Legal origin, creditor protection and bank lending: Evidence from emerging markets

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Abstract:

Numerous papers in the "law and finance" literature have established that countries with better functioning legal institutions enjoy better developed capital markets, and that legal origin is a fundamental determinant of legal institutions (La Porta *et al*. 1997, 1998, 2006; Djankov *et al*. 2007). In this study, we test whether banks are willing to grant more credit to the private sector when they enjoy superior legal protection. We test this hypothesis using bank-level data over the period 2000-2006 from 102 emerging-market countries and a random-effects model that controls for bank heterogeneity. We find that lenders allocate a significantly higher portion of their assets to loans (i) where they enjoy Socialist legal origin rather than English or French legal origin; (ii) where enforcement of debt contracts is more efficient and (iii) where banks enjoy fewer restrictions on their operations. These findings support our hypothesis that superior legal protection leads to more bank credit, which, in turn, should lead to higher economic growth. However, these findings contradict the predictions based upon the theory of legal origin.

Keywords: banking, creditor rights, emerging markets, investor protection, legal origin

JEL Classifications: G21, G34

1. Introduction

Recent research has established that legal origin and investor protection are important determinants of financial development.[1] Countries with British common-law legal origin and better investor protection have better developed financial markets, which, in turn, lead to higher levels of economic growth (King and Levine, 1993). Much of this research has analyzed country-level data, usually focusing on how investor protection affects the amount of private sector credit, which King and Levine (1993) and many others have linked to future economic growth. One question left largely unanswered by this literature is how lenders at the micro-level respond to differences in governance regimes. This question is especially important to emerging market economies, where bank debt is the primary source of business credit.

In this article, we extend the law and finance literature by using firm-level data from more than two thousand banks in 102 emerging-market countries to analyze how lenders respond to differences in legal origin and investor protection. Using a random-effects model that controls for bank heterogeneity, we find that lenders allocate a significantly higher portion of their assets to loans (i) where they enjoy Socialist legal origin rather than English or French legal origin; (ii) where enforcement of debt contracts is more efficient and (iii) where banks enjoy fewer restrictions on their operations. Where banks operate in countries with strong business and legal environments, they have incentive to extend more loans to the private sector. These findings generally support our hypothesis that superior legal protection leads to more bank credit, which, in turn, should lead to higher economic growth. However, they contradict the predictions based upon the theory of legal origin.

[1] See La Porta *et al*. 1997, 1998 and 2002; Levine 1999, Demirguc-Kunt and Maksimovic 1998; Djankov *et al*. 2003 and 2007; and Qian and Strahan 2006.

Our research builds on two strands of the literature: the "law and finance" literature and the "finance and growth" literature. The "law and finance" literature, which grew out of the seminal works of La Porta *et al*. (1997, 1998), has established that differences in legal protection of investors explain much of the variation in financial-sector development and that legal origin explains much of the variation in legal protection of investors. The "finance and growth" literature, which is most closely associated with King and Levine (1993), Levine and Zervos (1998) and Rajan and Zingales (1995, 1998), has established that financial sector development is positively related to economic growth.

We extend the literature by documenting one channel by which legal protection leads to better financial-sector development. With better investor protection, bankers increase the portion of their asset portfolios allocated to loans. In aggregate, this should lead to higher levels of private-sector credit, which the "finance and growth" literature has shown to be positively related to economic growth. Contrary to most previous research that has examined country-level data, we adopt a micro approach to examining the impact of the business and legal environments on banking operations, using bank-level rather than country-level data.

Consistent with the theoretical works of Aghion and Bolton (1992) and Hart and Moore (1992, 1994), we hypothesize that the risk-taking behavior of banks is affected by country's legal tradition and the prevailing structures in terms of more openness in banking practices and better protection of property rights. Specifically, in countries with better legal protection, banks have an incentive to take on more portfolio risk because they face less risk of expropriation by borrowers. In other words, they can make more risky loans because their expected loss per loan is smaller when they enjoy the superior creditor protection available from the institutions in countries of British legal origin.

Our analysis rests on a panel data set of 2,723 commercial banks from 102 emerging economies over the period 2000-2006. Our interest has two justifications: first, there is wide variation in legal protection across these countries; and second, banking in these parts of the world has received scant attention in the academic literature.

