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Economic Performance in Bank-Based and Market-Based Financial Systems: Do Non-Financial Institutions Matter?

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Abstract

Based on a sample of 87 countries, this paper shows that non-financial institutions, specifically rule of law, do matter for the relative merits of bank-based and market-based financial systems. Market-based systems work better in low rule of law countries, while bank-based systems are more efficient in high-rule of law countries. These results are consistent with the premise that market-based systems' superiority in solving the incomplete information problem dominates over bank-based systems' superiority in solving the moral hazard and contract enforcement problems, which are expected to be more prevalent in low rule of law countries. Additionally, the level of financial development also matters in the relative performance of market-based and bank-based financial systems. Market-based systems function better in financially developed economies, while bank-based systems are better in financially underdeveloped economies. The findings of this paper can explain the co-existence of market-based and bank-based systems throughout the world across both developed and underdeveloped economies. The findings also have policy implications for developed and developing countries with regard to giving priority to improving their markets or banking systems.

JEL classification numbers : G20, N20, F30
Keywords: Financial institutions, financial structure, market-based financial systems, bank-based financial systems, financial development, rule of law

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1 Introduction

Whether a bank-based or market-based system is better in capital allocation and economic performance has long been a focus of debate. Several lines of approach have been documented, but there is still a lack of consensus. Is it the market-based systems or bank-based systems that optimally allocate capital, enhancing economic performance or do they complement each other and their relative merits do not matter as long as they provide financial services in a collective manner. Or alternatively, do their relative merits vary depending on different country characteristics, such as some non-financial institutions? The present paper investigates this possibility.

The relative merits of bank-based and market-based systems can be summarized as follows: While bank-based systems can survive in environments of poor contract enforcement and greater moral hazard, market-based systems are superior in solving incomplete information problems that are pertinent in valuation and real investment decisions.

It follows then that some non-financial institutions may have bearings on the relative merits of the two systems as non-financial institutions have potential effects on the level of contract enforcement, moral hazard and incomplete information across countries.

In this framework, the aim of this study is to investigate whether such non-financial institutions as rule-of-law are related to relative performances of bank-based and market-based systems across countries in the context of economic performance. In other words, do market-based or bank-based systems perform differentially depending on the level of some “non-financial institutions”?

If rule of law indicators have significant effects on economic performance in varying financial systems, the most important implication would be that failing to align specific institutional characteristics and the appropriate financial system may retard economic performance. Specifically, for instance, it might be more efficient for underdeveloped and developing countries, which generally have low levels of rule of law indicators, either to give priority to advance their banking system or to promote the functioning of their financial markets on their challenging path towards development.

The study is organized as follows: Section 2 reviews the relevant literature and constructs the linkages. Data and methodology are described in Section 3. Section 4 presents and interprets the test results and Section 5 concludes.

2 Literature Review

In general, studies on the debate either take one of the two sides, namely bank-based or market-based, or argue that having market-based or bank-based financial systems does not matter in relative economic performance. Specifically, while Gerschenkron (1962), Stiglitz (1985), Bhide (1993), and Stulz (2000)

mention the advantages of bank-based systems and/or challenge one or more aspects of equity markets, Rajan (1992), Allen (1993), Weinstein and Yafeh (1998) and LaPorta et. al. (2002) emphasize the superiority of market-based systems and/or criticize bank financing. Levine (2002), on the other hand, argues that as long as quality financial services are provided in an economy, it does not matter whether it is a bank-based or market-based system in relation to economic performance.

Relatively few studies assess the relative merits of alternative financial structures conditional on certain country specific factors. For instance, Rajan and Zingales (1998) focus on the contractual environment and capital availability and argue that bank-based systems can survive in environments of poorly drafted laws and lack of contract enforcement. Tadesse (2002) argues that effectiveness of the two systems depend on country-specific factors, such as contractual, legal and institutional environments, and these factors are associated with the level of financial development. He finds that among countries with developed financial markets, market-based systems yield higher real economic performance, while bank-based systems are superior among underdeveloped financial markets. He also argues that bank-based systems work better in weak legal and institutional environments.

Financial institutions play a crucial role in an economy as they have a variety of functions that contribute to better capital provision and allocation. Such functions include decreasing informational asymmetries, transaction costs and alleviating moral hazard problems through information production, specialization and monitoring. Different mechanisms, however, are employed to achieve these functions by financial markets and banks, as they have varying advantages and effectiveness in performing different functions. For instance, Allen and Gale (1995) suggest that bank-based systems provide better intertemporal risk sharing, while market-based systems provide better cross-sectional risk sharing (in Boot and Thakor, 1997).

