Bank-Based or Market-Based Financial Systems:

Which is Better?

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Abstract: For over a century, economists and policy makers have debated the relative merits of bank-based versus market-based financial systems. Recently, however, proponents of the legal-based view of financial development have argued that the century long debate concerning bank-based versus market-based financial systems is analytically vacuous. According to this view, the critical issue is establishing a legal environment in which both banks and markets can operate effectively. This paper represents the first broad, cross-country examination of which view of financial structure and economic growth is most consistent with the data.

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I. Introduction

For over a century, economists and policy makers have debated the relative merits of bank-based versus market-based financial systems. At the close of the 19th century, German economists argued that their bank-centered financial system had helped propel Germany past the market-centered United Kingdom as an industrial power [Goldsmith 1969]. During the 20th century this debate expanded to include Japan, as a major bank-based economy, and the United States, as the quintessential market-based system. Indeed, less than a decade ago, many observers claimed that Japan's bank-based financial system would catapult it past the United States as the world's foremost economic power [e.g., Vogel 1979; and Porter 1992]. Although Japan's recent troubles have pushed this particular example from center stage, policy makers and economists around the globe continue to analyze the relative merits of bank-based versus market-based financial systems [e.g., Allen and Gale 1999].

Implicit in the bank-based versus market-based debate is the notion of a tradeoff. Two unfamiliar disciplines, corporate finance and development economics, can each be used to provide the analytical basis for this tradeoff view. Many development economists argue that investment is the key to growth and readily note that much more corporate finance is raised from banks than from equity sales even in the most developed markets.[1] This view produces a pessimistic assessment of the role of markets compared to banks in fostering growth. Moreover, many development economists note that markets can destabilize economies with negative ramifications on development. Thus, traditional development economics focuses on banks and views stock markets as unimportant – and perhaps dangerous -- sideshows. In turn, traditional corporate finance theory views debt and equity – and through this prism, banks and equity

markets – as substitute sources of finance [Modigliani and Miller 1958]. Corporate finance and development economics, therefore, may give little positive role to markets or view banks and markets as competing components of the financial system.

There may not exist a tradeoff between banks and markets according to the financial services view of the finance-growth nexus. Levine (1997) and others stress that financial arrangements – contracts, markets, and intermediaries – arise to provide key financial services. Specifically, financial systems assess potential investment opportunities, exert corporate control after funding projects, facilitate risk management, including liquidity risk, and ease savings mobilization. By providing these financial services more or less effectively, different financial systems promote economic growth to a greater or lesser degree. According to this "financial services view," the issue is not banks *or* markets. The issue is creating an environment in which banks *and* markets provide sound financial services. The financial services view is not necessarily inconsistent with either bank-based or market-based financial systems being particularly effective at providing financial services at particular stages of economic development. Nevertheless, the financial services view places the analytical spotlight on how to create better functioning banks and markets, and relegates the bank-based versus market-based debate to the shadows.

The legal-based view of financial structure -- espoused by Laporta, Lopez-de-Silanes, Shleifer, and Vishny (henceforth LLSV, 1997, 1998, 1999) – extends the financial services view and unconditionally rejects the bank-based versus market-based debate. The legal-based view argues that finance is a set of contracts. These contracts are defined – and made more or less effective – by legal rights and enforcement mechanisms. From this perspective, a well-

[1] For discussion of development economics and its erroneous stress on capital accumulation, see Easterly and Levine (1999). For evidence on corporate finance around the globe, see Mayer (1980).

functioning legal system facilitates the operation of both markets and intermediaries. It is the overall level and quality of financial services – as determined by the legal system – that improves the efficient allocation of resources and economic growth. According to the legal-based view, the century long debate concerning bank-based versus market-based financial systems is analytically vacuous. Fortunately, recently compiled data allows us to analyze these different hypotheses on financial structure and growth.

The purpose of this paper is to evaluate which view of financial structure and economic growth is most consistent with international experience. Besides the bank-based and market-based views, I examine the financial services view along with its extension: the legal-based approach. The bank-based view stresses the importance of financial intermediation in ameliorating information asymmetries and intertemporal transaction costs. According to this view, bank-based financial systems – especially in countries at early stages of economic development – are better than market-based financial systems at promoting economic growth. The market-based view stresses the importance of well-functioning securities markets in providing incentives for investors to acquire information, impose corporate control, and custom design financial arrangements. According to the market-based view, market-based financial systems are better at promoting long-run economic growth than more bank-based financial systems. The financial services view does not conceptually reject the bank-based versus market-based debate. Rather, it emphasizes that both banks and markets can provide financial services that foster economic growth. The legal-based view rejects the bank- versus market-based distinction. It stresses that the legal system plays the pivotal role in determining the provision of growth-promoting financial services.

Besides resolving theoretical debates, providing empirical evidence on financial structure will help in formulating growth-enhancing public policies. If the evidence supports either the bank-based or market-based views of financial structure and growth, then policy makers can focus on implementing policies to encourage the development of a particular financial structure. Toward this end, Demirguc-Kunt and Levine (1999) provide evidence on the legal, tax, and policy determinants of financial structure. If the evidence rejects the bank-based and market-based approaches and supports the financial services approach to financial structure, then policy makers should focus more on improving the functioning of both banks and markets. More specifically, evidence supporting the legal-based view of financial structure and growth would highlight the importance of strengthening the rights of investors and improving the efficiency of contract enforcement. Thus, empirically distinguishing the merits of the competing views of financial structure and growth has critical policy implications.

Past studies of financial structure and growth have tended to focus on a few industrialized countries. Indeed, the historical focus has been on Germany, Japan, the United Kingdom, and the United States.[2] Case-studies construct country-specific measures of financial structure. Thus, studies of Germany commonly focus on the extent to which banks own shares or vote proxy shares; studies of Japan frequently focus on whether a company has a "main bank;" while, studies of the United States sometimes on the role of market takeovers as corporate control devices. These country-specific measures are very useful; however, they are difficult to use in a broad cross-country analysis. Also, there is a major shortcoming with existing comparisons of market-based versus bank-based financial systems: they focus on a very narrow set of countries with similar levels of GDP per capita, so that the countries have very similar long-run growth

rates. Thus, if one accepts that Germany and Japan are "bank-based" and that the United Kingdom and the United States are "market-based," then this implies that financial structure did not matter much since the four countries have similar long-run growth rates.[3] To provide greater information on both the economic importance and determinants of financial structure, economists need to broaden the debate to include a wider array of national experiences.

This paper represents the first broad, cross-country examination of financial structure and economic growth.[4] One advantage of the broad cross-country approach is that it permits a consistent treatment of financial system structure across many countries. I use the new dataset constructed by Beck, Demirguc-Kunt, and Levine (1999). We constructed this data from individual country sources and more standard databases. The dataset measures the size, activity, and efficiency of various components of the financial system, including banks, securities markets, and nonbank financial intermediaries for a wide assortment of developed and developing countries. While recognizing that broad cross-country comparisons come at the cost of less precise measures of financial structure, this paper provides the first consistent appraisal of financial structure and economic performance in the international cross-section of countries.

The results are overwhelming. There is no cross-country empirical support for either the market-based or bank-based views. Neither bank-based nor market-based financial systems are particularly effective at promoting growth. This conclusion is not altered when examining countries at different levels of economic development. Similarly this conclusion is not altered

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[2] For an enlightening review of the literature on financial structure, see Allen and Gale (1999). Also, see Chirinko and Elston (1999), Edwards and Fischer's (1994) book, along with the review by Gorton 1995. The Black and Moersch (1998b) volume contains very worthwhile research.

[3] While other differences (e.g., fiscal, monetary, and regulatory policies) could have perfectly balanced the growth effects of differences in financial structure, this seems unlikely. Also, past studies of financial structure do not control for differences in non-financial sector policies.

[4] Black and Moersch (1998a) start down this path, but they do not have sufficient data to conduct the analyses on a diverse set of countries.

when looking at extremes: countries with very well developed banks but poorly developed markets do not perform notably differently from those with very well developed markets but poorly developed banks, or than those with more balanced financial systems after controlling for overall financial development. Thus, cross-country comparisons do not suggest that distinguishing between bank-based and market-based is analytically useful for understanding the process of economic growth.

The cross-country evidence is very supportive of the financial services and legal-based views of finance and growth. Better-developed financial systems positively influence economic growth. It is relatively unimportant for economic growth whether overall financial development stems from bank or market development. More particularly, the data are consistent with the legal-based view: the legal system plays a leading role in determining the level and quality of growth-promoting financial services. The component of financial development defined by the legal rights of investors and the efficiency of contract enforcement is very strongly associated with long-run growth. Thus, the data tend to support the LLSV (1999) view that (i) the legal system is a crucial determinants of financial development and (ii) financial structure is not an analytically useful way to distinguish financial systems.

These findings are based on the best available cross-country data. It seems unlikely that substantially better measures of financial structure will become readily available for a large cross-section of countries. Nevertheless, it should be emphasized that there is no uniformly accepted concept of bank-based versus market-based and there is no correspondingly unique empirical measure. Moreover, the use of broad cross-country comparisons further limits the available types of financial structure measures. Thus, this paper's strong findings must be tempered by these relevant qualifications.

The remainder of this paper is organized as follows. Section II describes the different theoretical views of financial structure and growth and derives predictions regarding particular parameters in a regression framework. Section III presents and discusses the data that I use to evaluate the different theoretical predictions. Section IV provides the results of the empirical tests. Section V conclusions.

II. Theory and Econometric Specification

This section reviews the literature on financial structure -- i.e., bank-based versus market-based financial systems -- and formulates econometric tests to distinguish competing theories. More specifically, I first describe the economic rationale for how intermediaries and markets influence economic performance. Then, I describe the debate regarding the relative merits of banks versus markets in promoting economic growth. Third, I describe an alternative two-part view that shuns the bank-based versus market-based debate. Instead of viewing the world as banks *versus* markets, one can view the world as banks *and* markets. This financial services view suggests that various components of the financial system may each provide financial services that promote economic growth. This financial services view can be extended to focus on the legal determinants of financial contracting. The legal-based view emphasizes the positive role that governments can plan in defining and enforcing property rights. Finally, I translate the predictions arising from these competing theories into restrictions on the parameters in a simple growth regression framework.

