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**Article**

## Stock markets, banks, and economic development: Theory and evidence

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## ABSTRACT

*This paper discusses the different functions that capital markets and banks have in economic development, and it reviews the debate about market-based vs. bank-based financial systems. Using data for a sample of 40 countries over the period 1975-98, the paper then shows that variation in both banking sector and stock market development can explain variation in economic growth, but the degree to which a financial system is market- or bank-based cannot explain economic development across countries. This is consistent with the financial services view, which focuses on the services provided rather than the providers of services and which emphasises complementarities between markets and intermediaries.*

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# Stock markets, banks, and economic development: theory and evidence

## 1. Introduction

Economic historians and theorists have provided conflicting opinions on the importance of financial intermediaries and markets for economic development. On the one hand, Joseph Schumpeter - for instance - argued in 1912 that financial intermediaries play a decisive role in economic development because they choose which firms get to use society's savings. Joan Robinson (1952), on the other hand, argued that finance rather follows growth and that the process of economic development had to be explained by other factors. Lucas (1988) asserts that the role of finance in economic development has been significantly overrated. Similarly, theoretical models show how financial intermediaries and markets can alleviate information and transaction frictions and thus enhance economic growth (Bencivenga and Smith 1991, Bencivenga *et al.* 1995, King and Levine 1993), but the same models show that higher returns from better resource allocation may depress saving rates to an extent that better developed intermediaries and markets can actually slow economic growth.

Economic history and theory also provide conflicting opinion on the different roles of financial intermediaries and markets. Some authors stress the advantages of intermediaries, others the advantages of markets. Arguments have been made in favour of a financial system in which intermediaries provide most financial services, while others focus on the superiority of financial markets.

Across countries, we can observe a wide variation in the development of both financial intermediaries and financial markets. We can also observe a variation in the degree to which financial systems are based more on intermediaries or more on markets. The theoretical debate and the empirical observation give rise to several questions: first, is the development of financial intermediaries and markets related to economic growth performance? Second, do markets and intermediaries provide the same, substitutable financial services, or are their services complementary? Third, are there advantages of having a financial system that relies more on intermediaries or more on markets? This paper reviews the theoretical literature and provides empirical evidence on these three questions.

These are important questions, not only for academics who want to understand the process of economic growth, but also for policymakers. If we find a significant relation between financial development and economic growth, it underlines the importance of policies that foster the development of efficient intermediaries and markets. If we find evidence for the superiority of either an intermediary-based or a market-based system, this implies policies that are focused more on either intermediaries or markets. In the following we will refer to financial development as the level of development of both intermediaries and markets while financial structure will mean the degree to which a financial system is based on intermediaries or markets.<sup>1</sup> Furthermore, most of our analysis will focus on banks, arguably



**Thorsten Beck**

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1 An alternative distinction refers to systems that are based on intermediaries as relationship-based and to market-based systems as arms-length systems. See Rajan and Zingales (1999).

the most prominent type of intermediary, and on stock markets, i.e. the most important capital market segment for firms to raise external finance.

The remainder of the paper is organised as follows. Section 2 reviews the theoretical literature on banks and stock markets and presents empirical evidence on their relation with economic growth. Section 3 describes the debate on market- vs. bank-based financial systems and provides evidence on the importance of financial structure. Section 4 presents the financial services view, and Section 5 concludes and offers policy implications.

## 2. Financial development and economic growth

*The better banks and markets fulfil their functions, the higher economic growth is.*

This section reviews the theoretical literature on the roles that banks and stock markets have in fostering economic development; while both perform a variety of functions, a crucial one is the efficient mobilisation and allocation of savings: the better financial systems are in fulfilling this function, the higher is economic growth. We then present indicators of banking sector and stock market development, before presenting the results of cross-country growth regressions.

### 2.1 The theory

Significant information and transaction frictions prevent savers from easily entrusting their savings to entrepreneurs and firms. First, acquiring and processing information on firms and prospective investment projects is not only costly for individual investors, but would also result in duplication of effort. Second, individual investors face high costs of monitoring and controlling borrowers once money has changed hands. In this context, it should also be noted that small investors have incentives to free-ride on large investors who have greater incentives to pay the cost of screening, assessing, monitoring, and controlling firms. Third, investors are reluctant to give up control over their savings over a longer time period (liquidity risk). Many investments, however, require the long-term commitment of resources. Fourth, investors face idiosyncratic risk of individual investments. In the absence of tools to diversify these risks, investors again might be reluctant to give up control over their savings. In the following, we will describe how banks and markets can help overcome these different frictions.<sup>2</sup>

To start with banks, it is useful to highlight, first, that by specialising in the assessment of potential borrowers, banks can reduce the cost of acquiring and processing information about firms and potential projects, thus overcoming the problem of duplication and of freeriding (Diamond 1984, Boyd and Prescott 1986). By easing information frictions between savers and borrowers, they may increase saving and capital accumulation in the economy. Furthermore, by identifying the most worthy projects and firms, banks foster innovation and efficient resource allocation. Similarly, banks can specialise in monitoring and controlling borrowers, again avoiding duplication and free-riding of individual investors.