The bank-based system view basically hinges on the monitoring function of banks and the advantages of the long-term relationships with borrowers. Gerschenkron (1962) argues that banks can use their power to induce firms in revealing information and paying debts, and close relations between banks and industrial firms can help eliminate the economic backwardness problem. In addition, state-owned banks can reduce market failures and allocate resources to strategically important sectors. Stiglitz (1985) focuses on the capital control function of capital markets and argues that mechanisms that equity markets offer for capital control are not as effective as those offered by bank financing. Raising capital through banks results in more effective capital control. Banks focus their attention on the events associated with the probability of default and exert control through explicit and implicit contract terms as well as reward structures that affect the behavior of managers to take more accorded actions with the interests of lenders. Bhide (1993) assesses the (hidden) costs of stock market liquidity: Low costs of selling shares reduce the incentives of stockholders to monitor, impairing

corporate governance. Stulz (2000) argues that banks effectively provide staged financing, which is crucial for entrepreneurs in realizing their projects. At each stage of the project, banks re-evaluate and apply their specialized skills to increase the success probability of the projects that they are lending.

Proponents of market-based systems emphasize the efficient capital allocation function of markets and costs of bank financing. Rajan (1992) draws attention to the costs of bank financing, given its relatively well understood advantages. The cost is that, banks have bargaining power over the firm's profits obtained from the projects implemented. In such a case, there is a reduction in the firm's incentives to exert effort to increase project returns, because the firm no longer obtains the entire surplus from the project. Allen (1993) argues that stock markets provide incentives for a large number of investors to check what the firm is doing. This repetitive checking process is the great advantage of stock markets over banks, which allow checking to occur only relatively few times. This is particularly important in cases where there is no consensus on the way the firm should be run. The fewer number of checks by banks may not permit a consensus to be reached. Weinstein and Yafeh (1998), show for the case of Japan that while close relations between banks and firms improve access to capital, benefits from this relation accrue largely to banks through high interest payments and pressure on firms to use bank-financed capital inputs. Finally, LaPorta et. al. (2002) find that higher government ownership of banks is associated with slower financial development, lower economic and productivity growth.

Beck and Levine (2002) investigate the issue in four dimensions; adding financial services and law and finance views to the bank-based and market-based debate. According to the financial services view, it is not the bank-based and market-based debate which is of a first-order importance; it is the ability of a financial system to reduce information and transaction costs, irrespective of who provides these services (Levine, 1997). Banks and markets complement each other. Advanced by La Porta et. al. (2000), the law and finance view focuses on the role of legal system. According to the view, it is more useful to distinguish countries according to the efficiency of legal systems in supporting financial transactions rather than distinguishing on the basis of financial structure. If legal systems are able to effectively enforce contracts, financial development and efficient capital allocation is improved. Beck and Levine (2002) find evidence in support of the financial services and law and finance views but not of the bank-based or market-based views.

Boot and Thakor (1997) make a distinction between a bank and a market, based on the premise that while agents in a bank can cooperate and coordinate their actions, agents in a market compete with each other. This distinction has implications in relation to the informational problems in an economy. The problem of incomplete information about future projects can be more efficiently solved in an "uncoordinated" market-based environment in which agents compete with each other. However, the problem of post-lending asset substitution moral hazard can be more efficiently solved by the coordinated action of agents in the

economy to form a bank. In a financial market there is a valuable information loop between equilibrium market prices of securities and real decisions given by firms, which in turn affect equilibrium prices. While there is no such an efficient information loop in bank financing, banks have the comparative advantage of resolving asset substitution moral hazard. Thus, there is a trade-off between information feedback and improved reduction of moral hazard in choosing market-based and bank-based systems.

Boot and Thakor (1997) argue that the presence of moral hazard enhances the roles of banks in the financial system for two reasons. First, moral hazard premiums would be high and second, the value of the informed traders' information would be low in the financial market. When successful borrowers from banks develop reputations, moral hazard would decline and traders will become more informed about firms resulting in an evolutionary process from a bank-based system to a market-based one.

Rajan and Zingales (1998) document two important distinctions between the two systems: the degree of reliance on legal enforcement and the relative importance of transparency. They argue that in environments of poorly drafted laws and lack of contract enforcement, bank-based systems can survive, because the parties have the incentive to maintain their reputations in order to ensure the continuity of future business. In the absence of such relationships and less detailed contract provisions, as is the case in a market-based system, flexible and timely law enforcement is crucial. That is why, perhaps, market-based systems are found in countries with a common-law tradition, in which the court follows the spirit rather than the wording of a contract. With regard to transparency, since bank-based systems are characterized by long term relationships between borrowers and the financier, preserving opacity is dominant. On the other hand, transparency is essential in a market-based system to guarantee protection. There is a potential lack of competition in the case of a relationship-based financing, which limits informative price signals to guide real decisions. Therefore, there is a case for inefficiency in investment decisions and misallocation of resources in a bank-based system. However, it is also possible that short-run losses can be compensated by long-run gains in long-term financing relationships.