A. *Finance and Growth*[5]

The costs of acquiring information, enforcing contracts, and making transactions create incentives for the emergence of financial contracts, markets, and intermediaries to mitigate the

negative repercussions of these market frictions. In arising to ameliorate market frictions, financial systems provide crucial financial services: (1) they assess investment opportunities and provide corporate control, (2) they ease risk management, including liquidity risk, and (3) they lower the costs of mobilizing resources. Better financial systems, therefore, can be defined in terms of how well they provide these key financial services. This subsection discusses how financial intermediaries provide these services.

A.1. Banks

First, financial intermediaries may reduce the costs of acquiring and processing information about firms and managers and thereby improve resource allocation and corporate control [Diamond 1984; Boyd and Prescott 1986]. Specifically, there are large costs associated with evaluating firms and managers. 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. Instead of this inefficient situation, financial intermediaries can evaluate firms and managers for a large group of investors. By reducing duplication and free-riding, financial intermediaries improve the ex ante assessment of investment opportunities and the ex post exertion of corporate control once those investment have been funded.

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

[5] For references, see Levine (1997).

[Allen and Gale 1999]. 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. Also, intermediaries can reduce 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. Specifically, banks invest just enough in short-term securities to satisfy those with liquidity needs. At the same time, banks 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.

Third, financial intermediaries facilitate savings mobilization -- pooling -- by economizing on the transactions costs associated with mobilizing savings from many disparate agents and by overcoming the informational asymmetries associated with making savers comfortable in relinquishing control of their savings [Sirri and Tufano 1995; Lamoreaux 1995]. By effectively mobilizing savings, financial intermediaries not only ease capital accumulation. Financial intermediaries 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 resource for "immense works." Bagehot was very explicit in noting that it was not the

national savings rate per se, rather it was the ability to pool society's resources and allocate those savings toward the most productive ends.

Thus, an assortment of theories outline intuitively appealing reasons for how better intermediaries -- 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 these predictions.[6]

A.2. Stock Markets

Stock markets also provide financial services by influencing information acquisition and corporate control, risk management, and savings mobilization. First, well-functioning stock markets may stimulate the acquisition and dissemination of information. As markets become larger and more liquid, 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 enhance resource allocation substantially 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 and by making it easier to tie managerial compensation to performance. 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

[6] 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 [Demirguc-Kunt and Maksimovic 1998], industry-level studies [Rajan and Zingales 1998; Wurgler 2000], country-case studies [Cameron 1967; McKinnon 1973; Haber 1991, 1996], time-series [Neusser and Kugler 1998; Wachtel and Rousseau 1995],

managerial compensation with stock price performance, then this helps align the interests of managers with those of firm owners.

Second, 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. Markets can also ease liquidity risk [Levine 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. Liquid equity markets make long-term investment more attractive because they allow savers to 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.

Third, well-developed securities markets can assist resource mobilization. Mobilizing the savings of many disparate savers is costly because it involves (a) overcoming the transaction costs associated with collecting savings from different individuals and (b) 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 generally very concerned about establishing stellar reputations, so that savers feel comfortable about entrusting their savings to others.

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simple cross-country studies [King and Levine 1993a,b], and more recent instrumental variable and panel examinations [Levine 1998, 1999a; Levine, Loayza, and Beck 2000; Beck, Levine, and Loayza 2000].

The data support the view that well-functioning markets boost economic growth.[7] In particular, Levine and Zervos (1998) show that it is the liquidity of the market – not the size of the market as represented by market capitalization – that matters for long-run growth. Thus, past theory and evidence suggest that both banks and markets promote economic growth.

B. "Banketeers" vs "Marketeers"

B.1. "Banketeers:" 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, the provision of risk-reducing arrangements, and the mobilization of capital. This is an argument in favor of well-developed banks. It is not, however, an argument in favor of a bank-based financial system. The case for a bank-based system, instead, comes from a critique of the role of markets in providing financial service.

Stiglitz (1985) argues that since well-developed markets quickly reveal information to investors at large, this dissuades individual investors from spending much time and money researching firms. There is a basic free-rider problem. This problem is less severe in bank-based systems since banks can make investments without revealing their decisions immediately in public markets.

Furthermore, "banketeers" argue that markets are an ineffective device for exerting corporate control. First, insiders probably have better information about the corporation than outsiders do. This informational asymmetry mitigates the potential effectiveness of takeovers since it is less likely that ill-informed outsiders will outbid relatively well-informed insiders for control of firms (unless they pay too much!). Second, liquid equity markets may facilitate

[7] See Levine and Zervos (1998), Maksimovic and Demirguc-Kunt (1999), and Levine (2000) on the relationship between stock markets and economic growth.

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 [Shleifer and Vishny 1986]. Fourth, if an outsider expends lots of resources obtaining information, other market participants will observe the results of this research 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 obtaining 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. Fifth, existing managers often take action – poison pills – which deter takeovers and thereby weaken the market as an effective disciplining device. There is some evidence that, in the United States, the legal system hinders takeovers and grants considerable power to management. Fifth, although shareholder should be able to control management through boards of directors, 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. Thus, boards are more likely to approve golden parachutes to managers and poison pills that reduce the attractiveness of takeover. This incestuous link may further reduce the effectiveness of the market for corporate control [Allen and Gale 1999].

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 involving intertemporal risk sharing – bank-based systems may offer better risk ameliorating services than market-based systems [Allen and Gale 1999].

B.2. Marketeers: Case for a Market-Based System

The case for a market-based system is essentially a counterattack focusing on the problems created by power banks. 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, banks can 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-base 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].

Banks (as debt issuers) also have an inherent bias toward prudence, so that bank-based systems may stymie corporate innovation and growth. Weinstein and Yafeh (1998) find evidence of this in Japan. While firms with close to 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 to (i) employ conservative, slow growth strategies and do not grow faster than firms without a "main bank," (ii) use more capital inventive processes than non-main bank firms holding other features constant, and (iii) produce lower profits, which is consistent with the powerful banks

extracting rents from the relationship. Allen and Gale (1999) 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, bank 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 act in their own best interests. Bankers may become captured by firms, or collude with firms against other creditors. Thus, influential banks may prevent outsiders from removing inefficient managers if these managers are particularly generous to the bankers [Black and Moersch 1998a]. 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%. 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 rested 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 make 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. Financial Services or Legal-Based Views

C.1. Complementarities between Banks and Markets

As noted above, market frictions create incentives for the creation of financial contracts, markets, and intermediaries. In turn, the various component of the financial system provide financial services: they evaluate project, exert corporate control, facilitate risk management, and ease the mobilization of savings. The financial services view focuses on these services. It stresses that better financial systems are better at providing these services. The primary issue is the availability and quality of these services. The exact composition of the financial system – bank-based or market-based is of secondary importance.

The financial services view notes that markets and banks may provide complementary services or provide the same financial services. For instance, stock markets may positively affect economic development even though not much capital is raised through them. Specifically, 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; Allen and Gale 1999], 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, monetary, fiscal, trade, and exchange rate policies, the data still indicate that both banking development and stock market development exert a positive influence on growth. Using firm-level data, Demirguc-Kunt and Maksimovic (1996) 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. We may not want to view bank-based and market-based systems as representing a tradeoff. Policymakers 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.

C.2. Legal-Based Approach

An alternative view, which I will term "the legal-based view," builds on this financial services view. LLSV (1999, p.24) argue that, "In the end, the rights create finance." More specifically, they present arguments supporting the view that creating strong legal codes that support the rights of outside investors – both equity and debt investors – and then efficiently enforces those codes is crucial for the providing growth-enhancing financial services. Indeed, they suggest it would easier to explain cross-country differences in the quality of financial services by looking at the quality of the legal system rather than by focusing on bank- versus

market-based issues. In their own words, "… bank- versus market-centeredness is not an analytically useful way to distinguish financial systems." (LLSV p.25) The legal-based view predicts that the level of financial development defined by the legal environment will be a much better predictor of economic performance than any measure of financial structure per se.

D. *Econometric Specification*

These competing theories of financial structure can be represented as rival predictions on the parameters in a standard growth equation. Standard growth models and their econometric representations typically model real per capita GDP growth, G, as a function of a number of growth determinants, X. These growth determinants universally include initial income and the initial level of workforce education to capture conditional convergence and the importance of human capital. Many models also control macroeconomic stability, openness to international trade, and political stability. I modify these cross-country growth specifications to investigate econometrically the competing views of financial structure.

Specifically, to distinguish among the alternative financial structure views, consider the following cross-country regression equations

(1) $G = a'X + bS + U(1)$

(2) $G = c'X + dF + U(2)$

(3) $G = f'X + hS + jF + U(3)$

G is real per capita GDP growth.
X is a set of conditioning information, i.e., standard growth determinants.
S measures financial structure measure. Larger values of S signify more market-based, while smaller values signify more bank-based.
F measures overall financial sector development, i.e., the level of development of banks, nonbanks, and securities markets. Larger values of F signify a greater level of financial services.
U(i) is the error term in equation i=1, 2, and 3 respectively.

The small letters, a, b, c, d, f, h, and j are coefficients.

Different hypotheses regarding financial structure and growth imply different predictions on the values of the parameters in regressions 1-3.

Bank-based view: Bank-based systems are particularly good for growth and banks contribute to overall financial development. Thus, the bank-based view predicts that $b<0$, $d>0$, $h<0$, and $j>0$.

Market-based view: Market-based systems are particularly good for growth and markets contribute to overall financial development. Thus, the market-based view predicts that $b>0$, $d>0$, $h>0$, and $j>0$.

Financial-services view: The financial structure debate is not very useful. Financial services – whether provided by bank or markets -- positively influence growth. Unless overall financial development happens to be positively related to either bank-based or market-based system, financial structure should not matter for growth. Thus, the financial-services view predicts that $b=0$, $h=0$, $d>0$, and $j>0$.

Legal-based view: Only that part of overall financial development defined by the legal system is linked with economic growth. This approach suggests using instrumental variables to extract that component of overall financial development, F, defined by the legal rights of outside investors and the efficiency of contract enforcement. It makes the same predictions as the financial-services view, except within the context of a regression framework that uses the legal codes and enforcement efficiency as instruments.

Thus, these views of financial structure yield very different predictions on parameters b and h. I use cross-country data to construct estimates of the parameters. This helps distinguish among the competing views of financial structure empirically.