Second, banks can lower liquidity risk (Diamond and Dybvig 1983, Bencivenga and Smith 1991). By pooling savings and by investing both in short-term securities and long-term investments, banks can transform the maturity of savings and thus facilitate the commitment of long-term resources to investment projects.

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<sup>2</sup> For a more detailed overview of the theoretical literature, see Levine (1997).

Third, banks allow the pooling and sharing of risk by reducing transaction costs of individual investors. Banks can provide vehicles for pooling and diversifying idiosyncratic risk, thus allowing a shift to higher-return, higher-risk projects. Banks can also facilitate intertemporal risk diversification (Allen and Gale 2000): systematic risks, which cannot be diversified away at a specific point in time, can be diversified across generations by long-living banks; this is because – having a long-term perspective – banks can buffer shocks by offering a relatively lower return during good times and a relatively higher return during bad times.

Turning to the role of stock markets, we note, first, that more liquid markets give investors higher incentives to invest in the acquisition and processing of information since they are more likely to realise a return on this investment by trading in the market (Holmström and Tirole 1993). At the same time, firms can rely on long-term resources raised through markets.

Second, stock markets can help in corporate control by facilitating takeovers and tying managers' compensation to companies' performance (Jensen and Meckling 1976). By easing takeovers of poorly managed firms, liquid stock markets foster corporate control and efficient resource allocation (Scharfstein 1988, Stein 1988). Tying managers' compensation to stock performance helps align their interest with shareholders' interest (Diamond and Verrecchia 1982, Jensen and Murphy 1990).

Third, markets can ease liquidity risk by allowing investors to sell rapidly in more liquid markets. If individual investors can rapidly convert equity claims into cash, they will be more willing to provide resources for investment projects that require long-term commitment of resources (Levine 1991).

Finally, markets can facilitate risk diversification (Saint-Paul 1992). Better-developed markets – both larger and more liquid – allow investors to construct diversified portfolios and, thus, hedge against idiosyncratic risk.

In sum, while operating in different ways and with a different focus, both banks and markets can ease the acquisition and processing of information, allow control over users of finance, and facilitate risk diversification. In light of this, we would expect both banking sector and stock market development to foster economic growth. Let us see whether the data and the empirical evidence support this expectation.

*Banks and markets  
operate in different ways  
and with different focus.*

## 2.2 The data

To analyse the link between stock market and bank development and economic growth, we use a sample of 40 countries, with data for each country averaged over the period 1975-98. Table A1 in the Annex lists the countries in the sample and the different indicators of financial development and structure we will be using. Suffice to note here that the sample includes both developing and developed economies, and that we have averaged data over a longer time period to remove business-cycle effects.<sup>3</sup>

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<sup>3</sup> For a detailed description of the data and its construction see Beck, Demirgüç-Kunt, and Levine (2000).

To measure stock market development, we use the “turnover ratio” measure of market liquidity, which equals the value of shares traded on domestic exchanges divided by the total value of listed shares.<sup>4</sup> It indicates the trading volume of the stock market relative to its size. Some models predict that more liquid capital markets will create incentives to long-run investments because it is relatively easier to sell one's stake in the firm. This can foster more efficient resource allocation and faster growth.

To measure banking sector development, we use “bank credit”, which equals bank claims on the private sector by deposit money banks divided by GDP. Although bank credit does not directly measure the degree to which banks ease information and transaction frictions, it is more suitable than alternative measures. For instance, unlike many studies of finance and growth that use the ratio of broad money to GDP as an empirical proxy of financial development, the bank credit variable directly measures the funds that banks intermediate from savers to the private sector.

*There is a wide variation in financial sector development and economic growth performance across countries.*

To assess the relation of banks, markets, and economic growth, we average real per capita GDP growth rates over the period 1975-98. Table 1 presents descriptive statistics on turnover ratio, bank credit, and economic growth. There is a wide variation in financial development - measured by the turnover ratio and bank credit - and in growth performance across the sample. Venezuela experienced negative average annual growth of 0.9 percent over the period 1975-98 while Taiwan achieved an annual growth rate of 6.3 percent (see also Table A1 in the Annex). Bank credit ranges from about 8 percent in Peru to 101 percent in Japan. While Uruguay had a turnover ratio of 5 percent over the period 1975-98, Taiwan had a ratio of 227 percent. Both financial development indicators are not only positively and significantly correlated with each other, but also with per capita GDP growth.