Given this background, Rajan and Zingales (1998) emphasize two factors in determining relative merits of bank-based or market-based systems. The first factor is the adequacy of the contractual infrastructure (contractibility), the second is the availability of capital for investment opportunities. If capital is scarce, it is relatively easy to detect positive NPV projects therefore bank-based financing would work fine. If capital is abundant, however, it is relatively more difficult to select positive NPV projects as profitable investments would have already been made, price signals are important. In the case of low contractibility and capital scarcity only relationship-based financing works well.

Tadesse (2002) argues that the relative importance of bank-based and market-based systems depends on how effectively markets perform the information feedback function (the supply side) and the value of this information

for the firm (the demand side). On the supply side, since contracts and legal enforceability are crucial for markets, weak legal enforceability and poor institutional infrastructure hamper the functioning of markets by reducing the supply of information feedback. However, banks can survive in such environments, as they are able to replace the lack of legal enforceability with their loan collection skills to protect their interests. On the demand side, the value of market-generated information may diminish when moral hazard problems are severe and prevalent. Greater moral hazard reduces the value of market information in real decisions. However, as Boot and Thakor (1997) argue, banks have advantages and specialized skills in solving post-lending asset substitution moral hazard. Given that financial underdevelopment is generally associated with weak legal systems, poor property rights and fragile regulatory institutions, he finds that real economic performance varies across countries with differing financial systems. Industries in bank-based countries grow faster than those in market-based systems across financially underdeveloped economies. Across financially developed economies, industries in market-based systems grow faster than those in bank-based systems.

The abovementioned discussion leads to the following premise: whether a bank-based or market-based system is better for a country's economic performance may depend on country-specific institutional and legal environments as well as the level of financial development, which have effects on remedying incomplete information, potential of moral hazard and problems of contract enforcement.

One candidate for such country specific institutional and legal factors that may have a potential effect on the relative merits of bank-based and market-based systems is rule of law. This "non-financial institution" reflects the "…extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence" (Kauffman, et. al., 2010). Given this definition and the above discussion, there is a case for potential effects of rule of law on incomplete information, moral hazard and contract enforcement.

The link to contract enforcement is obvious from the definition of rule of law: in low rule of law-countries, it is more probably to have contract enforcement problems. Similarly, the incomplete information problem can be expected to be more prevalent in low rule of law-countries, as reflected in lack of property rights.

The moral hazard linkage requires some further explanation. Moral hazard is defined by Dickerson (1963) in the context of insurance markets as "every deviation from correct human behavior that may pose a problem for an insurer". Similarly, according to Faulkner (1960), moral hazard "reflects the hazard that arises from the failure of individuals who are or have been affected by insurance to uphold the accepted moral qualities". Pauly (1968), however, argues that moral hazard is not a result of moral disloyalty but rather of rational economic behavior.

Arrow (1968) challenges this argument. He argues that "rational economic behavior" and "moral perfidy" are not mutually exclusive categories and complete

reliance on economic incentives does not lead to optimal resource allocation. Alternative relationships developed in most societies permit cooperation and risk sharing; and in a successful economic system, such relations of trust and confidence between principal and agent can be so strong that an agent refrains himself from cheating even though it may be economically rational to do so. In the absence of such confidence, economic development may be retarded. “Non-market controls, whether internalized as moral principles or externally imposed, are to some extent essential for efficiency” (p.538). We can infer from this discussion that in countries where there is a lack of rule of law, it is conceivable to think of more prevalent moral hazard and contract enforcement problems.