There may be subtle variants on these approaches. For instance, some bank-based proponents focus on developing countries. Thus, there is a "modified" bank-based view that might favor the following regression equation, where Y is real per capita GDP.

(4) $G = a'X + bS + kS*Y + U$

Modified bank-based view: Banks are particular important at low levels of economic development. As income rises, however, countries benefit from market development. Thus, this modified bank-based view predicts that $b<0$ and $k>0$. I consider this specification below.

Given this conceptual framework, I now describe the empirical proxies for S and F that I use to examine the financial structure debate.

IV. **Data**

A. Definitions of Financial Structure

To examine the relationship between financial structure and economic growth, one needs a measure of financial structure. Unfortunately, there is no uniformly accepted empirical definition of a bank-based or market-based financial system. Consequently, I use an assortment of measures of financial structure based on the aggregate, cross-country dataset constructed by Beck, Demirguc-Kunt, and Levine (1999). This dataset contains numerous measures of financial structure for a broad cross-section of countries over the 1980-95 period.

One advantage of the broad cross-country approach is that it permits a consistent treatment of financial system structure across countries and thereby facilitates international comparisons. One weakness of the broad cross-country approach is that it does not permit the use of indicators such as the voting power of banks or the role of market takeovers as corporate control devices. These types of measures are informative and very useful in individual country

studies or detailed studies of a few countries. These types of measures, however, are not available for the international cross-section of countries. To provide a broad cross-country approach, therefore, this paper focuses on five aggregate indicators of financial structure based on measures of the relative size, activity, and efficiency of banks and markets.

STRUCTURE-ACTIVITY is a measure of the activity of stock markets relative to that of banks. To measure the activity of stock markets, I use the *total value traded ratio*, which equals the value of domestic equities traded on domestic exchanges divided by GDP. This total value traded ratio is frequently used to gauge market liquidity because it measures market trading relative to economic activity. The total value traded ratios for the 48 countries used in this paper are ranked and given in Table 1. To measure the activity of banks, I use the *bank credit ratio*, which equals the value of deposit money bank credits to the private sector as a share of GDP. This measure excludes credits to the public sector (central and local governments as well as public enterprises). The bank credit ratio is ranked and given in Table 1. Thus, STRUCTURE-ACTIVITY equals the logarithm of the total value traded ratio divided by the bank credit ratio. Larger values of STRUCTURE-ACTIVITY imply a more market-based financial system. The values for STRUCTURE-ACTIVITY are ranked and listed in Table 2. I discuss these values below.

STRUCTURE-SIZE is a measure of the size of stock markets relative to that of banks. To measure the size of the domestic stock market, I use the *market capitalization ratio*, which equals the value of domestic equities listed on domestic exchanges divided by GDP. Table 1 ranks and lists the market capitalization ratio. To measure the size of bank, I again use the *bank credit ratio*. It should be noted, however, that other measures of banking system size, such as the total banking system assets divided by GDP, yield similar results. Thus, STRUCTURE-SIZE

equals the logarithm of the market capitalization ratio divided by the bank credit ratio. The values for STRUCTURE-SIZE are ranked and listed in Table 2. I discuss these values below.

STRUCTURE-EFFICIENCY is a measure of the efficiency of stock markets relative to that of banks. To measure the efficiency of stock markets, I use the *total value traded ratio* since it reflects the liquidity of the domestic stock market. I also used the turnover ratio, which equals the value of stock transactions relative to market capitalization. The turnover ratio measures trading relative to the size of the markets is also used as an indicator of market efficiency. Using the turnover ratio produces similar results to those obtained with the total value traded ratio. To measure the efficiency of the banking sector, I use *overhead costs*, which equals the overhead costs of the banking system relative to banking system assets. While subject to interpretational problems, large overhead costs may reflect inefficiencies in the banking system. Moreover, while many readers may question the accuracy of this index, I include it for completeness. Table 1 ranks and lists the overhead cost index of bank efficiency. I also used interest rate margins in place of overhead costs and obtained similar results. Thus, STRUCTURE-EFFICIENCY equals the logarithm of the total value traded ratio times overhead costs. Larger values of STRUCTURE-EFFICIENCY imply a more market-based financial system. Its value is given in Table 2.

STRUCTURE-AGGREGATE is a conglomerate measure of financial structure based on activity, size, and efficiency. Specifically STRUCTURE-AGGREGATE is the first principal component of STRUCTURE-ACTIVITY, STRUCTURE-SIZE, and STRUCTURE-EFFICIENCY. Thus, I construct STRUCTURE-AGGREGATE to be the variable that best explains (highest joint R-square) the first three financial structure indicators. The ranked values of this variable are also given in Table 2.

STRUCTURE-DUMMY makes a simple bivariate classification of bank-based versus market-based financial systems based on the STRUCTURE-AGGREGATE indicator. Specifically, STRUCTURE-DUMMY equals one if STRUCTURE-AGGREGATE is greater than the sample median and zero otherwise. Thus, STRUCTURE-DUMMY equals one for "market-based" economies and zero for "bank-based" ones.

B. Discussion of Financial Structure Measures

Demirguc-Kunt and Levine (1999) discuss a variety of appealing and anomalous features associated with measures of financial structure. For instance, the activity measure of financial structure, STRUCTURE-ACTIVITY, makes the intuitively appealing classification that Taiwan, Malaysia, Switzerland, and the United States are highly market-based because of their active markets. However, STRUCTURE-ACTIVITY also identifies Turkey, Mexico, and Brazil as very market-based even though their total value traded ratios are about one-sixth that of the United States. This reflects the fact that these countries all have very low levels of bank development.

The size measure of financial structure suffers from a particularly large array of anomalies. The size measure of financial structure, STRUCTURE-SIZE, identifies Ghana, Jamaica, and Zimbabwe as having highly market-based financial systems. It does this because these countries have very small and under-developed banking systems, not because their stock markets are particularly well developed. The size measure also classifies Egypt and Honduras as highly bank-based, even though they have bank credit ratios below the sample mean. The size measure also indicates that Chile and South Africa are very market-based even though neither country has a very active market. Both countries have large market capitalization with relatively little trading. Theory, however, focuses on the liquidity of the market, not the listing of shares

per se. Thus, the size measure seems particularly prone to problems. Indeed, while all the structure indicators are highly correlated as shown in Table 5, the weakest cross-correlations involve STRUCTURE-SIZE.

The efficiency measure of financial structure suffers from similar problems. While STRUCTURE-EFFICIENCY appealingly identifies Switzerland, Taiwan, the United States, and the United Kingdom as market-based, it also indicates that Brazil has a relatively highly efficient market. But, Brazil has such a high value of STRUCTURE-EFFICIENCY because it has very large bank overhead costs. Similarly, while Egypt, Kenya, and Ghana standout as very bank-based according to this efficiency measure, the designation derives from the very low levels of activity in their stock markets, not because they have efficient banks.

Since the goal of this paper is to use the best available data to assess the relationship between financial structure and economic growth, it is crucial to recognize the measurement problems and evaluate their importance when possible. As exemplified above, financial structure measures can be large either because the country has well-developed markets, or because it has very poorly developed banks. Similarly, a country may have small financial structure indicators either because its banks are comparatively well-developed or because its markets are relatively underdeveloped. Thus, I use the Demirguc-Kunt and Levine (1999) method of first identifying countries with highly underdeveloped financial systems. They argue that it might be appropriate to classify these countries as neither bank-based nor market-based, but to simply note that these countries are underdeveloped financially. Specifically, I identify those counties that have below mean values of bank credit, market capitalization, and total value traded ratios and greater than median values of overhead expenditures as noted in Table 1. Specifically, I create a dummy variable called UNDEVELOPED, which equals 1 if the country

has below median values of all of these financial development indicators. The UNDEVELOPED countries are listed in Table 3. As a robustness check, I test whether identifying these countries in the analyses alters the findings. I discuss this in the presentation of the results below.

C. Measuring Overall Financial Development

The legal-based approach suggests that neither market-based nor bank-based systems are particularly important for economic growth. The legal-based approach instead emphasizes that that component of overall financial sector development produced by the legal system is critically and positively linked to long-run growth. To assess this view, one needs a measure of overall financial sector development and measures of the degree to which the legal system supports financial sector development. Toward this end, this section presents measures of overall financial sector development based on indicators of activity, size, and efficiency. The goal is that these indicators proxy for the degree to which national financial systems provide financial services: assessing firms and monitoring managers, easing risk management, and mobilizing resources.

FINANCE-ACTIVITY is a measure of the activity of stock markets***and*** intermediaries. To measure the activity of stock markets, I use the*total value traded ratio*. To measure the activity of banks, I use the*private credit ratio*, which equals the value of financial intermediary credits to the private sector as a share of GDP. This measure excludes credits to the public sector (central and local governments as well as public enterprises). Unlike the bank credit ratio used to construct STRUCTURE-ACTIVITY, however the private credit ratio includes credits issued by non-deposit money banks. Thus, it is a more comprehensive measure of financial intermediary development than private credit. This is appropriate since FINANCE-ACTIVITY is an overall index of financial sector activity. (Note, however, that when I reconstruct all the

structure measures using private credit instead of bank credit, this does not change the results.) Thus, FINANCE-ACTIVITY equals the logarithm of the total value traded ratio times the private credit ratio and it is listed in Table 4. Also, Table 5 shows that FINANCE-ACTIVITY is significantly and positively correlated with each of the structure indicators and the other financial development indicators.

FINANCE-SIZE is a measure of the size of stock markets ***and*** intermediaries. To measure the size of the domestic stock market, I use the *market capitalization ratio*. As noted above, there are conceptual problems with simply using market size to gauge market development. Also, Levine and Zervos (1998) find that market size is not strongly linked with economic growth but market activity (as measured by the total value traded ratio) is a good predictor of economic growth. Nonetheless, we include this measure for completeness and to assess the Levine and Zervos (1998) finding with a different dataset. To measure the size of intermediaries, I again use the *private credit ratio*. Thus, FINANCE-SIZE equals the logarithm of the market capitalization ratio times the private credit ratio. Table 4 lists its values.

FINANCE-EFFICIENCY is a measure of financial sector efficiency. To measure the efficiency of stock markets, I use the *total value traded ratio*. To measure the efficiency of the banking sector, I use *overhead costs*, which equals the overhead costs of the banking system relative to banking system assets. Thus, FINANCE-EFFICIENCY equals the logarithm of the total value traded ratio divided by overhead costs. Its value is given in Table 4.