### 2.3 The empirical evidence

The data presented in the previous section suggest a close association of financial sector development and economic growth. Here we present ordinary-least-squares regressions of the average per capita GDP growth rate over the period 1975-98 on bank credit and turnover ratio. To assess the strength of the independent link between both stock market development and growth and bank development and growth, we control for other potential determinants of economic growth in our regressions. Specifically, we include the initial real GDP per capita to control for convergence, the average years of schooling to control for human capital accumulation, and the share of exports and imports to GDP to control for trade openness. Further, we control for a variety of government policies. Specifically, we include the black market premium to control for exchange rate and price distortions, the inflation rate to control for monetary stability, and the ratio of government expenditures to GDP to control for the government's role in the economy.<sup>5</sup>

<sup>5</sup> Other recent empirical papers on the role of financial development in economic growth have used the same set of conditioning information; see, among others, Beck, Levine, and Loayza (2000).

<sup>4</sup> We prefer a measure of liquidity to one of size since theory also focuses on market liquidity rather than size. Furthermore, as noted by Levine and Zervos (1998), value traded relative to GDP has the potential pitfall that a higher value can be due to higher prices without an increase in transactions. Since the turnover ratio contains the price in both numerator and denominator, it is not subject to this problem.

**Table 1. Stock markets, banks, and economic growth**

	Descriptive statistics		
	Economic growth	Turnover ratio	Bank credit
Mean	2.1	37.0	44.0
Median	1.9	30.1	43.5
Maximum	6.3	227.3	100.9
Minimum	-0.9	5.0	8.4
Standard deviation	1.6	37.4	23.6
Number of observations	40	40	40

  

	Correlations		
	Economic growth	Turnover ratio	Bank credit
Economic growth	1.00		
Turnover ratio	0.58 (0.001)	1.00	
Bank credit	0.32 (0.041)	0.45 (0.004)	1.00

Notes: p-values are reported in parentheses; for definition of variables see text.

The results of the regression analysis, which are summarised in Table 2, provide evidence for a robust statistical relation between banks, stock markets, and economic growth. When we include either bank credit or the turnover ratio, both measures enter positively and significantly at the 1 percent level (regressions 1 and 2). When we include both measures simultaneously (regression 3), both measures enter individually only at the 10 percent significance level, but jointly at the 1 percent significance level. Interestingly, only the share of government consumption in GDP and the black market premium enter significantly at the 10 percent level in all three regressions, both negatively, while none of the other control variables enters significantly across the three regressions.

The empirical results do not only show a statistically significant relation between banking and stock market development, on the one hand, and economic growth on the other, but also an economically significant relation, as the following examples illustrate: all other things being equal, Mexico's annual average growth rate during 1975-98 would have been 1.4 percentage points higher than the actual rate of 1 percent if that country had had a level of banking sector development equal to the sample average of 44 percent instead of 13 percent; similarly, Chile's growth rate would have been 1.1 percentage above the actual rate of 4.2 percent if that country's stock markets had shown the liquidity of the sample average of 37 percent instead of the actual 7 percent.

Our results are consistent with the recent empirical literature. Levine and Zervos (1998) show that both banking sector and stock market development explain cross-country growth in GDP per capita for a sample of 42 countries over the period 1976-1993. Demirgüç-Kunt and Maksimovic (1998) find that countries with more liquid stock markets and better-developed banking systems exhibit a larger share of firms that grow beyond the rate predicted by their short-term financial resources. Rousseau and Wachtel (2000)

*Empirical evidence suggests a robust statistical relation between banks, stock markets, and growth.*

5 Other recent empirical papers on the role of financial development in economic growth have used the same set of conditioning information; see, among others, Beck, Levine, and Loayza (2000).