3 Data, Variables and Methodology

3.1 Financial Structure (FSMRKL, FSPCBL, FSPCKL)

To define a particular country’s financial system as either market-based or bank-based, a financial structure measure is needed. However, there is no universally accepted measure of financial structure. Beck and Levine (2002) construct a financial structure measure using two variables, which reflect the comparative activity and size of markets and banks. The Structure-Activity variable is calculated as the log of the ratio of Value Traded (the value of stock transactions as a share of national output) to Bank Credit (claims of the banking sector on the private sector as a share of GDP). The Structure-Size variable is calculated as the log of the ratio of Market Capitalization (the value of listed shares divided by GDP) to Bank Credit. Their Financial Structure measure is the first principal component of the activity and size variables. Similarly, Demirguc-Kunt and Levine (1999) construct a financial structure index using the relative size, activity and efficiency of the stock market in a given country as compared to the banking sector. The Structure-Size variable is equal to the ratio of Capitalization (market capitalization of domestic stocks divided by GDP) to Bank Credit (claims of the banking sector against the private sector as a percentage of GDP). The Structure-Activity variable is the ratio of Trading (total value traded as a share of GDP) to Bank Credit. Finally, the Structure-Efficiency variable is equal to the ratio of Trading (as defined above) to Overhead Cost (banking overhead costs as a share of banking assets). Their conglomerate measure of financial structure is the means removed averages of the three variables. As an additional measure, Tadesse (2002) generates another conglomerate measure of financial structure as the principal component of the three component variables used in Demirguc-Kunt and Levine (1999). For each of the three financial structure measures, higher values reflect a more market-based system and lower values reflect a more bank-based financial system. To account for the lack of financially accepted financial structure measure as well as robustness purposes, three different financial structure measures are used in this study: the one used by

Demirguc-Kunt and Levine (1999) (FSMRKL), the one used by Beck and Levine (2002) (FSPCBL) and the one used by Tadesse (2002) (FSPCKL).

In this study, the financial structure measures constructed in Beck and Levine (2002) will be employed using a different sample time interval. The other two measures will be used in the robustness checks.

3.2 Rule of Law (RL)

Rule of law (RL) measures for countries are obtained from Kauffman, et. al. (2010). Their rule of law indicator is constructed based on the perceptions of a very diverse group of respondents, reflecting the "…extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence." Their indicators are based on surveys of individuals or domestic firms, on the views of country analysts at the major multilateral development agencies, on expert assessments, on data sources provided by various nongovernmental organizations and on information providers. The Rule of Law indicator ranges from -2.5 to +2.5, from worst to the best.

3.3 Economic Performance (IVA and GDPGR)

As performance measures, two indicators are used. The first measure is the annual growth rates of industry value added (IVA) in each country. The data is obtained from the World Bank's World Development Indicators. Value added is calculated as the net output of a sector after adding up all outputs and subtracting intermediate inputs. Sectors include mining, manufacturing, construction, electricity, water and gas. The second measure is the growth rate of GDP (GDPGR) provided again by the World Bank's World Development Indicators.

3.4 Control Variables (GDPpC, FD)

We control for basically two variables. Given that industries in developed countries might grow more slowly as compared to those in underdeveloped ones, we include initial per capita GDP (GDPpC) to control for the convergence effect and the issue of capital availability suggested by Rajan and Zingales (1998). Additionally, we include financial development measures to control for the effect of the level of financial development on economic performance, which was demonstrated by Tadesse (2002). As indicators of financial development, we use two alternative measures. First, we use the measure employed by Beck and Levine (2002). The indicator is based on two underlying measures; the Finance-Activity measure is equal to log of the product of Private Credit (the value of credits by

financial intermediaries to the private sector as a share of GDP) and Value Traded (the value of total shares traded as a share of GDP). The Finance-Size measure is equal to the log of the sum of Private Credit and Market Capitalization, which were defined previously. The financial development measure (FDBL) is equal to the first principal component of the Finance-Activity and Finance-Size measures. The second financial development measure is the one used by Claessens and Laeven (2003) (FDCL), which is the ratio of private credit to GDP.

Overall, although we have data on rule of law and performance indicators for about 200 countries, the available data for the financial structure and development variables restrict our sample to 87 countries. The analysis period is restricted by the available continuous data on rule of law over the period 2002-2009.

First we employ a pure cross-country regression model to gauge the effects of financial structure on economic performance across 87 countries. For each variable explained above, we take the averages through the years 2002-2007 in each country. 2008 and 2009 years are intentionally excluded so as to avoid any potential effects of the recent financial crisis. The following regression equation is estimated.

$$IVA_i=\alpha + \beta FS_i + \gamma RL_i + \delta FD_i + \zeta GDPpC_i + \rho(FS_i * RL_i) + \eta(FS_i * FD_i) + \varepsilon_i \quad (1)$$

where, IVA_i stands for the average annual growth rate of industry value added in country i, FS_i is the average financial structure measure, RL_i is the average rule of law measure, FD_i, *and* $GDPpC_i$ are control variables for financial development and initial per-capita GDP, respectively. The interaction term $(FS_i * RL_i)$ captures the effect of financial structure on the economic performance for different levels of rule of law measures. There is also another interaction term to capture non-linear effects of financial structure for different levels of financial development, as demonstrated by Tadesse (2001). The foregoing discussion leads to a two sided hypothesis for the sign of the interaction term $(FS_i * RL_i)$. Regarding the other interaction term, a positive sign will be consistent with Tadesse (2002). Then,