FINANCE-DUMMY simply isolates those countries identified by Demirguc-Kunt and Levine (1999) as having underdeveloped banks and markets from other countries. Thus, FINANCE-DUMMY equals 0 if the country is highly underdeveloped financially and 1 otherwise.

FINANCE-AGGREGATE is the first principal component of the first three financial development indicators of activity, size, and efficiency.

C. Other Variables

To assess the relationship between economic growth and both financial structure and financial development, it is important to control for other potential growth determinants. The matrix of variables X in the equations above represented the other potential growth determinants. More specifically, in the regressions that follow, I use two sets of conditioning information to assess the links between growth and financial structure and development.

The **simple conditioning information set** contains only the logarithm of initial real per capital GDP, which for the present study is the value in 1980, and the logarithm of the initial level of the number of years of schooling in the working age population. Initial income captures the convergence effect predicted by many growth models and schooling is included because many analyses suggest a positive role for human capital in the growth process.

The **full conditioning information** set contains the simple conditioning information set plus (i) the logarithm of one plus the average rate of inflation, (ii) the logarithm of one plus the average black market premium, (iii) the logarithm of government size as a share of GDP, (iv) the logarithm of international trade (exports plus imports) as a share of GDP, and (v) indicators of civil liberties, revolutions and coups, political assassinations, bureaucratic efficiency, and corruption. An assortment of research papers stresses the importance of macroeconomic policies and political factors in the process of economic growth. I control for these factors in order to assess the independent link between growth and both financial structure and overall financial development.

III. **Results**

A. Financial Structure

Table 6 presents the financial structure results using ordinary least squares estimation with heteroskedasticity-consistent standard errors. The top panel lists the results for the simple conditioning information set for each of the five financial structure variables. The bottom panel lists the results for the full conditioning information set. I use a common sample throughout, so that there are 48 observations in all of the regressions (except as noted below). To concisely summarize a large number of regressions, I only report the results on the variable of interest: the financial structure variables.

The Table 6 results indicate that financial structure is not significantly related to economic growth. None of the financial structure indicators enters any of the growth regressions significantly at the 0.10 level. The results are inconsistent with both the bank-based and the market-based views. The bank-based view predicts a negative relationship between growth and the financial structure measures. The market-based view predicts a positive relationship. Rather, the results are more consistent with the financial services and legal-based views: they predict that financial structure is not the most useful way to distinguish financial systems.

These findings are robust to alterations in the regression equation. In the econometric specification, regression equation (3) specifies growth as a function of *both* financial structure and overall financial development. I also examined this specification. The financial structure variables never enter the equation (3) specification significantly. I report and discuss the robust results on overall financial development below. Furthermore, I re-did all of the results in Table 6 to test whether banks are particularly important at low levels of economic development. Thus, I included the interaction term, S*Y, where S is the financial structure indicator and Y is real per

capita GDP. Specifically, I estimated equation (4) above to assess the validity of the modified bank-based view. This did not alter the results: neither the coefficient on S nor the coefficient on S*Y is ever significant at the 0.10 level. Again, the results are more consistent with the financial services and legal-based views than with the other views of financial structure.

Furthermore, I controlled for very underdeveloped financial systems, i.e., those listed in Table 3. I augmented the regressions in Table 6 by including the dummy variable, UNDEVELOPED, which equals one for the very underdeveloped financial system countries and zero for other countries. This did not alter the results. None of the structure indicator enters significantly. Thus, the data do not support either the market-based or bank-based theories regarding financial structure.

Tables 7, 8, and 9 examine whether financial structure is related to the sources of growth: capital accumulation, total factor productivity growth, or the private savings rate. More specifically, Table 7 is the same as Table 6 except that I include the rate of physical capital accumulation as the dependent variable. In Table 8, the dependent variable is total factor productivity growth, which in this case equals G – (0.3)(real per capita capital growth) and is taken from Easterly and Levine (1999). Table 9 presents results where the private savings rate is the dependent variable. As shown, there is not a significant link – positive or negative – between financial structure and the sources of economic growth. The results are more consistent with the legal-based view of financial structure.

Table 10 examines the relationship between financial structure and economic growth using instrumental variables to control for potential simultaneity. I use three instrumental variables that explain cross-country differences in financial structure. All three variables come

from LLSV (1998). SRIGHTS is an index of shareholder rights.[8] SRIGHTS does a particularly good job of explaining cross-country differences in stock market development. In turn, CRIGHTS is an index of creditor rights.[9] CRIGHTS helps account for cross-country differences in banking sector development. CRIGHTS, however, does not explain much of the cross-country variation in stock market development. Since contract enforcement is important for both bank and market activities, I also include a measure of the law and order tradition of the country, LAW, to gauge the efficiency of contract enforcement.[10] Use of these instruments, reduces the sample size to 41. As seen in Table 10, the use of instrumental variables does not alter the results: financial structure is neither positively nor negatively related to economic growth.[11]

B. Financial Development

The results are quite different when examining the five measures of overall financial development. Table 11 presents simple regressions of growth against the different financial development indicators for the simple and full conditioning information sets. Tables 12, 13, and 14 present similar results on the relationship between overall financial development and the

[8] Specifically, for shareholder rights, I add 1 if: (1) the country allows the shareholders to mail their proxy to the firm; (2) shareholders are not required to deposit their shares prior to the General Shareholders' Meeting; (3) cumulative voting or proportional representation of minorities in the board of directors is allowed; (4) an oppressed minorities mechanism is in place; (5) the minimum percentage of share capital that entitles a shareholder to call for an Extraordinary Shareholders' Meeting is less than or equal to 10 percent (the sample median); or (6) shareholders have preemptive rights that can only be waived by a shareholders' vote.

[9] Specifically, for creditor rights I add one if (1) the country imposes restrictions, such as creditors' consent, to file for reorganization; (2) secured creditors are able to gain possession of their security once the reorganization petition has been approved (no automatic stay); (4) secured creditors are ranked first in the distribution of the proceeds that result from the disposition of assets of a bankrupt firm; and (4) the debtor does not retain the administration of its property pending the resolution of the reorganization.

[10] Specifically, LAW ranges from 10, strong law and order tradition, to 1, weak law and order tradition; average over 1982-95.

[11] While STRUCTURE-ACTIVITY enters with a P-value of 0.078 in Table 5 with the full conditioning information set, this P-value jumps to over 0.9 when one controls for the level of financial development. This is relevant since financial structure is positively related to overall financial development as emphasized by Demirguc-Kunt and Levine (1999). In assessing financial structure, it is important to examine whether financial structure is related to growth after controlling for overall financial development. This is the specification presented in equation 3 above.

sources of growth (capital accumulation, total factor productivity growth, and private saving rates). Table 15 presents the growth regressions using instrumental variables.

Financial development – as measured by the conglomerate indices of bank activity and stock market activity -- is positively and significantly related to economic growth in the international cross-section of countries. Indeed, the only financial development indicator that is not significantly related to growth in Table 11 is FINANCE-SIZE, which measures financial size. This result is consistent with the Levine and Zervos (1998) result that market capitalization is not a robust predictor of economic growth. They show that stock market liquidity, as measured by the total value traded ratio, and banking sector activity, as measured by bank credit to the private sector are robust predictors of growth. Thus, the Table 11 results are consistent with the financial services and legal-based views. While they are also consistent with both the market-based and bank-based views of financial development, these views of financial structure did not fair very well in the specific examination of financial structure. Moreover, all of the overall financial development indicators continue to enter significantly in the simple growth regressions when controlling for financial structure.[12] The results in Tables 12, 13, and 14 also confirm earlier findings that (1) financial development is closely linked with total factor productivity growth but (2) financial development is not robustly linked with capital accumulation or private saving rates.

These findings are consistent with the financial services view of financial structure and the coefficients suggest an economically large relationship between finance and growth. To illustrate the economic size of the coefficients in Table 11 consider FINANCE-ACTIVITY, the

[12] Note that STRUCTURE-ACTIVITY and FINANCE-ACTIVITY are highly correlated (0.69). In the OLS regression with the full conditioning information set, FINANCE-ACTIVITY does not enter with P-value of less than 0.05 when controlling for STRUCUTRE-ACTIVITY. STRUCTURE-ACTIVITY does not enter significantly

overall financial activity measure, and its estimated coefficient of 0.435 in the full conditioning information set regression. Now consider changing Peru and Argentina's levels of overall financial activity from –6.6 and –6.0 respectively to the level of their neighbor Chile, which has a value of FINANCE-ACTIVITY of –4.0 over the 1980-95 period. The estimates suggest an increase in real per capital GDP growth of 1.15 percentage points for Peru and 0.89 percentage points in Argentina. This increase in growth is large. Over this period, Peru shrank at a rate of –1.8 percent per year while Argentina stagnated with an annual growth rate of 0.04 percent. Chile, however, might also strive for greater financial development. For instance, Thailand, which has similar real per capita GDP, has an overall financial sector activity index of –2.0, compared to Chile's value of –4.0 for FINANCE-ACTIVITY. If Chile had enjoyed Thailand's level of financial activity during this 15 year period, the coefficient estimates suggest that Chile would have grown 0.86 percentage points faster each year (Chile's real per capita annual growth over the period averaged 3.7 percent. These examples are meant to illustrate the economic size of the coefficients and should not be viewed as exploitable elasticities. Nonetheless, the results indicate that the economic relationship between overall financial sector development and long-run growth is economically relevant.

Table 15 provides information on the legal-based view of financial development. Here I use instrumental variables to extract that part of overall financial development determined by the legal environment. Specifically, I identify financial development determined by (i) legal codes that support shareholders, (ii) legal codes that support creditors, and (iii) the efficiency with which law are enforced. It is worth pointing out the desirability of using these legal indicators. Earlier studies have shown that the exogenous component of financial development is positively

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either. FINANCE-ACTIVITY, however, in the full conditioning information regressions, enters significantly when controlling for any of the other four measures of financial structure.

linked with growth.[13] These studies use the legal origin of each country as an instrumental variable in extracting the exogenous component of financial development. LLSV (1998) show that legal origin – either French, English, German, or Scandinavian – explains differences in legal codes and enforcement efficiency. Also, these legal origin variables can be viewed as exogenous to the period of study. While these earlier studies were primarily interested in the confronting the issue of exogeneity, the current study is primarily interested in assessing different views of financial structure and growth. The legal-based view argues the following: the part of overall financial development defined by the legal codes and enforcement capabilities explains cross-country growth differences. Thus, I focus on using legal codes and law enforcement to extract this component of overall financial development, rather than replicating work.