**Table 2. Regressions of economic growth on bank credit and turnover ratio**

Explanatory variables	Regression (1)	Regression (2)	Regression (3)
Constant	4.099 (0.025)	3.958 (0.104)	2.33 (0.275)
Initial per capita income 1/	-0.723 (0.044)	-0.355 (0.365)	-0.614 (0.136)
Average years of schooling 2/	0.356 (0.753)	-0.455 (0.735)	0.033 (0.980)
Government consumption 1/	-1.586 (0.027)	-1.251 (0.063)	-1.361 (0.037)
Trade openness 1/	0.324 (0.417)	0.637 (0.100)	0.513 (0.190)
Inflation rate 2/	1.345 (0.195)	-1.225 (0.290)	0.405 (0.758)
Black market premium 2/	-3.736 (0.003)	-4.083 (0.019)	-2.971 (0.054)
<u>Bank credit</u> 1/	1.808 (0.001)		1.185 (0.079)
<u>Turnover ratio</u> 1/		0.96 (0.008)	0.73 (0.068)
R <sup>2</sup>	0.518	0.554	0.608
Wald test for joint significance of bank credit and turnover ratio (p-value)			0.001
Observations	40	40	40

Notes: p-values are reported in parentheses; for definition of variables see text;

1/ In the regressions, this variable is included as log (variable);

2/ In the regressions, this variable is included as log (1+ variable).

and Beck and Levine (2003) show that the relation between banks, stock markets, and economic growth is not due to biases induced by simultaneity, reverse causation, and omitted variables.<sup>6</sup>

### 3. Financial structure and economic growth

While the previous section focused on the positive roles that both banks and markets can play in the economic growth process, this section emphasises the relative advantages of banks and stock markets. In essence, we want to examine whether financial structure, i.e. the degree to which a financial system is based on markets or banks, influences economic growth. We first present theoretical arguments for the bank-based and market-based view, respectively, before developing indicators of the financial structure of economies. Finally, we present cross-country growth regressions to assess the validity of either view. In this context, we also provide further evidence for the growth-enhancing role of financial development itself.

<sup>6</sup> Using a sample of 74 countries over the period 1960-95, Levine *et al.* (2000) also show that the relation between financial intermediary development and economic growth is robust to biases induced by simultaneity, reverse causation, and omitted variables. Beck, Levine, and Loayza (2000) show that the impact of financial intermediaries on economic growth occurs through productivity growth rather than capital accumulation.



### 3.1 The theory

Proponents of **bank-based financial systems** emphasise not only the advantages that well developed financial intermediaries have for economic growth, but also point at the relative advantages of banks vis-à-vis financial markets. First, financial markets do not provide sufficient incentives against free-riding of small investors. Since well-developed and liquid markets promptly reveal information to all investors, small investors do not have incentives to invest in the acquisition and processing of information (Stiglitz 1985). Banks, by contrast, do not face this problem since their information on borrowers is mostly proprietary (Boot *et al.* 1993).

*Banks may be better than markets at overcoming information asymmetries and at providing intertemporal smoothing of risks.*

Second, it is argued that banks are better exercisers of corporate control than markets.<sup>7</sup> There are four main reasons why this may be the case. The first is that insiders typically have better information about the firm than outsiders, such as small investors in the financial markets (Myers and Majluf 1984). Ill-informed outsiders will therefore be reluctant to out-bid well-informed insiders, which makes takeover (i.e. a potentially important corporate control mechanism in market-based systems) a deficient tool of corporate control. Moreover, ill-informed and short-term oriented shareholders can also force management to not undertake investments with a high long-term return (Stulz 2001). The second reason is that liquid markets might actually decrease incentives to use takeovers as a corporate control device since exit by sale is less costly (Bhide 1993). More liquid markets might foster more diffuse ownership of large corporations, thus decreasing incentives of the individual - fractional - owner to exercise corporate control (Shleifer and Vishny 1986). The third reason rests on the notion that an investor in very liquid and transparent markets will be reluctant to spend resources to obtain information about a potential takeover target if other investors can free-ride on his efforts (Grossman and Hart 1980). The last reason for a possibly ineffective market control of corporate behaviour is that boards of directors, supposed to represent the interests of shareholders vis-à-vis management, often enjoy incestuous relationships with management, reducing the effectiveness of corporate control (Allen and Gale 2000). Banks, on the other hand, can form long-term relationships with firms, which facilitate the acquisition and processing of information and thus resource allocation. Through staged financing and short-term loans that are renewed subsequently, they can monitor and exercise control over the borrower (Stulz 2001).

Finally, proponents of a bank-based system argue that banks are better than markets in providing intertemporal risk diversification options.