La Porta *et al*. (1998) argue that different legal origins, especially French civil law versus English common law, provide much different levels of investor protection that are reflected in financial sector development. Most of the countries included in the study were colonized by the world economic powers at the time until the middle of the past century and there is wide variation in creditor protection among them. This makes emerging economies an especially fertile laboratory for testing our hypothesis.

The rest of the paper is organized as follows. Section 2 provides a brief review of the relevant literature. Section 3 presents the data and variables used in the study followed by multivariate analyses of the risk-return characteristics of commercial banks in section 4. Section 5 provides a summary and conclusions.

2. A brief review of the relevant literature

The "law and finance" literature essentially begins with La Porta *et al*. (1997, 1998), who argue and provide empirical evidence at the country level that the most important determinant of capital markets development is the degree of legal protection provided to investors. Corporate finance flourishes in countries with legal systems that better protect investors' rights and support contract enforcement. In addition, they find that a country's "legal origin" is a fundamental determinant of investor protection. "Legal origin" refers to the legal family from which a country's legal system evolved.

In their 1998 article, La Porta *et al*. distinguish among two broad legal traditions: English common law and Roman civil law. Within the broad civil law tradition, they distinguish three families—French, German and Scandinavian. La Porta *et al*. find that countries with English common law tradition enjoy the best investor protection while countries with French civil law tradition suffer the worst investor protection. They attribute these finding to differences in the legal protection from institutions left behind by the colonial powers. Also in this article, La Porta *et al*. develop an index of creditor rights, which they show is higher in common law countries than in civil law countries.

In a 1999 follow-up article, La Porta *et al*. expand the four families to five—with the addition of the Socialist civil law tradition, which enables them to better categorize eastern European countries that emerged following the breakup of the Soviet Union. They find that countries with Socialist civil law tradition suffer from poor legal protection similar to countries with French civil law tradition.

Beck, Demirguc-Kunt and Levine (2003) analyze a sample of 70 countries for evidence regarding how well legal origins can explain financial development. Among other findings, but most relevant to this study, they find that credit from financial intermediaries to the private sector as a share of GDP is higher in countries of British legal origin.

Djankov *et al*. (2003) construct two indices of procedural formalism in legal resolution of disputes—how many days it takes to collect a bounced check and how many days it takes to evict a tenant for nonpayment of rent. They find considerable variation in these measures and that procedural formalism is greater in civil-law countries than common law countries and in poorer countries than in rich countries.

Djankov *et al*. (2007) extend previous work on legal protection of creditors to a panel analysis of 129 countries over 25 years. They find that the creditors' rights index developed by La Porta *et al*. (1998) is associated with higher levels of private sector credit, but that this relationship does not hold in poorer countries. They also find that procedural formalism is associated with lower levels of private sector credit but, again, this relationship does not hold in poorer countries.

Qian and Strahan (2007) examine data on individual bank loans for evidence on how differences in legal systems affect terms of bank loans. Like Djankov et al. (2007), they focus on the La Porta *et al*. (1998) index of creditor rights rather than legal origin, and find that stronger creditor rights are associated with lower interest rates and longer maturities. However, they also report that loans in countries of British legal origin carry higher rates and that higher rates are associated with greater financial development, which they attribute to higher loan demand for loans in more developed economies.

The literature on "finance and economic growth" examines how economic growth is related to financial development. There now exists a wide empirical strand of the literature establishing a positive relationship between financial sector development and economic growth, although the direction of causality remains an issue of debate.

Levine and Zervos (1998) document that stock-market liquidity and banking development are both positively and robustly correlated with future economic growth, capital accumulation and productivity growth.

Rajan and Zingales (1998) examine the channels through which financial development promotes growth. They find that industrial sectors more dependent upon external finance

develop disproportionately faster in countries with more developed financial markets. Hence, banks promote economic growth by reducing the cost of external finance of firms.

Beck, Levine and Loayza (2000) find that financial development boosts economic growth primarily by improving resource allocation and accelerating total factor productivity growth.