The results are consistent with the legal-based view: greater financial development, as defined by the legal environment, is positively related to economic growth. Only the simple dummy variables in the full conditioning information set regression does not enter significantly at the 0.05 level. All of the other variables enter significantly. Furthermore, the regressions pass the test of the overidentifying restrictions. That is, the data do not reject the hypothesis that shareholder rights, creditor rights, and the law and order tradition of the country influence growth only through their effects on financial development. Thus, the data are consistent with the view that the component of overall financial development explained by legal codes and enforcement efficiency is positively and significantly related to economic growth. Finally, note the coefficient sizes did not shrink from the simple OLS regression results presented in Table

[13] See Levine (1998, 1999, 2000), Levine, Loayza, and Beck (2000), and Beck, Levine, and Loayza (2000).

11.[14] The economic impact of the exogenous component of financial sector development is economically large.

The results on the legal-based view, however, must be viewed cautiously. To view the Table 11 results as providing information on the legal-based view, we draw inferences about the instruments. Specifically, to derive conclusions about the legal-based view of financial structure from Table 11, one must interpret results as supporting the contention that the component of financial development determined by specific legal variables is positively and significantly linked with growth. This is consistent with results. Nonetheless, this interpretation is inherently a structural statements and should be evaluated within the context of a structural model, which is beyond the scope of this paper. However, a couple of additional pieces of information support the legal-based view. First, the three legal system variables jointly explain economic growth. Specifically, I enter the three legal system variables jointly in the full conditioning information set growth regression. Using an F-statistic on the ability of the three variables to jointly explain growth, they enter significantly.[15] Second, the legal variables do not enter significantly when controlling for overall financial development, which suggests that it is the ability of the legal variables to explain cross-country differences in financial development that is crucial for growth.[16] This is exactly the legal-based view of financial structure.

[14] Indeed, the parameters rose substantially. For instance, the OLS estimate in the simple conditioning information set regression on FINANCE-ACTIVITY is 0.65, while the corresponding estimate for the IV regression is 0.86. Using instrumental variables, but alternative measures of financial development, Levine, Loayza, and Beck (2000) found a similar rise in coefficient estimates when various instrumental variables.

[15] Specifically, the F-statistic equals 3.01 with a P-value of 0.048 and the Chi-square statistic on the test of joint significance is 9.03, with a P-value of 0.029. The shareholder rights indicator enters individually significantly at the 0.02 significance level, while creditor rights and the law and order tradition of the country enter with t-statistics of greater than one.

[16] Specifically, the P-value on the F- and Chi-square-statistics when testing the joint significance of the legal variables while controlling for overall financial development are typically greater than 0.45 with the alternative financial development indicators.

D. Unbalanced Financial Systems

As a final assessment of the potential importance of financial structure, I examine unbalanced financial systems. Countries with well-developed banks and poorly developed markets, or vice-versa, may have distorted financial structures that hinder the efficient provision of financial services. Thus, a country can have an unbalanced financial system if its banks are well-developed (better than the median value of the private credit ratio) and its markets are under-developed (lower than the median value of the total value traded ratio). This type of financial system with relatively active banks and inactive markets is classified as "unbalanced bank." A country can also have an unbalanced financial system if its banks are under-developed (lower than the median value of the private credit ratio) and its markets are well-developed (greater than the median value of the total value traded ratio). This type of financial system with relatively active markets and inactive banks is classified as "unbalanced market." Table 16 summarizes the categorization of countries according to the classification system.

Table 17 shows that identifying countries with very unbalanced financial systems does not help in explaining economic growth. Countries with well-developed banks but poorly developed markets do not perform worse than countries with very well-developed markets but poorly developed banks, or than those with more balanced financial systems. Moreover, when I include any of the five indicators of overall financial development with the unbalanced indicators, each of the five financial development indicators enters significantly at the five percent level. It is the overall level of financial development that is strongly linked with economic growth, not the particular arrangements of markets and intermediaries that provide financial services. Cross-country comparisons do not suggest that distinguishing between bank-based and market-based is analytically useful for understanding the process of economic growth.

IV. Conclusions

This paper explores the relationship between economic performance and financial structure – the degree to which a country's financial system is market-based or bank-based. In particular, I examine competing views of financial structure and economic growth. The bank-based view holds that bank-based systems – particularly at early stages of economic development – foster economic growth to a greater degree than market-based financial system. In contrast, the market-based view emphasizes that markets provide key financial services that stimulate innovation and long-run growth. Alternatively, the financial services view stress the role of bank and markets in research firms, exerting corporate control, creating risk management devices, and mobilizing society's savings for the most productive endeavors. This view minimizes the bank-based versus market-based debate and emphasizes the quality of financial services produced by the entire financial system. Finally, the legal-based view rejects the analytical validity of the financial structure debate. The legal-based view argues that the legal system shapes the quality of financial services. Put differently, the legal-based view stresses that the component of financial development explained by the legal system critically influences long-run growth. Thus, we should focus on creating a sound legal environment, rather than on debating the merits of bank-based or market-based systems.

The cross-country data strongly support the financial services view of financial structure and growth, while also providing evidence consistent with the legal-based view. The data provide no evidence for the bank-based or market based view. Distinguishing countries by financial structure does not help in explaining cross-country differences in long-run economic performance. Distinguishing countries by their overall level of financial development, however,

does help in explaining cross-country difference in economic growth. Countries with greater degrees of financial development – as measured by aggregate measures of bank development and market development – are strongly linked with economic growth. Moreover, the component of financial development explained by the legal rights of outside investors and the efficiency of the legal system is strongly and positively linked with long-run growth. The legal system importantly influences financial sector development and this in turn influences long-run growth.

Although the measures of financial structure are not optimal, the results do provide a clear picture with sensible policy implications. Improving the functioning of markets and banks is critical for boosting long-run economic growth. Thus, policy makers should focus on strengthening the legal rights of outside investors and the overall efficiency of contract enforcement. There is not very strong evidence, however, for using policy tools to tip the playing field in favor of banks or markets. Instead, policy makers should resist the desire to construct a particular financial structure. Rather, policy makers should focus on the fundamentals: property rights and the enforcement of those rights.

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Table 1: Bank and Market Indicators of Activity and Size

Bank Credit (Activity/Size)		Total Value Traded (Activity/Efficiency)		Market Capitalization (Size)		Overhead Cost (Efficiency)	
Switzerland	1.44	Taiwan	1.50	South Africa	1.31	Ireland	0.00
Japan	1.04	Switzerland	0.98	Malaysia	1.07	Netherlands	0.01
Germany	0.86	Malaysia	0.43	U.K.	0.76	Japan	0.01
Taiwan	0.83	Japan	0.38	Japan	0.73	Malaysia	0.02
Austria	0.83	U.K.	0.35	Switzerland	0.71	Panama	0.02
France	0.82	U.S.A.	0.34	U.S.A.	0.58	Finland	0.02
U.K.	0.74	Thailand	0.20	Taiwan	0.49	Taiwan	0.02
Netherlands	0.74	Netherlands	0.19	Canada	0.46	Egypt	0.02
Finland	0.67	Germany	0.19	Chile	0.43	Tunisia	0.02
Spain	0.66	Israel	0.16	Australia	0.43	Thailand	0.02
U.S.A.	0.65	Canada	0.15	Netherlands	0.41	U.K.	0.02
Portugal	0.63	Australia	0.14	New Zealand	0.40	Canada	0.02
Malaysia	0.59	Ireland	0.14	Sweden	0.38	Austria	0.02
Cyprus	0.57	Sweden	0.14	Israel	0.29	Norway	0.02
Tunisia	0.52	France	0.08	Ireland	0.27	Portugal	0.03
Thailand	0.51	New Zealand	0.08	Thailand	0.26	Australia	0.03
South Africa	0.51	South Africa	0.08	Belgium	0.26	New Zealand	0.03
Israel	0.51	Brazil	0.06	Jamaica	0.24	Germany	0.03
Italy	0.51	Denmark	0.06	Denmark	0.22	Belgium	0.03
Panama	0.49	Mexico	0.06	Philippines	0.21	India	0.03
Canada	0.48	Spain	0.06	France	0.20	Pakistan	0.03
Norway	0.48	Turkey	0.06	Cyprus	0.19	Sweden	0.03
Australia	0.47	Norway	0.06	Germany	0.19	Chile	0.03
Chile	0.45	Philippines	0.05	Finland	0.18	Spain	0.03
Sweden	0.44	India	0.05	Spain	0.18	Italy	0.04
Denmark	0.42	Finland	0.04	Norway	0.15	Denmark	0.04
New Zealand	0.41	Italy	0.04	Mexico	0.15	South Africa	0.04
Belgium	0.37	Austria	0.04	Zimbabwe	0.13	U.S.A.	0.04
Trin. & Tob.	0.30	Chile	0.04	India	0.13	Kenya	0.04
Ireland	0.27	Belgium	0.03	Sri Lanka	0.13	Israel	0.04
India	0.24	Jamaica	0.03	Ghana	0.12	Zimbabwe	0.04
Egypt	0.24	Portugal	0.02	Italy	0.12	Greece	0.04
Pakistan	0.23	Honduras	0.02	Brazil	0.12	Honduras	0.04
Philippines	0.23	Pakistan	0.02	Kenya	0.12	Cyprus	0.04
Greece	0.22	Ecuador	0.02	Trin. & Tob.	0.11	France	0.04
Jamaica	0.22	Argentina	0.02	Ecuador	0.10	Trin. & Tob.	0.04
Honduras	0.21	Greece	0.02	Pakistan	0.09	Sri Lanka	0.05
Sri Lanka	0.19	Cyprus	0.02	Greece	0.08	Switzerland	0.05
Kenya	0.19	Peru	0.01	Portugal	0.08	Mexico	0.05
Brazil	0.16	Sri Lanka	0.01	Tunisia	0.08	Philippines	0.05
Ecuador	0.15	Trin. & Tob.	0.01	Austria	0.07	Ghana	0.05
Mexico	0.15	Zimbabwe	0.01	Panama	0.07	Turkey	0.06
Argentina	0.14	Tunisia	0.01	Colombia	0.06	Jamaica	0.08
Colombia	0.14	Colombia	0.01	Turkey	0.06	Ecuador	0.08
Zimbabwe	0.13	Egypt	0.00	Peru	0.06	Colombia	0.08
Turkey	0.13	Kenya	0.00	Egypt	0.05	Peru	0.10
Peru	0.06	Ghana	0.00	Honduras	0.05	Argentina	0.11
Ghana	0.03	Panama	0.00	Argentina	0.05	Brazil	0.12