Proponents of **market-based financial systems** focus on the problems that powerful banks pose for the efficient delivery of financial services and thus resource allocation. First, powerful banks with inside information about firms can extract rents from these firms (Hellwig 1991). This might negatively affect the incentives for firms to undertake innovative, profitable projects (Rajan 1992). Other factors may further weaken the incentive to innovate. For instance, since banks are debt issuers, they tend to be conservative, thus hindering innovation and growth. Moreover, they may be less effective

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7 Davis (this volume) provides further perspectives on corporate control mechanisms in bank-based and market-based financial systems.

in collecting and processing information on new, innovative industries (Allen and Gale 2000, Subrahmanyam and Titman 1999) that are characterised by significant uncertainty. Markets, on the other hand, are much better in financing new, innovative industries, since they allow differing and complementary views.

Second, proponents of the market-based system also claim that banks, due to their insider status, are ineffective corporate controllers (Hellwig 1998). Bankers might become captured by firm management, colluding against the interests of shareholders (Black and Moersch 1998).

*Markets may be better than banks at supporting innovative firms and at providing risk diversification.*

Finally, according to proponents of the market-based system, financial markets offer better opportunities to hedge and diversify risk. While banks only offer limited and standardised hedging products, markets offer a richer and more customised set of risk diversification and hedging instruments.

Overall, at the heart of the debate about banks vs. markets is the question whether one system is better than the other at acquiring and processing information, corporate control, and risk diversification and, resulting from this, whether one system outperforms the other in efficiently mobilising and allocating savings and thus generating growth. To argue their case, proponents of market-based financial systems often use evidence from Japan and Germany. Japanese firms with close bank links tend to follow more conservative, slow-growth strategies, use more capital-intensive processes, and produce lower profits than other firms (Weinstein and Yafeh 1998, Morck and Nakamura 1999). Wenger and Kaserer (1998) provide evidence on the close relationship between banks and corporate management in Germany and on how banks fail to effectively control their borrowers. That said, Japan's bank-based system is often credited with partly explaining the country's rapid economic development over the last 50 years (Porter 1992, Aoki and Patrick 1993). Japanese firms with close ties to banks tend to be less credit-constrained than other firms (Hoshi *et al.* 1991).

Economic reasoning and the experience of particular countries do thus not provide arguments for the superiority of either the bank-based or the market-based view. Can it be that financial structure is irrelevant? In answering this question, we first present the data used in this section.

### 3.2 The data

We use two indicators to measure the structure of a financial system. The first indicator, which we name "structure-activity", builds on the indicators of stock market and banking sector development used above, namely the turnover ratio and bank credit, respectively. Specifically, "structure-activity" equals the log of the ratio of the turnover ratio to bank credit. This indicator thus measures the relative importance of stock markets vis-à-vis banks in a country's financial system.

The second indicator of financial structure, called "restrict", measures regulatory restrictions on banks' activities. This indicator aggregates sub-indices that gauge restrictions on banking along four dimensions: activities in the (i) securities, (ii) insurance, and (iii) real estate markets; and (iv) ownership and control of non-financial firms. The

degree of restrictions can vary as follows: unrestricted (=1), permitted (=2), restricted (=3), or prohibited (=4). The aggregate indicator can therefore vary between four and 16, with higher numbers indicating more restrictions on bank activities and non-financial ownership and control. The indicator “restrict” is computed for 1999 and is taken from Barth *et al.* (2001a, 2003). Barth *et al.* (2001b) have shown – though for a smaller sample of countries – that the indicator “restrict” has changed very little over the last 20 years; in light of this, we assume persistence of this indicator over the sample period 1975-98. Compared to “structure-activity”, “restrict” focuses on the policy environment that determines the structure of the financial system, specifically, the activities of banks relative to other financial institutions and financial markets.

To control for the level of financial development, we construct an aggregate indicator that accounts for the development of financial intermediation and stock markets. This indicator, called “finance-activity”, equals the log of the product of private credit and the turnover ratio. Private credit equals the claims of financial intermediaries on the private sector, expressed in percent of GDP. Unlike bank credit, it includes claims by both banks and non-bank financial intermediaries.<sup>8</sup> Recent work shows that the variable private credit exerts a statistically and economically significant influence on economic growth (Levine *et al.* 2000; Beck, Levine, and Loayza 2000).

Table 3 presents summary statistics of the three financial sector indicators. There is a wide variation in both “structure-activity” and “restrict”. To begin with “structure-activity”, this indicator yields intuitive as well as surprising rankings (see Table 1 in the Annex). According to this measure of financial structure, France and Japan have bank-based financial systems while the United States has a market-based system. Surprisingly, “structure-activity” identifies Germany as having a relatively more market-based system than the United States. Furthermore, the indicator ranks South Africa as the most bank-based financial system and Mexico as the most market-based system. But here it should be noted that Mexico is classified as market-based not so much because of a very liquid stock market, but because of a very underdeveloped banking system. Similarly, South Africa is classified as bank-based not because its banking system is very developed, but because its stock market is very illiquid. This underlines the importance of controlling for the level of financial development, via the “finance-activity” indicator, when assessing the relation of financial structure with economic growth.