H_o: $\rho=0$
H_1: $\rho\neq0$

We next employ a pooled regression methodology to increase the statistical power of the tests, assuming constant country and temporal effects. We estimate the following regression:

$$IVA_{it}=\alpha+\beta FS_{it}+\gamma RL_{it}+\delta FD_{it}+\zeta GDPpC_{it}+\rho(FS_{it}*RL_{it})+\eta(FS_{it}*FD_{it})+Dummy+\varepsilon_{it} \quad (2)$$

where, *IVA, FS, RL, FD, GDPpC* and interaction terms are as defined before, but in this case their 2002-2009 values are included for each country. The *Dummy* variable is included to account for the potential effects of the 2007 financial crises, effects of which were mainly felt through 2008 and 2009. Thus, the Dummy variable takes the value of one between 2002 and 2007 and zero in 2008 and 2009.

As in the case of the pure cross-country specification, the hypothesis regarding the sign of the interaction term, $FS_{it}*RL_{it}$, is two-sided: Then,

H_o: $\rho=0$
H_1: $\rho\neq0$

With two alternative performance measures (IVA and GDPGR), three alternative financial structure measures (FSMRKL, FSPCBL, FSPCKL), two alternative financial development measures (FDCL, FDBL) and two different regression specifications (regressions based on cross-country averages and pooled regressions), we have 24 different regression combinations to test whether the effects of financial structure on economic performance depend on the level of rule of law and financial development.

4 Results

The results of the regression combinations are shown in Table 1 through Table 4 (see in Appendix). Table 1 and Table 2 show the results of the regressions based on 2002-2007 averages, while Table 3 and Table 4 include the results of the pooled regressions. In Table 1 and Table 3, the dependent variable is growth of industry value added (IVA), while in Table 2 and Table 4 the dependent variable is GDP growth. Each table includes 6 regression combinations to account for alternative financial structure and financial development measures as well as their interactions.

Table 1 shows that the rule of law level of a country do affect industry value added growth rates differentially in bank-based and market-based financial systems. The sign of the interaction term RL*FS is negative in all of the specifications, although they are not statistically significant when FSMRKL and FSPCKL measures are used. However, for the FSPCBL financial structure measure, which was used by Beck and Levine (2002), the sign of the interaction term is negative and statistically significant for both of the financial development measures, FDCL and FDBL. The negative sign indicates that in low-rule of law countries, market-based systems works better, while in high rule of law countries market-based systems are more efficient, all else being equal. This finding is consistent with the idea suggested by Boot and Thakor (1997) that incomplete information problems are most efficiently solved by a market setting, where individuals compete with each other and there is a fruitful information loop that impacts real decisions.

Regarding the interaction between financial structure and financial development (FS*FD), Table 1 shows that when growth of industry value added (IVA) is used as the dependent variable, the coefficient is positive in all of the specifications, yet in only one of them it is significant. However, when GDP growth (GDPGR) is used as the dependent variable, all of the six regressions yield positive coefficients and four of them are statistically significant. These results are

consistent with the findings of Tadesse (2002), who argues that market-based systems work better in financially developed countries, while bank-based systems are more efficient in financially underdeveloped ones. The coefficients of per capita GDP, which is used to control for the convergence effect and capital availability, are negative as expected and are very close in magnitude to what Tadesse (2002) found.

Similar results are obtained when GDP growth is used as the dependent variable (see Table 2). In this case, the sign of the interaction terms are all negative for the six regression combinations and they are statistically significant when the financial structure measure FSPCBL is used, for both of the financial development measures, FDCL and FDBL. Additionally, all of the coefficients of the FS*FD interaction terms are positive and four of these are statistically significant, implying that market-based systems are more efficient in financially developed countries, a result consistent with the findings of Tadesse (2002).

Table 3 and Table 4 show the results of the pooled regressions. Pooled regression results are consistent with the regressions based on 2002-2007 averages and show considerable increase in statistical power. Table 3 shows that all of the six regressions yield negative signs on the interaction term RL*FS, while two of them are significant. This suggests that market-based systems perform better in low rule of law countries and bank-based systems are better in high-rule of law countries. These results are once again consistent with Boot and Thakor (1997), who argue that market-based systems are superior in solving the incomplete information problem. In addition, it seems that the effect of rule of law on incomplete information problems dominate over the effects on moral hazard and contract enforcement. Alternatively, information asymmetry is more of a problem than moral hazard and contract enforcement in the functioning of financial markets and institutions.