Table 2: Ranked Structure Indices

STRUCTURE ACTIVITY		STRUCTURE SIZE		STRUCTURE EFFICIENCY		STRUCTURE AGGREGATE	
Taiwan	0.59	Ghana	1.34	Switzerland	-3.03	Taiwan	1.86
Malaysia	-0.32	South Africa	0.94	Taiwan	-3.62	Malaysia	1.59
Switzerland	-0.39	Malaysia	0.60	U.S.A.	-4.38	Switzerland	1.58
U.S.A.	-0.64	Jamaica	0.08	U.K.	-4.79	U.S.A.	1.34
Ireland	-0.64	Zimbabwe	0.03	Brazil	-4.87	U.K.	1.24
Turkey	-0.73	U.K.	0.02	Malaysia	-4.97	Brazil	1.01
U.K.	-0.74	Mexico	-0.02	Israel	-5.10	Mexico	0.90
Mexico	-0.85	New Zealand	-0.02	Japan	-5.24	Japan	0.86
Brazil	-0.92	Ireland	-0.03	Germany	-5.26	South Africa	0.85
Thailand	-0.92	Chile	-0.03	Sweden	-5.47	Canada	0.82
Japan	-1.00	Canada	-0.06	Thailand	-5.52	Sweden	0.80
Canada	-1.14	Peru	-0.07	Turkey	-5.54	Australia	0.80
Israel	-1.15	Australia	-0.09	Australia	-5.58	Israel	0.75
Sweden	-1.18	Philippines	-0.10	Canada	-5.59	Turkey	0.71
Australia	-1.18	U.S.A.	-0.11	France	-5.60	Thailand	0.68
Netherlands	-1.36	Sweden	-0.15	Mexico	-5.75	Philippines	0.58
Philippines	-1.47	Brazil	-0.31	South Africa	-5.91	New Zealand	0.49
Germany	-1.52	Japan	-0.35	Philippines	-5.92	Peru	0.39
Peru	-1.54	Belgium	-0.36	Denmark	-6.08	Jamaica	0.38
India	-1.61	Sri Lanka	-0.39	New Zealand	-6.12	Ireland	0.33
New Zealand	-1.64	Ecuador	-0.43	Jamaica	-6.12	Netherlands	0.33
Denmark	-1.87	Kenya	-0.48	Spain	-6.14	Germany	0.17
South Africa	-1.90	Taiwan	-0.53	Netherlands	-6.26	Denmark	0.17
Jamaica	-2.04	Israel	-0.56	Argentina	-6.28	Ghana	0.16
Norway	-2.06	Netherlands	-0.60	Norway	-6.49	India	0.14
Argentina	-2.15	India	-0.60	Peru	-6.53	Chile	0.00
Ghana	-2.17	Denmark	-0.62	Italy	-6.54	Ecuador	-0.04
Ecuador	-2.19	Thailand	-0.66	India	-6.58	Belgium	-0.17
France	-2.28	Switzerland	-0.71	Ecuador	-6.65	France	-0.17
Honduras	-2.34	Turkey	-0.74	Chile	-6.74	Argentina	-0.18
Spain	-2.36	Colombia	-0.78	Austria	-6.92	Norway	-0.23
Belgium	-2.38	Pakistan	-0.98	Belgium	-6.94	Spain	-0.31
Chile	-2.46	Trin. & Tob.	-1.00	Honduras	-7.06	Zimbabwe	-0.35
Pakistan	-2.51	Greece	-1.02	Finland	-7.23	Sri Lanka	-0.41
Italy	-2.52	Argentina	-1.09	Cyprus	-7.31	Italy	-0.55
Zimbabwe	-2.58	Cyprus	-1.11	Sri Lanka	-7.37	Pakistan	-0.62
Greece	-2.65	Norway	-1.15	Greece	-7.37	Honduras	-0.63
Sri Lanka	-2.66	Finland	-1.29	Pakistan	-7.47	Greece	-0.66
Finland	-2.72	Spain	-1.29	Colombia	-7.50	Colombia	-0.75
Austria	-3.04	France	-1.42	Portugal	-7.52	Finland	-0.76
Colombia	-3.04	Italy	-1.45	Trin. & Tob.	-7.72	Trin. & Tob.	-1.04
Portugal	-3.40	Honduras	-1.46	Zimbabwe	-7.88	Cyprus	-1.05
Trin. & Tob.	-3.41	Germany	-1.53	Ireland	-8.02	Austria	-1.27
Cyprus	-3.62	Egypt	-1.54	Ghana	-8.52	Kenya	-1.37
Kenya	-3.93	Tunisia	-1.91	Kenya	-8.88	Portugal	-1.43
Egypt	-4.14	Panama	-1.94	Tunisia	-8.90	Egypt	-2.09
Tunisia	-4.29	Portugal	-2.10	Egypt	-9.60	Tunisia	-2.09
Panama	-5.17	Austria	-2.46	Panama	-9.98	Panama	-2.75

Table 3: Underdeveloped Financial Systems

Argentina
Colombia
Ecuador
Ghana
Greece
Honduras
Kenya
Peru
Sri Lanka
Trinidad and Tobago
Zimbabwe

Note: Countries with below median values bank credit, market capitalization total value traded, and above median values of overhead costs.

Table 4: Financial Development

FINANCE ACTIVITY		FINANCE SIZE		FINANCE EFFICIENCY		FINANCE AGGREGATE	
Switzerland	0.55	Switzerland	5.51	Taiwan	4.43	Switzerland	1.88
Taiwan	0.31	Japan	5.49	Ireland	4.14	Taiwan	1.84
Japan	-0.43	South Africa	5.35	Japan	3.32	Japan	1.76
U.S.A.	-0.80	U.S.A.	5.24	Malaysia	3.27	Malaysia	1.52
Malaysia	-1.08	Malaysia	5.23	Switzerland	2.98	U.S.A.	1.37
U.K.	-1.33	Netherlands	5.13	Netherlands	2.95	Netherlands	1.35
Netherlands	-1.41	U.K.	5.02	U.K.	2.72	U.K.	1.27
Germany	-1.76	Sweden	4.99	Thailand	2.33	Ireland	1.11
Sweden	-1.91	Taiwan	4.94	U.S.A.	2.24	Sweden	0.92
Thailand	-1.98	Australia	4.82	Germany	1.91	Germany	0.89
Canada	-2.14	Canada	4.81	Canada	1.84	Thailand	0.86
Australia	-2.14	Germany	4.71	Australia	1.71	Canada	0.86
Ireland	-2.41	France	4.71	Sweden	1.49	Australia	0.84
Israel	-2.52	Norway	4.64	Israel	1.43	South Africa	0.79
France	-2.57	Cyprus	4.57	New Zealand	1.07	Israel	0.51
South Africa	-2.81	New Zealand	4.55	Finland	0.98	France	0.50
Norway	-2.91	Thailand	4.55	Norway	0.91	Norway	0.47
Spain	-3.11	Austria	4.54	South Africa	0.75	New Zealand	0.42
New Zealand	-3.14	Chile	4.54	France	0.64	Spain	0.30
Austria	-3.36	Spain	4.50	Denmark	0.58	Finland	0.28
Finland	-3.52	Ireland	4.49	Spain	0.57	Austria	0.26
Denmark	-3.63	Finland	4.45	India	0.52	Chile	0.10
Italy	-3.89	Israel	4.37	Austria	0.48	Denmark	0.05
Chile	-3.96	Portugal	4.26	Mexico	0.23	Italy	-0.09
Brazil	-4.14	Tunisia	4.16	Chile	0.20	Belgium	-0.16
Philippines	-4.17	Denmark	4.16	Belgium	0.19	Portugal	-0.17
Portugal	-4.32	Belgium	4.14	Italy	0.13	Cyprus	-0.21
India	-4.35	Italy	4.13	Philippines	0.03	Philippines	-0.26
Belgium	-4.37	Trin. & Tob.	4.11	Turkey	-0.03	India	-0.30
Cyprus	-4.44	Panama	4.06	Portugal	-0.19	Mexico	-0.49
Mexico	-4.50	Jamaica	3.95	Pakistan	-0.45	Brazil	-0.53
Turkey	-4.77	Philippines	3.91	Brazil	-0.62	Jamaica	-0.55
Jamaica	-4.82	Greece	3.88	Honduras	-0.76	Tunisia	-0.58
Greece	-5.05	Kenya	3.71	Greece	-0.92	Greece	-0.62
Honduras	-5.15	India	3.69	Jamaica	-0.96	Trin. & Tob.	-0.67
Trin. & Tob.	-5.32	Brazil	3.60	Tunisia	-1.00	Honduras	-0.77
Pakistan	-5.41	Zimbabwe	3.56	Cyprus	-1.06	Pakistan	-0.78
Tunisia	-5.52	Honduras	3.52	Sri Lanka	-1.26	Turkey	-0.81
Ecuador	-5.75	Colombia	3.51	Zimbabwe	-1.37	Panama	-0.95
Sri Lanka	-5.97	Egypt	3.50	Trin. & Tob.	-1.52	Sri Lanka	-1.03
Argentina	-5.99	Mexico	3.47	Ecuador	-1.52	Zimbabwe	-1.04
Zimbabwe	-6.14	Pakistan	3.47	Egypt	-1.55	Ecuador	-1.10
Colombia	-6.31	Sri Lanka	3.47	Panama	-1.76	Egypt	-1.23
Panama	-6.55	Ecuador	3.35	Argentina	-1.91	Kenya	-1.27
Peru	-6.60	Turkey	2.99	Peru	-2.02	Colombia	-1.31
Kenya	-6.83	Argentina	2.99	Kenya	-2.30	Argentina	-1.39
Egypt	-6.85	Peru	2.76	Colombia	-2.51	Peru	-1.62
Ghana	-9.07	Ghana	2.73	Ghana	-2.71	Ghana	-2.20

Table 5: Correlations: Financial Structure and Financial Development

	STRUCTURE ACTIVITY	STRUCTURE SIZE	STRUCTURE EFFICIENCY	STRUCTURE AGGREGATE	STRUCTURE DUMMY	FINANCE ACTIVITY	FINANCE SIZE	FINANCE EFFICIENCY	FINANCE DUMMY	FINANCE AGGREGATE
STRUCTURE ACTIVITY	1.00	0.54	0.86	0.97	0.79	0.69	0.35	0.73	0.41	0.62
STRUCTURE SIZE		1.00	0.30	0.67	0.61	0.08	***0.04***	0.16	***-0.04***	***0.10***
STRUCTURE EFFICIENCY			1.00	0.88	0.63	0.80	0.51	0.67	0.49	0.69
STRUCTURE AGGREGATE				1.00	0.80	0.66	0.38	0.65	0.37	0.59
STRUCTURE DUMMY					1.00	0.51	0.30	0.57	0.30	0.48
FINANCE AGGREGATE						1.00	0.88	0.94	0.78	0.98
FINANCE SIZE							1.00	0.80	0.80	0.93
FINANCE EFFICIENCY								1.00	0.75	0.96
FINANCE DUMMY									1.00	0.81
FINANCE AGGREGATE										1.00

Note: All correlations are significant at the 0.05 level except those in italcs and bold.