*Financial structure differs widely across countries, with surprising country rankings.*

Similarly, the second indicator, “restrict”, provides some intuitive and some surprising rankings. New Zealand has the least restricted banking system while Indonesia has the most restricted one. Both the United States and Japan have relatively restricted banking systems while both Germany and the United Kingdom have relatively few restrictions on bank activities and ownership.

Table 3 also shows that the two indicators of financial structure do not show a significant relation (the correlation coefficient is 0.14 and the p-value is 0.432). This might reflect the different aspects of financial structure measured by these two indicators. While “structure-activity” is an outcome measure, “restrict” is a policy measure. Using both measures might

8 For this section, we prefer private credit to bank credit since we want a comprehensive measure of financial development, rather than a measure isolating banks.

**Table 3. Financial structure, financial development, and economic growth**

	Descriptive statistics		
	Structure-Activity	Restrict	Finance-Activity
Mean	-0.34	9.23	7.16
Median	-0.42	9.00	7.19
Maximum	1.32	14.00	9.82
Minimum	-1.96	4.00	4.95
Standard deviation	0.76	2.64	1.25
Number of observations	40	35	40

  

	Correlations		
	Structure-Activity	Restrict	Finance-Activity
Structure-Activity	1.00		
Restrict	0.14 (0.432)	1.00	
Finance-Activity	0.34 (0.030)	-0.22 (0.214)	1.00

Notes: p-values are reported in parentheses; for definition of variables see text.

add additional robustness to our empirical test. We also observe a positive and significant correlation between “finance-activity” and “structure-activity”, suggesting that financial development is associated with a move towards more market-based systems. At the same time, there is no significant correlation between financial development (“finance-activity”) and the degree of bank restrictions (“restrict”) as the high p-value of 0.214 suggests.

### 3.3 The empirical evidence

Table 4 presents the results of regressions of economic growth on financial structure. As in Section 2, we control for a number of variables to assess the strength of the link between financial structure and economic growth. In addition to the control variables introduced in the previous section, we have now included a measure of financial development (“finance-activity”). Neither the “structure-activity” nor “restrict” variable has a statistically significant impact on real per capita GDP growth. There is thus no evidence in favour of either the market-based or bank-based hypothesis. By contrast, the “finance-activity” indicator for financial development enters the regressions significantly at the 1 percent level. This is strong evidence that cross-country variation in financial development explains cross-country variation in growth performance.

These results are consistent with the recent empirical literature that assesses the market-based and bank-based views. Levine (2003) shows that the importance of financial markets relative to banks in a country cannot explain cross-country variation in economic growth, while financial development can. Beck and Levine (2002) show that the level of financial development fosters the expansion of industries that depend heavily on external finance, facilitates the formation of new establishments, and improves the efficiency of capital allocation across industries, but a specific structure of the financial system does not. Demirgüç-Kunt and Maksimovic (1998) show that the financial structure of a country cannot explain firm growth, but financial development can.

*The importance of markets relative to banks cannot explain cross-country variation in economic growth.*

**Table 4. Regressions of economic growth on financial structure**

Explanatory variables	Regression (1)	Regression (2)
Constant	2.325 (0.288)	0.096 (0.978)
Initial per capita income 1/	-0.594 (0.160)	-0.466 (0.183)
Average years of schooling 2/	-0.19 (0.882)	-0.26 (0.835)
Government consumption 1/	-1.388 (0.038)	-1.348 (0.127)
Trade openness 1/	0.601 (0.144)	0.686 (0.083)
Inflation rate 2/	0.375 (0.800)	-0.477 (0.705)
Black market premium 2/	-3.364 (0.036)	-3.154 (0.234)
<u>Structure-activity</u>	-0.234 (0.674)	
<u>Restrict</u>		0.108 (0.201)
<u>Finance-activity</u>	0.923 (0.003)	0.914 (0.003)
R <sup>2</sup>	0.581	0.603
Observations	40	35

Notes: p-values are reported in parentheses; for definition of variables see text; the regressions also include dummy variables for different time periods, which are not reported

1/ In the regressions, this variable is included as log (variable);

2/ In the regressions, this variable is included as log (1+ variable).