Pooled regressions produce similar results as well for the interaction of financial development and financial structure terms. When the dependent variable is industry value added growth, in two of the regression combinations the interaction terms are negative, yet insignificant. The remaining 4 regressions yield positive coefficients on the interaction terms, two of which are statistically significant. Positive and significant coefficients on the FD*FS interaction term imply that in financially developed economies, market-based systems work better, while in financially underdeveloped economies, bank-based systems are more efficient. These results are consistent with Tadesse (2002).

When the dependent variable is GDP growth, the results are virtually unchanged. In all of the six regression combinations, the RL*FS interaction terms are negative, and two of them are statistically significant (when FSPCBL is used as the financial structure measure for both of the financial development measures), which suggest that market-based (bank-based) systems work better in low (high) rule of law countries. Different than the case where the dependent variable is industry value added growth, however, all of the coefficients of the FD*FS interactions are positive, while two of them are statistically significant. Once

again, these results are consistent with the findings of Tadesse (2002), who argue that market-based systems work better in financially developed economies, and vice versa. In the pooled regressions, coefficient of the *Dummy* variable is statistically significant at the 1 percent level for all the specifications, justifying the inclusion.

Overall, these findings are consistent with the observed evidence regarding the co-existence of market-based and bank-based systems throughout the world across both developed and underdeveloped countries. Developed countries generally have relatively higher financial development and higher rule of law indicators, while the opposite holds for underdeveloped countries. Therefore, the findings that financial development favors market-based systems and rule of law favors bank-based systems can be a possible explanation regarding the fact that, for instance, while Germany has a bank-based financial system, the US is market-based, although both are financially developed and have high rule of law indicators. In a similar vein, across financially underdeveloped and low-rule-of-law countries, there exist both market-based and bank-based systems. The co-existence of market-based and bank-based systems throughout the world across both developed and underdeveloped economies can be a result of the competing effects of financial development and rule of law on the functioning of financial institutions.

5 Conclusion

The findings of this paper show that a non-financial institution, namely rule of law, does matter for the relative economic performance in bank-based and market-based financial systems. Market-based systems work better in low rule of law countries, while bank-based systems are more efficient in high-rule of law countries. These results are consistent with Boot and Thakor (1997), who argue that market-based systems are superior in solving the incomplete information problem. The following explanations are consistent with the findings of this paper: the effect of rule of law on incomplete information problems dominate over the effects on moral hazard and contract enforcement. Alternatively, information asymmetry is more of a problem than moral hazard and contract enforcement in the functioning of financial markets and institutions.

Additionally, the level of financial development also matters in the relative merits of market-based and bank-based financial systems. Market-based systems function better in financially developed economies, while bank-based systems are better in financially underdeveloped economies. These results are consistent with the findings of Tadesse (2002).

Finally, the findings of this paper are consistent with the observed evidence regarding the co-existence of market-based and bank-based systems throughout the world across both developed and underdeveloped countries. Developed countries generally have relatively higher financial development and higher rule of

law indicators, while the opposite holds for underdeveloped countries. Therefore, the findings that financial development favors market-based systems and rule of law favors bank-based systems can be a possible explanation regarding the fact that, for instance, while Germany has a bank-based financial system, the US is market-based, although both are financially developed and have high rule of law indicators. In a similar vein, across financially underdeveloped and low-rule-of-law countries, there exist both market-based and bank-based systems. The co-existence of market-based and bank-based systems throughout the world across both developed and underdeveloped economies can be a result of the competing effects of financial development and rule of law on the functioning of financial institutions.

The findings also have policy implications for developed and developing countries with regard to giving priority to improving their markets or banking systems. If market-based systems work better in low-rule-of-law countries, which are generally underdeveloped or developing both in terms of their economies and market systems, then such countries should give priority to improving the functioning of market mechanisms. On the other hand, high-rule-of-law countries, which are generally developed both in terms of their economies and market systems, should aim at improving their banking systems.

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Table 1 :
Regressions Based on 2002-2007 Averages
Dependent Variable: Industry Value Added Growth