Structure-Activity = Ln (total value trade / bank credits to private sector).
Structure-Size = Ln ((market capitalization / bank credits to private sector)).
Structure-Efficiency = Ln (total value traded * bank overhead ratio).
Structure-Aggregate = principal component of structure 1, 2, 3.
Structure-Dummy = 1 if structure4 is greater than the sample median, 0 otherwise.
Finance-Activity = Ln (total value traded * intermediary private credits / GDP).
Finance-Size = Ln ((market capitalization + intermediary private credits) / GDP).
Finance-Efficiency = Ln (total value traded / bank overhead cost ratio).
Finance-Dummy = 0 if both value trade & intermediary private credits < mean.
Finance-Aggregate = Principal component of Finance 1, 2, 3.

Table 6: Financial Structure and Economic Growth

Dependent variable: Real per Capita GDP Growth, 1980-95

1. Simple Conditioning Information Se

Explanatory Variable	coefficient	standard error	t-statistic	P-value	R-Squared
Structure-Activity	0.474	0.285	1.659	0.104	0.086
Structure-Size	-0.318	0.350	-0.909	0.368	0.019
Structure-Efficiency	0.373	0.255	1.460	0.151	0.069
Structure-Aggregate	0.365	0.313	1.167	0.250	0.039
Structure-Dummy	0.302	0.568	0.531	0.598	0.010

2. Full Conditioning Information Se

Explanatory Variable	coefficient	standard error	t-statistic	P-value	R-Squared
Structure-Activity	0.455	0.305	1.493	0.145	0.405
Structure-Size	-0.605	0.517	-1.170	0.250	0.386
Structure-Efficiency	0.336	0.259	1.299	0.203	0.392
Structure-Aggregate	0.315	0.321	0.982	0.333	0.372
Structure-Dummy	0.055	0.514	0.108	0.915	0.355

Note: the reported explanatory variables are included one-by-one in the regressions.

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

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

Structure-Activity = Ln (total value trade / bank credits to private sector).
Structure-Size = Ln ((market capitalization / bank credits to private sector) / GDP).
Structure-Efficiency = Ln (total value traded * bank overhead ratio).
Structure-Aggregate = principal component of structure 1, 2, 3.
Structure-Dummy = 1 if Structure-Aggregate is greater than the sample median, 0 otherwise.

Table 7: Financial Structure and Capital Growth

Dependent variable: Real per Capita Capital Growth, 1980-95

1. Simple Conditioning Information Se

Explanatory Variable	coefficient	standard error	t-statistic	P-value	R-Squared
Structure-Activity	0.420317	0.2739	1.5348	0.132	0.110
Structure-Size	-0.440	0.497	-0.885	0.381	0.081
Structure-Efficiency	0.373	0.247	1.508	0.139	0.111
Structure-Aggregate	0.309	0.343	0.902	0.372	0.077
Structure-Dummy	0.067	0.653	0.103	0.919	0.056

2. Full Conditioning Information Se

Explanatory Variable	coefficient	standard error	t-statistic	P-value	R-Squared
Structure-Activity	0.354	0.335	1.055	0.299	0.443
Structure-Size	-0.291	0.575	-0.506	0.616	0.424
Structure-Efficiency	0.238	0.311	0.764	0.450	0.434
Structure-Aggregate	0.269	0.417	0.644	0.524	0.428
Structure-Dummy	-0.102	0.684	-0.149	0.883	0.419

Note: the reported explanatory variables are included one-by-one in the regressions.

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

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

Structure-Activity = Ln (total value trade / bank credits to private sector).
Structure-Size = Ln ((market capitalization / bank credits to private sector) / GDP).
Structure-Efficiency = Ln (total value traded * bank overhead ratio).
Structure-Aggregate = principal component of structure 1, 2, 3.
Structure-Dummy = 1 if Structure-Aggregate is greater than the sample median, 0 otherwise.

Table 8: Financial Structure and Productivity Growth

Dependent variable: Total Factor Productivity Growth, 1980-95

1. Simple Conditioning Information Se

Explanatory Variable	coefficient	standard error	t-statistic	P-value	R-Squared
Structure-Activity	0.347	0.230	1.511	0.138	0.075
Structure-Size	-0.186	0.254	-0.733	0.468	0.014
Structure-Efficiency	0.261	0.207	1.262	0.214	0.056
Structure-Aggregate	0.273	0.245	1.112	0.272	0.037
Structure-Dummy	0.282	0.447	0.630	0.532	0.015

2. Full Conditioning Information Se

Explanatory Variable	coefficient	standard error	t-statistic	P-value	R-Squared
Structure-Activity	0.349	0.238	1.470	0.151	0.337
Structure-Size	-0.517	0.401	-1.291	0.205	0.326
Structure-Efficiency	0.265	0.202	1.312	0.198	0.327
Structure-Aggregate	0.235	0.249	0.943	0.352	0.305
Structure-Dummy	0.086	0.415	0.207	0.837	0.291

Note: the reported explanatory variables are included one-by-one in the regressions.

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

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

Structure-Activity = Ln (total value trade / bank credits to private sector).
Structure-Size = Ln ((market capitalization / bank credits to private sector) / GDP).
Structure-Efficiency = Ln (total value traded * bank overhead ratio).
Structure-Aggregate = principal component of structure 1, 2, 3.
Structure-Dummy = 1 if Structure-Aggregate is greater than the sample median, 0 otherwise.

Table 9: Financial Structure and Savings

Dependent variable: Private Savings Rate, 1980-95

1. Simple Conditioning Information Se

Explanatory Variable	coefficien	standard error	t-statistic	P-value	R-Squared
Structure-Activity	0.017	0.008	2.193	0.034	0.348
Structure-Size	-0.011	0.015	-0.760	0.452	0.276
Structure-Efficiency	0.019	0.006	2.991	0.005	0.398
Structure-Aggregate	0.016	0.009	1.696	0.098	0.316
Structure-Dummy	0.014	0.019	0.748	0.459	0.271

2. Full Conditioning Information Se

Explanatory Variable	coefficien	standard error	t-statistic	P-value	R-Squared
Structure-Activity	0.012	0.009	1.329	0.194	0.654
Structure-Size	-0.010	0.014	-0.685	0.498	0.630
Structure-Efficiency	0.013	0.007	1.731	0.093	0.668
Structure-Aggregate	0.012	0.011	1.074	0.291	0.643
Structure-Dummy	0.007	0.018	0.371	0.713	0.625

Note: the reported explanatory variables are included one-by-one in the regressions.

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

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

Structure-Activity = Ln (total value trade / bank credits to private sector).
Structure-Size = Ln ((market capitalization / bank credits to private sector) / GDP).
Structure-Efficiency = Ln (total value traded * bank overhead ratio).
Structure-Aggregate = principal component of structure 1, 2, 3.
Structure-Dummy = 1 if Structure-Aggregate is greater than the sample median, 0 otherwise.

Table 10: Financial Structure and Economic Growth, Instrumental Variables

Dependent variable: Real per Capita GDP Growth, 1980-95

1. Simple Conditioning Information Se

Explanatory Variable	coefficient	standard error	t-statistic	P-value	N*J Statistic
Structure-Activity	0.699	1.252	0.559	0.580	4.928
Structure-Size	0.343	1.257	0.273	0.787	4.812
Structure-Efficiency	0.685	1.299	0.527	0.601	5.548
Structure-Aggregate	0.469	1.194	0.393	0.696	5.054
Structure-Dummy	3.959	3.844	1.030	0.310	6.778

2. Full Conditioning Information Se

Explanatory Variable	coefficient	standard error	t-statistic	P-value	N*J Statistic
Structure-Activity	1.478	0.808	1.829	0.078	0.900
Structure-Size	1.315	0.799	1.646	0.111	2.290
Structure-Efficiency	1.089	0.702	1.551	0.132	2.331
Structure-Aggregate	1.566	0.936	1.673	0.106	1.250
Structure-Dummy	4.276	4.132	1.035	0.310	1.102

Note: N*J-Statistic is distributed Chi-Squared with two degrees of freedom
At the 10% level, the critical value is 4.61. At the 5% level, the critical value is 5.99

Note: the reported explanatory variables are included one-by-one in the regressions.
Simple conditioning information set: logarithm of initial income and schoolin
Full conditioning information set: simple set, plus inflation, black market premium, government size, trade openness, and
indicators of civil liberties, revolutions and coups, political assassinations, bureaucratic efficiency, and corruptio
Instruments: creditor rights, shareholder rights, law and order

Structure-Activity = Ln (total value trade / bank credits to private sector).
Structure-Size = Ln ((market capitalization / bank credits to private sector) / GDP).
Structure-Efficiency = Ln (total value traded * bank overhead ratio).
Structure-Aggregate = principal component of structure 1, 2, 3.
Structure-Dummy = 1 if Structure-Aggregate is greater than the sample median, 0 otherwise.