#### 4. The financial services view

While the theoretical literature has provided many arguments on the relative advantages of bank-based and market-based financial system, there is no empirical evidence in favour of either view. Cross-country growth regressions show the importance of the overall level of financial development rather than the composition of the financial system. This is consistent with the financial services view that emphasises the services that financial intermediaries and markets provide rather than who provides them. The financial services view is a functional approach, focusing on overcoming the informational and transaction frictions discussed earlier. It considers the institutional question of who provides these services of secondary importance.

The financial services view also emphasises the complementarity of intermediaries and markets. Well-developed and liquid stock markets can offset the negative effects of powerful banks we described above (Stulz 2001). They can offer alternative financing sources for an entrepreneur and help her realise the return on a successful project by selling her stake in the firm (Black and Gilson 1998). Financial intermediaries can benefit from price signals sent by well-developed and liquid markets. Further, intermediaries and markets

*What is important is that financial services are provided, not who provides them.*

provide funding to different segments of firms, with only larger and older firms accessing equity finance through stock markets. But even if markets provide external funding to only a relatively small share of firms, they can play an important role by offering customised risk diversification tools to investors. Finally, recent developments, such as loan securitisation, underline the complementarity and interdependence of intermediaries and markets.

The importance of markets relative to intermediaries might increase with the economic development of an economy (Boyd and Smith 1996, 1998; Boot and Thakor 1997). In other words, the structure of an economy's financial system might become more market-oriented as the economy develops. However, this would imply an effect of economic development and growth on the structure of the financial system rather than financial structure affecting growth.<sup>9</sup>

*A well-functioning legal framework is crucial for a healthy financial system.*

Complementary to the financial services view, the law and finance view focuses on the legal system as a major input for a healthy financial system. In the words of La Porta *et al.* (2000): "in the end, the rights create finance." The law and finance view stresses the importance of the rights of outside investors - both creditors and minority shareholders - and their effective enforcement for financial development and economic growth. Only if outside investors' rights are well protected, will they be willing to provide the necessary funding to firms and projects.

The evidence and the empirical literature discussed in the previous section are consistent with the financial services view; the level of financial services provided rather than the institutional structure of their provision explains cross-country variation in economic growth. The related literature also provides evidence for the law and finance view. Beck and Levine (2002) find that industries dependent on external finance grow faster in countries with better outside investor protection.

Levine (2003) shows that the component of financial development accounted for by legal system efficiency explains cross-country growth variation. More specifically, Demirgüç-Kunt and Maksimovic (1998) find that the component of both banking sector and stock market development accounted for by the protection of the rights of outside investors explains firm growth.

## 5. Conclusions

This paper has summarised theoretical arguments on the respective roles of financial intermediaries and financial markets and their relative advantages. We have discussed the channels through which intermediaries and markets can influence economic growth. Our empirical results for a sample of 40 developed and developing countries over the period 1975-98 confirm the importance of both banks and stock markets for economic growth. The lower level of statistical significance of the banking sector and stock market development indicators when including both, however, might indicate that it is difficult to distinguish their respective role in our rather small sample of 40 countries.

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<sup>9</sup> Alternatively, the insignificant coefficients on our indicators of financial structure are also consistent with the hypothesis that countries choose the optimal, growth-maximising financial structure.

We then discussed the arguments in favour of a market-based and a bank-based financial system, focusing on the relative advantages that intermediaries have over markets and vice versa. Our empirical findings, however, do not support either the market-based or the bank-based view. While the level of financial development can explain cross-country variation in economic growth, the degree to which a financial system is more market-based or more bank-based cannot. This is consistent with the financial services view, which focuses on the efficient provision of financial services and regards the question on who provides them as secondary. Similarly, the law and finance view stresses the importance of the rights of outside investor and their effective protection as decisive for the effective provision of financial services.

Our findings have important policy implications. For one thing, they are not supportive of policies that favour either financial intermediaries or markets and, thus, they caution against trying to tilt the playing field in favour of either banks or markets. For another, our results stress the importance of creating the conditions for an efficient provision of financial services. The recent literature has made large progress in identifying key conditions. To begin with, La Porta *et al.* (1997, 1998, 2000), Levine (1998, 1999, 2001), and Levine *et al.* (2000) have identified the effective protection of outside investors as important conditions for a well-developed financial system. In this context, it is important to note that the effective enforcement of creditors' and shareholders' rights, rather than the laws themselves, seems to matter.

Another condition is monetary stability. The intertemporal character of financial contracts suggests that this is crucial for an efficient provision of financial services (Huybens and Smith 1999). Using cross-country and panel techniques, Boyd *et al.* (2001) consider a stable monetary environment an important precondition for the development of efficient financial intermediaries and markets.