Regressions	[1]		[2]		[3]		[4]		[5]		[6]	
Explanatory Variables	Coeff.	p-value	Coeff.	p-value	Coeff.	p-value	Coeff.	p-value	Coeff.	p-value	Coeff.	p-value
Constant	0.1376	**0.001**	0.1257	**0.002**	0.1356	**0.001**	0.1126	**0.008**	0.1143	**0.005**	0.1184	**0.006**
RL	0.0158	**0.060**	0.0159	**0.054**	0.0164	**0.050**	0.0102	0.208	0.0134	0.119	0.0137	0.120
LogGDPpC	-0.0175	0.127	-0.0148	0.195	-0.0175	0.135	-0.0163	0.169	-0.0197	**0.089**	-0.0195	0.105
FDCL	-0.0492	**0.001**	-0.0464	**0.001**	-0.0472	**0.001**						
FDBL							-0.0223	**0.016**	-0.0164	**0.045**	-0.0205	**0.022**
FSMRKL	0.0000	0.984					0.0021	0.104				
FSPCBL			-0.0107	0.108					0.0101	**0.079**		
FSPCKL					-0.0024	0.718					0.0115	0.148
RL x FSMRKL	-0.0010	0.224					-0.0004	0.612				
RL x FSPCBL			-0.0113	**0.067**					-0.0133	**0.015**		
RL x FSPCKL					-0.0068	0.283					-0.0048	0.459
FDCL x FSMRKL	0.0013	0.394										
FDCL x FSPCBL			0.0180	0.195								
FDCL x FSPCKL					0.0096	0.484						
FDBL x FSMRKL							-0.0011	0.424				
FDBL x FSPCBL									0.0084	**0.037**		
FDBL x FSPCKL											-0.0028	0.766
Number of Observations	87		87		87		87		87		87	
Adjusted R^2	0.189		0.219		0.185		0.147		0.190		0.148	

RL stands for Rule of Law measured by Kauffman et al. (2010), GDPpC is GDP per Capita, FDCL is the Financial Development measure used by Claessens and Laeven (2003); FDBL is the Financial Development measure used by Beck and Levine (2002); FSMRKL is the Financial Structure measure used by Demirguc-Kunt and Levine (1999); FSPCBL is the Financial Structure measure used by Beck and Levine (2002) and FSPCKL is the Financial Structure measure used by Tadesse (2002).

Table 2:
Regressions Based on 2002-2007 Averages
Dependent Variable: GDP Growth

Regressions	[1]		[2]		[3]		[4]		[5]		[6]	
Explanatory Variables	Coeff.	p-value	Coeff.	p-value	Coeff.	p-value	Coeff.	p-value	Coeff.	p-value	Coeff.	p-value
Constant	0.1164	**0.000**	0.1097	**0.000**	0.1135	**0.000**	0.0988	**0.000**	0.1066	**0.000**	0.1004	**0.000**
RL	0.0084	0.112	0.0076	0.147	0.0081	0.126	0.0034	0.504	0.0068	0.209	0.0041	0.462
LogGDPpC	-0.0153	**0.035**	-0.0141	**0.055**	-0.0149	**0.045**	-0.0152	**0.044**	-0.0171	**0.021**	-0.0153	**0.045**
FDCL	-0.0257	**0.005**	-0.0206	**0.017**	-0.0227	**0.010**						
FDBL							-0.0018	0.749	-0.0064	0.214	-0.0034	0.541
FSMRKL	-0.0006	0.319					-0.0004	0.615				
FSPCBL			-0.0080	**0.061**					0.0054	0.134		
FSPCKL					-0.0058	0.176					-0.0007	0.883
RL x FSMRKL	-0.0008	0.124					-0.0007	0.158				
RL x FSPCBL			-0.0076	**0.053**					-0.0074	**0.033**		
RL x FSPCKL					-0.0060	0.135					-0.0054	0.187
FDCL x FSMRKL	0.0020	**0.050**										
FDCL x FSPCBL			0.0167	**0.062**								
FDCL x FSPCKL					0.0163	**0.062**						
FDBL x FSMRKL							0.0013	0.159				
FDBL x FSPCBL									0.0058	**0.025**		
FDBL x FSPCKL											0.0075	0.206
Number of Observations	87		87		87		87		87		87	
Adjusted R^2	0.206		0.212		0.200		0.165		0.202		0.163	

RL stands for Rule of Law measured by Kauffman et al. (2010), GDPpC is GDP per Capita, FDCL is the Financial Development measure used by Claessens and Laeven (2003); FDBL is the Financial Development measure used by Beck and Levine (2002); FSMRKL is the Financial Structure measure used by Demirguc-Kunt and Levine (1999); FSPCBL is the Financial Structure measure used by Beck and Levine (2002) and FSPCKL is the Financial Structure measure used by Tadesse (2002).

