 to 5 and aggregates shareholder rights and creditor rights is an index that ranges from 0 to 4.5 and aggregates creditor rights as explained in La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1998). Law and order indicator reflects the degree to which the citizens of a country are willing to accept the established institutions to make and implement laws and adjudicate disputes. It is scored 0 to 6 with higher scores indicating sound political institutions and a strong court system. Legal efficiency indicator is an assessment of the efficiency and integrity of the legal environment as it affects business, particularly foreign firms. It is scored 0 to 10 with lower scores for lower efficiency levels. Quality of accounting standards is an index created by examining and rating company annual reports on the basis of their inclusion or omission of 90 key accounting items. Restrictions on banking is a dummy variable that takes the value 1 if banking activities in securities is restricted and 0 otherwise. Deposit insurance is a dummy variable that takes the value 1 if the country has an explicit insurance scheme and the value 0 otherwise. The tax variables are the relative tax advantage of debt with respect to dividends and capital gains. All variables, when available, were averaged over 1980–1990 so that each country has one observation. Correlations reported are Pearson Correlation Coefficients. P-values are given in italics. Number of observations are reported under respective p-values.

FINANCIAL STRUCTURE	LEGAL CODES		LEGAL ENFORCEMENT			ACCOUNTING AND REGULATION		TAX TREATMENT		
	COMMON LAW	SHAREHOLDER RIGHTS INDEX	CREDITOR RIGHTS INDEX	LAW AND ORDER INDICATOR	LEGAL EFFICIENCY INDICATOR	QUALITY OF ACCOUNTING STANDARDS	RESTRICTIONS ON BANKING	DEPOSIT INSURANCE	TAX ADV. OF DEBT VS. DIVIDENDS	TAX ADV. OF DEBT VS. CAPITAL GAINS
Relative	0.463	0.490	0.171	-0.014	0.328	0.504	0.053	-0.357	-0.578	-0.141
Size	0.011 29	0.007 29	0.385 28	0.943 29	0.039 40	0.009 26	0.811 23	0.058 29	0.001 28	0.476 28
Banking	-0.377	-0.451	-0.339	-0.130	-0.205	-0.354	-0.188	0.224	0.068	-0.302
Spread	0.052 27	0.018 27	0.090 26	0.519 27	0.230 36	0.083 25	0.401 22	0.261 27	0.735 27	0.125 27

Source: Demirguc-Kunt and Levine (1998)

D. Conclusions: Banks and Markets

Here, I want to make two points. First, there are good reasons for believing that the issue is not banks or stock markets, but that both banks and stock markets provide complementary services to the economy that promote economic progress. Second, although there exists considerable debate about the relationship between financial structure and economic growth, there is insufficient evidence to arrive at a confident conclusion concerning bank-based and market-based systems.

1. Complementarities between Banks and Markets

Traditionally, development specialists have focused on banks and viewed stock markets as unimportant sideshows. They note that much more corporate capital is raised from banks than from equity issues. Similarly, traditional finance theory, strongly influenced by Modigliani-Miller, views debt and equity—and through this prism, banks and equity markets—as substitute sources of finance. These traditional views, therefore, either give little role to markets or view banks and markets as competing components of the financial system.

This traditional view, however, ignores an important point: Stock markets may provide different financial services from banks. Put differently, stock markets may positively affect economic development even though not much capital is raised through them. For instance, stock markets may play a prominent role in facilitating custom-made risk-management services and boosting liquidity. In addition, stock markets may complement banks. For instance, by spurring competition for corporate control and by offering alternative means of financing investment, securities markets may reduce the potentially harmful effects of excessive bank power.