And then, transparency helps reduce informational asymmetry between lenders and borrowers, thereby promoting the efficient provision of financial services. Levine *et al.* (2000) discover that variation in the quality of accounting standards explains cross-country variation in financial intermediary development. Jappelli and Pagano (2002) find that the existence of credit registries, processing both positive and negative information about borrowers, is related to better developed financial intermediaries. Credit registries can decrease informational asymmetries between lenders and borrowers and reduce banks' market power vis-à-vis individual borrowers.

A final condition worth highlighting is that private agents need to have the means and incentives to monitor and exercise market discipline vis-à-vis banks as well as stock markets. Recent empirical work has established that this fosters the efficient provision of financial services. For instance, Barth *et al.* (2003) show that countries where private agents have better means to monitor banks enjoy higher levels of banking sector development. An important policy implication is that private agents have better incentives to monitor and exercise market discipline vis-à-vis banks if they are not protected by too generous deposit insurance. Necessary prerequisites for monitoring and exercising market discipline also include disclosure requirements and the legal liability of directors for the information they disclose. La Porta *et al.* (2002) show that private enforcement through high disclosure standards is related to more liquid stock markets. Finally, Beck *et al.* (2003) find that firms

*Financial development matters for economic growth, but financial structure does not.*

report lower financing obstacles in countries where private agents have higher incentives and better instruments to monitor banks and exercise market discipline vis-à-vis them.

To summarise the main message of this paper: financial development matters for economic growth, but financial structure does not; from a policy perspective, the need to ensure an environment that is conducive to financial sector development cannot be overemphasised.



## Annex

**Table A1. Country sample, economic growth, and key explanatory variables**

	Economic growth	Turnover ratio	Bank credit	Structure-activity	Restrict	Finance-activity
Australia	1.74	30.10	44.98	-0.40	8	7.67
Austria	2.15	38.98	79.20	-0.71	5	8.08
Belgium	1.86	13.38	38.41	-1.05	9	6.24
Bangladesh	2.38	9.53	14.84	-0.44	12	4.95
Brazil	1.16	53.45	17.69	1.11	10	7.23
Canada	1.45	33.12	47.24	-0.36	7	7.82
Chile	4.16	7.47	39.05	-1.65	11	5.81
Colombia	1.84	9.14	13.69	-0.40	...	5.52
Germany	2.11	82.65	90.67	-0.09	5	8.92
Denmark	2.12	21.27	40.11	-0.63	8	6.75
Egypt	3.44	10.02	24.03	-0.87	13	5.63
Finland	2.05	28.85	60.22	-0.74	7	7.46
France	1.74	36.28	75.90	-0.74	6	8.08
Great Britain	1.94	37.71	69.81	-0.62	5	7.88
Greece	1.70	18.97	23.09	-0.20	9	6.65
Indonesia	3.98	25.93	26.07	-0.01	14	6.52
India	2.98	49.21	21.47	0.83	10	7.08
Israel	1.74	54.77	51.10	0.07	13	7.94
Italy	2.14	35.47	55.45	-0.45	10	7.59
Jamaica	-0.72	8.58	22.33	-0.96	12	5.47
Jordan	1.67	14.92	53.63	-1.28	11	6.80
Japan	2.51	48.51	100.91	-0.73	13	8.96
Korea	5.89	96.39	44.37	0.78	9	8.95
Mexico	1.01	50.10	13.39	1.32	12	6.81
Malaysia	3.99	30.61	55.94	-0.60	10	7.73
Netherlands	1.80	43.83	71.83	-0.49	6	8.55
Norway	2.87	43.05	46.58	-0.08	...	8.27
New Zealand	0.76	24.58	40.13	-0.49	4	7.16
Pakistan	2.71	30.06	22.69	0.28	...	6.52
Peru	-0.29	20.67	8.38	0.90	8	5.51
Philippines	0.50	27.97	25.64	0.09	7	6.80
Portugal	2.88	21.91	68.48	-1.14	9	7.31
Sweden	1.17	32.50	42.63	-0.27	9	8.07
Thailand	5.53	71.65	53.09	0.30	9	8.54
Taiwan	6.27	227.29	80.68	1.04	12	9.82
Uruguay	1.60	5.01	28.02	-1.72	...	4.95
USA	1.76	57.02	64.21	-0.12	12	8.94
Venezuela	-0.86	14.00	20.44	-0.38	10	6.24
South Africa	-0.64	7.12	50.36	-1.96	8	6.33
Zimbabwe	-0.01	6.36	13.48	-0.75	...	4.95

Notes: all data are averaged over the period 1975-98; for definition of variables see text.

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