Table 3:
Pooled Regressions
Dependent Variable: Industry Value Added Growth

Regressions	[1]		[2]		[3]		[4]		[5]		[6]	
Explanatory Variables	Coeff.	p-value	Coeff.	p-value	Coeff.	p-value	Coeff.	p-value	Coeff.	p-value	Coeff.	p-value
Constant	0.0802	**0.002**	0.0745	**0.004**	0.0792	**0.002**	0.0680	**0.011**	0.0604	**0.021**	0.0716	**0.008**
RL	0.0083	**0.096**	0.0094	**0.056**	0.0096	**0.050**	0.0027	0.566	0.0086	**0.091**	0.0069	0.179
LogGDPpC	-0.0188	**0.008**	-0.0180	**0.014**	-0.0192	**0.009**	-0.0195	**0.008**	-0.0214	**0.003**	-0.0222	**0.003**
FDCL	-0.0325	**0.000**	-0.0332	**0.000**	-0.0328	**0.000**						
FDBL							-0.0139	**0.008**	-0.0149	**0.002**	-0.0141	**0.006**
FSMRKL	0.0004	0.220					0.0013	**0.027**				
FSPCBL			-0.0060	0.170					0.0131	**0.000**		
FSPCKL					0.0015	0.712					0.0114	**0.025**
RL x FSMRKL	-0.0003	0.171					-0.0003	0.269				
RL x FSPCBL			-0.0088	**0.021**					-0.0094	**0.004**		
RL x FSPCKL					-0.0032	0.368					-0.0025	0.472
FDCL x FSMRKL	-0.0001	0.795										
FDCL x FSPCBL			0.0151	**0.063**								
FDCL x FSPCKL					0.0014	0.819						
FDBL x FSMRKL							-0.0006	0.131				
FDBL x FSPCBL									0.0070	**0.006**		
FDBL x FSPCKL											-0.0052	0.290
Dummy	0.0560	**0.000**	0.0573	**0.000**	0.0566	**0.000**	0.0577	**0.000**	0.0608	**0.000**	0.0588	**0.000**
Number of Observations	592		592		592		592		592		592	
Adjusted R^2	0.231		0.235		0.229		0.215		0.230		0.215	

RL stands for Rule of Law measured by Kauffman et al. (2010), GDPpC is GDP per Capita, FDCL is the Financial Development measure used by Claessens and Laeven (2003); FDBL is the Financial Development measure used by Beck and Levine (2002); FSMRKL is the Financial Structure measure used by Demirguc-Kunt and Levine (1999); FSPCBL is the Financial Structure measure used by Beck and Levine (2002) and FSPCKL is the Financial Structure measure used by Tadesse (2002).

Table 4:
Pooled Regressions
Dependent Variable: GDP Growth

Regressions	[1]		[2]		[3]		[4]		[5]		[6]	
Explanatory Variables	Coeff.	p-value	Coeff.	p-value	Coeff.	p-value	Coeff.	p-value	Coeff.	p-value	Coeff.	p-value
Constant	0.0673	**0.000**	0.0635	**0.000**	0.0656	**0.000**	0.0578	**0.000**	0.0572	**0.000**	0.0588	**0.000**
RL	0.0038	0.206	0.0038	0.204	0.0045	0.132	-0.0009	0.750	0.0032	0.297	0.0004	0.884
LogGDPpC	-0.0127	**0.003**	-0.0122	**0.006**	-0.0127	**0.004**	-0.0136	**0.002**	-0.0147	**0.001**	-0.0143	**0.002**
FDCL	-0.0190	**0.000**	-0.0179	**0.000**	-0.0190	**0.000**						
FDBL							-0.0020	0.537	-0.0068	**0.021**	-0.0031	0.309
FSMRKL	0.0003	0.203					0.0001	0.674				
FSPCBL			-0.0049	**0.061**					0.0088	**0.000**		
FSPCKL					-0.0002	0.944					0.0025	0.412
RL x FSMRKL	-0.0001	0.393					-0.0002	0.171				
RL x FSPCBL			-0.0054	**0.018**					-0.0048	**0.016**		
RL x FSPCKL					-0.0017	0.434					-0.0019	0.378
FDCL x FSMRKL	0.0000	0.912										
FDCL x FSPCBL			0.0149	**0.002**								
FDCL x FSPCKL					0.0042	0.240						
FDBL x FSMRKL							0.0001	0.577				
FDBL x FSPCBL									0.0055	**0.000**		
FDBL x FSPCKL											0.0020	0.505
Dummy	0.0383	**0.000**	0.0387	**0.000**	0.0389	**0.000**	0.0403	**0.000**	0.0411	**0.000**	0.0408	**0.000**
Number of Observations	592		592		592		592		592		592	
Adjusted R^2	0.259		0.269		0.259		0.239		0.265		0.242	

RL stands for Rule of Law measured by Kauffman et al. (2010), GDPpC is GDP per Capita, FDCL is the Financial Development measure used by Claessens and Laeven (2003); FDBL is the Financial Development measure used by Beck and Levine (2002); FSMRKL is the Financial Structure measure used by Demirguc-Kunt and Levine (1999); FSPCBL is the Financial Structure measure used by Beck and Levine (2002) and FSPCKL is the Financial Structure measure used by Tadesse (2002).