While the theoretical literature is making progress in modeling the co-evolution of banks and markets (Boyd and Smith 1996; Huybeus and Smith 1998; Allen and Gale 1997), there is already some empirical evidence. For instance, Levine and Zervos (1998) show that greater stock market liquidity implies faster economic growth no matter what the level of banking development. Similarly, greater banking development implies faster growth regardless of the level of stock market liquidity. Moreover, even after controlling for other country characteristics, such as initial income, schooling, political stability, and monetary, fiscal, trade, and exchange-rate policies, the data still indicate that both banking development and stock market develop-

ment exert a positive influence on growth. Using firm-level data, Demirgüç-Kunt and Maksimovic (1996b) show that increases in stock market development actually tend to increase the use of bank finance in developing countries. Thus, these two components of the financial system may act as complements during the development process. While still in need of additional research, the scattered pieces of evidence that currently exist suggest that we may not want to view bank-based and market-based systems as representing a trade-off. Policy-makers may instead want to focus on providing a legal and regulatory environment that allows both banks and markets to flourish without tipping the playing field in favor of either banks or markets.

2. Insufficient Evidence

There is very little empirical evidence supporting—or refuting—any particular claim about the benefits of bank-based or market-based financial systems in economic growth. There have been insightful studies of bank-based versus market-based financial structures in a few industrial countries, mainly Germany, Japan, the United Kingdom, and the United States. These studies, however, have a fundamental weakness. These four countries are at about the same level of GDP per capita. Therefore, over a sufficiently long time horizon, they had similar rates of economic growth. Thus, it is virtually impossible to reliably link differences in financial structure to differences in economic growth because there are very little differences in economic growth. To resolve this problem, it is important to study a wider range of countries. Moreover, there are not recent cross-country studies of financial structure and economic development involving developing countries. Given the importance of this issue for economic growth, it is time to fill this research gap.

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Endnotes

1. For evidence, see James (1987), Lummer and McConnell (1989), James and Wier (1990), and Slovin, Sushka, and Polonchek (1993).

2. Also, see the review by Schiantarelli (1995) and Hubbard (1998).

3. Allen and Gale (1997) also note that when there are market frictions, the introduction of markets can hinder the ability of intermediaries to provide this intertemporal risk-sharing. Jacklin (1987) also shows that the introduction of markets can hinder efficient risk-pooling by intermediaries.

4. Some of this section is taken verbatim from Levine, Loayza, and Beck (1998).

5. Glendon, et al. (1982) and Berman (1997) describe how Roman law was compiled under the direction of Byzantine Emperor Justinian in the sixth century. Over subsequent centuries, the law was interpreted and adapted throughout Europe. Eventually, individual countries formalized legal codes. The Scandinavian countries developed their Civil Codes in the 17th and 18th centuries. These countries have remained relatively unaffected from the far-reaching influences of the English, German, and French legal traditions. The English legal tradition is not a civil law heritage, where laws are heavily shaped by legal scholars. Instead, in the English—common law—legal tradition, laws are heavily influenced by judges trying to resolve particular cases. The French Civil Code was written in 1804 under the direc-

tion of Napoleon, who saw the permanence of the Code as more important than the fleeting nature of his military conquests. He had the Code adopted in all conquered territories, including Italy, Poland, the low countries, and the Hapsburg Empire. Through conquest and colonization, France extended its legal influence to parts of the Near East, Northern and Sub-Saharan Africa, Indochina, Oceania, French Guiana, and the French Caribbean islands during the colonial era. Furthermore, because the French Civil Code exerted a major influence on the Portuguese and Spanish legal systems, this helped spread the French legal tradition to Central and South America. After the unification of Germany under Bismarck in 1871, the German Civil Code was completed in 1896. The German Code exerted a big influence on Austria and Switzerland, as well as China, Czechoslovakia, Greece, Hungary, Italy, and Yugoslavia. Also, the German Civil Code heavily influenced the Japanese Civil Code, which helped spread the German legal tradition to Korea.

6. Some of this section is taken verbatim from Levine (1998b).

7. For a discussion of results using other measures of stock market development, see Levine and Zervos (1998) and Levine (1997b).

8. The variable descriptions that follow are taken directly from LLSV.

9. Recall that the strong link between long-run growth and stock market development runs primarily through market liquidity, which highlights the importance of comprehensive and comparable data in facilitating stock market activity.

10. Furthermore, the data do not reject the orthogonality conditions in any of the 12 regressions; the data do not reject the over-identifying restrictions, which gives great confidence in the instrumental variables. Thus, the results are consistent with the statement that the shareholder rights (SRIGHTS) and information (ACCOUNT) indicators influence growth only through their impact on stock market development.