Table 11: Financial Development and Economic Growth

Dependent variable: Real per Capita GDP Growth, 1980-95

1. Simple Conditioning Information Se

Explanatory Variable	coefficient	standard error	t-statistic	P-value	R-Squared
Finance-Activity	0.645	0.170	3.792	0.001	0.316
Finance-Size	1.374	0.621	2.213	0.032	0.182
Finance-Efficiency	0.722	0.163	4.437	0.000	0.366
Finance-Dummy	2.136	0.738	2.895	0.006	0.248
Finance-Aggregate	1.340	0.356	3.767	0.001	0.327

2. Full Conditioning Information Se

Explanatory Variable	coefficient	standard error	t-statistic	P-value	R-Squared
Finance-Activity	0.435	0.203	2.141	0.039	0.434
Finance-Size	0.371	0.684	0.542	0.591	0.360
Finance-Efficiency	0.527	0.215	2.450	0.019	0.464
Finance-Dummy	1.750	0.672	2.602	0.014	0.465
Finance-Aggregate	0.897	0.407	2.204	0.034	0.425

Note: the reported explanatory variables are included one-by-one in the regressions.

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

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

Finance-Activity = Ln (total value traded * intermediary private credits / GDP).
Finance-Size = Ln ((market capitalization + intermediary private credits) / GDP).
Finance-Efficiency = Ln (total value traded / bank overhead cost ratio).
Finance-Dummy = 0 if both value trade & intermediary private credits < mean.
Finance-Aggregate = Principal component of Finance 1, 2, 3.

Table 12: Financial Development and Capital Growth

Dependent variable: Real per Capita Capital Growth, 1980-95

1. Simple Conditioning Information Se

Explanatory Variable	coefficient	standard error	t-statistic	P-value	R-Squared
Finance-Activity	0.621	0.157	3.954	0.000	0.297
Finance-Size	1.257	0.558	2.252	0.029	0.180
Finance-Efficiency	0.663	0.164	4.049	0.000	0.310
Finance-Dummy	1.620	0.619	2.617	0.012	0.173
Finance-Aggregate	1.250	0.326	3.830	0.000	0.290

2. Full Conditioning Information Se

Explanatory Variable	coefficient	standard error	t-statistic	P-value	R-Squared
Finance-Activity	0.343	0.244	1.406	0.169	0.459
Finance-Size	0.421	0.749	0.562	0.578	0.424
Finance-Efficiency	0.431	0.232	1.858	0.072	0.479
Finance-Dummy	1.368	0.563	2.432	0.020	0.474
Finance-Aggregate	0.748	0.504	1.486	0.146	0.459

Note: the reported explanatory variables are included one-by-one in the regressions.

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

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

Finance-Activity = Ln (total value traded * intermediary private credits / GDP).
Finance-Size = Ln ((market capitalization + intermediary private credits) / GDP).
Finance-Efficiency = Ln (total value traded / bank overhead cost ratio).
Finance-Dummy = 0 if both value trade & intermediary private credits < mean.
Finance-Aggregate = Principal component of Finance 1, 2, 3.

Table 13: Financial Development and Productivity Growth

Dependent variable: Total Factor Productivity Growth, 1980-95

1. Simple Conditioning Information Se

Explanatory Variable	coefficient	standard error	t-statistic	P-value	R-Squared
Finance-Activity	0.459	0.148	3.097	0.003	0.251
Finance-Size	0.997	0.498	2.003	0.051	0.152
Finance-Efficiency	0.523	0.141	3.716	0.001	0.301
Finance-Dummy	1.650	0.610	2.702	0.010	0.233
Finance-Aggregate	0.965	0.305	3.162	0.003	0.267

2. Full Conditioning Information Se

Explanatory Variable	coefficient	standard error	t-statistic	P-value	R-Squared
Finance-Activity	0.332	0.158	2.105	0.043	0.363
Finance-Size	0.245	0.550	0.445	0.659	0.295
Finance-Efficiency	0.398	0.169	2.354	0.024	0.387
Finance-Dummy	1.339	0.556	2.406	0.022	0.391
Finance-Aggregate	0.673	0.321	2.097	0.043	0.352

Note: the reported explanatory variables are included one-by-one in the regressions.

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

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

Finance-Activity = Ln (total value traded * intermediary private credits / GDP).
Finance-Size = Ln ((market capitalization + intermediary private credits) / GDP).
Finance-Efficiency = Ln (total value traded / bank overhead cost ratio).
Finance-Dummy = 0 if both value trade & intermediary private credits < mean.
Finance-Aggregate = Principal component of Finance 1, 2, 3.

Table 14: Financial Development and Saving

Dependent variable: Private Savings Rate, 1980-95

1. Simple Conditioning Information Se

Explanatory Variable	coefficient	standard error	t-statistic	P-value	R-Squared
Finance-Activity	0.023	0.004	6.640	0.000	0.602
Finance-Size	0.055	0.014	3.998	0.000	0.477
Finance-Efficiency	0.021	0.005	4.244	0.000	0.523
Finance-Dummy	0.066	0.016	4.246	0.000	0.455
Finance-Aggregate	0.047	0.008	5.772	0.000	0.575

2. Full Conditioning Information Se

Explanatory Variable	coefficient	standard error	t-statistic	P-value	R-Squared
Finance-Activity	0.015	0.006	2.418	0.022	0.694
Finance-Size	0.031	0.015	2.046	0.049	0.653
Finance-Efficiency	0.011	0.008	1.433	0.162	0.662
Finance-Dummy	0.043	0.017	2.594	0.014	0.680
Finance-Aggregate	0.029	0.014	2.135	0.041	0.680

Note: the reported explanatory variables are included one-by-one in the regressions.

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

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

Finance-Activity = Ln (total value traded * intermediary private credits / GDP).
Finance-Size = Ln ((market capitalization + intermediary private credits) / GDP).
Finance-Efficiency = Ln (total value traded / bank overhead cost ratio).
Finance-Dummy = 0 if both value trade & intermediary private credits < mean.
Finance-Aggregate = Principal component of Finance 1, 2, 3.

Table 15: Financial Development and Economic Growth, Instrumental Variables

Dependent variable: Real per Capita GDP Growth, 1980-95

1. Simple Conditioning Information Se

Explanatory Variable	coefficient	standard error	t-statistic	P-value	J-Statistic
Finance-Activity	0.858	0.297	2.892	0.006	1.597
Finance-Size	1.704	0.566	3.010	0.005	1.299
Finance-Efficiency	0.876	0.326	2.687	0.011	1.176
Finance-Dummy	2.850	1.308	2.178	0.036	2.367
Finance-Aggregate	1.418	0.478	2.965	0.005	1.412

2. Full Conditioning Information Se

Explanatory Variable	coefficient	standard error	t-statistic	P-value	J-Statistic
Finance-Activity	1.132	0.518	2.183	0.038	0.311
Finance-Size	3.039	1.372	2.214	0.035	1.183
Finance-Efficiency	0.861	0.311	2.769	0.010	0.561
Finance-Dummy	1.169	0.688	1.700	0.100	4.077
Finance-Aggregate	1.867	0.730	2.557	0.016	0.617

Note: N*J-Statistic is distributed Chi-Squared with two degrees of freedom
At the 10% level, the critical value is 4.61. At the 5% level, the critical value is 5.99.

Note: the reported explanatory variables are included one-by-one in the regressions.

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

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

Instruments: creditor rights, shareholder rights, law and order

Finance-Activity = Ln (total value traded * intermediary private credits / GDP).

Finance-Size = Ln ((market capitalization + intermediary private credits) / GDP).

Finance-Efficiency = Ln (total value traded / bank overhead cost ratio).

Finance-Dummy = 0 if both value trade & intermediary private credits < mean.

Finance-Aggregate = Principal component of Finance 1, 2, 3.

Table 16: Unbalanced Financial Systems

	UNBALANCED	ACTIVE BANKS & INACTIVE MARKETS	ACTIVE MARKETS & INACTIVE BANKS
Argentina	0	0	0
Australia	0	0	0
Austria	1	1	0
Belgium	0	0	0
Brazil	1	0	1
Canada	0	0	0
Chile	1	1	0
Colombia	0	0	0
Cyprus	1	1	0
Denmark	1	0	1
Ecuador	0	0	0
Egypt	0	0	0
Finland	1	1	0
France	0	0	0
Germany	0	0	0
Ghana	0	0	0
Greece	0	0	0
Honduras	0	0	0
India	0	0	0
Ireland	1	0	1
Israel	0	0	0
Italy	1	1	0
Jamaica	0	0	0
Japan	0	0	0
Kenya	0	0	0
Malaysia	0	0	0
Mexico	1	0	1
Netherlands	0	0	0
New Zealand	1	0	1
Norway	0	0	0
Pakistan	0	0	0
Panama	1	1	0
Peru	0	0	0
Philippines	1	0	1
Portugal	1	1	0
South Africa	0	0	0
Spain	0	0	0
Sri Lanka	0	0	0
Sweden	1	0	1
Switzerland	0	0	0
Taiwan	0	0	0
Thailand	0	0	0
Trin. & Tob.	0	0	0
Tunisia	1	1	0
Turkey	1	0	1
U.K.	0	0	0
U.S.A.	0	0	0
Zimbabwe	0	0	0

Table 17: Unbalanced Financial Structure and Economic Growth

Dependent variable: Real per Capita GDP Growth, 1980-95

1. Simple Conditioning Information Se

Explanatory Variable	coefficient	standard error	t-statistic	P-value	R-Squared
Unbalanced	0.096	0.541	0.178	0.860	0.004
Unbalanced Bank	0.750	0.637	1.179	0.245	0.027
Unbalanced Market	-0.578	0.600	-0.964	0.340	0.018

2. Full Conditioning Information Se

Explanatory Variable	coefficient	standard error	t-statistic	P-value	R-Squared
Unbalanced	0.092	0.540	0.169	0.866	0.355
Unbalanced Bank	0.792	0.687	1.153	0.257	0.376
Unbalanced Market	-0.568	0.597	-0.952	0.348	0.367

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

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

Unbalanced Market = 1 if greater than median Total Value Traded &
and less than median Bank Credit, and equals 0 otherwise

Unbalanced Bank = 1 if greater than median Bank Credit &
and less than median Total Value Traded, and equals 0 otherwise.

Unbalanced = 1 if either Unbalanced Market or if Unbalanced Bank = 1,
and equals 0 otherwise.