This positive effect of financial development on growth is found to be robust to different econometric methods, from the cross-country regressions, cross-country instrumental variable studies and time-series analyses to the dynamic panel GMM estimations. Levine (2004) provides an excellent review on the research in this area.

Demirguc-Kunt and Maksimovic (1998, 2002) and Levine (1999) tie these two strands of the literature together. Kunt and Maksimovic (1998) use firm level data investigate how differences in legal systems affect use of external financing. They find that a greater portion of firms in countries with more efficient legal systems use external financing to fund growth.

Levine (1999) uses country-level data to examine how legal environment affect financial development and subsequent long-run economic growth. He finds that financial intermediaries are better developed in countries with better legal protection and that the portion of financial intermediary development explained by the legal environment is positively related to economic growth.

Demirguc-Kunt and Maksimovic (2002) use firm-level data from 40 countries to analyze how a country's legal and financial systems affect a firm's ability to access external finance to fund growth opportunities. They find that the access to external finance is primarily a function of the efficiency of a country's legal system.

3. Data and Methodology

Our sample includes 16,877 bank-year observations on 2,723 banks located in 102 emerging-market countries. In terms of bank representation, Latin America dominates the sample and Northern Europe includes the least number of banks. Brazil, Panama and Argentina have the largest number of banks, followed by China, India, Lebanon and Poland, with Estonia, Qatar and Kuwait having the smallest number of banks.

We retrieve bank-level financial data for the years 2000-2006 from the BankScope database provided by Fitch-IBCA (International Bank Credit Analysis Ltd). We collect information on total assets, total loans, and total equity from the banks annual balance sheets along with net income from the banks' annual income statements. We use these financial data to create standard prudential ratios of performance, capitalization and risk-taking, including return on assets (ROA), equity to assets (Equity to Assets), and total loans to total assets (Loans to Assets).

We retrieve country-level "macro" data from the Heritage Foundation and from the International Financial Statistics. These include indices on banking activity restrictions, property rights, and GDP per capita.

Finally, we collect information on legal origin, creditors' rights, and procedural formalism from Professor Andrei Shleifer's Harvard web pages.[2] Legal origin is coded as a set of five dummy variables, one each for *English*, *French*, Germanic, Scandinavian and *Socialist* legal systems. In our sample, we have no Germanic or Scandinavian countries.

Legal Formalism is an estimate of the number of days necessary to collect an unpaid debt equal to 50% of the country's GDP per capita, which is used by Djankov *et al*. (2007).

[2] http://post.economics.harvard.edu/faculty/shleifer/data.html

We then merge these country-level data with our bank-level data. A description of the country-level governance and macroeconomic variables appears in Table 1.

[Table 1 about here]

Appendix 1 presents the values of these governance variables by country and averaged by legal origin.

With these data, we first calculate univariate statistics and conduct some simple tests for differences in means of performance and condition, splitting our samples into groups with high and low levels of our governance indices. These tests provide some broad evidence on the importance of legal origin and creditor rights to the performance and risk-taking of banks. Next, we implement multivariate regression analyses to analyze these relationships more fully in a multivariate setting. Specifically, we analyze different versions of the following regression model:

$$Y_{i,t} = \beta X_j + \delta C_j + \eta Z_{j,t} + \varepsilon_{i,t} \quad (1)$$

where:

$Y_{i,t}$ measures risk by the ratio of total loans to total assets, profitability by the ratio of net income to total assets or net income to total equity, and capital adequacy by the ratio of equity to total assets for bank *i* during year *t*;

X_j is a set of dummy variables describing the legal origin of country j;

C_j is a set of structural variables describing the country j, including governance indices that measure investor protection;

$Z_{j,t}$ controls for the macroeconomic environment in terms of the level of economic development; and

$\varepsilon_{i,t}$ is a random error term for bank *i* during year *t*.

Because we analyze panel data, we cannot rely upon ordinary-least-squares regression techniques as our error terms would be serially correlated. Typically, one must choose between a fixed-effects model and a random-effects model when analyzing panel data such as ours; however, we are constrained to using a random-effects model because our primary variables of interest—our indicators for Legal Origin—are invariant at both the bank and country levels. Therefore, they cannot be estimated using a fixed-effects model because they would be collinear with the fixed-effects dummy variables. Consequently, we estimate all models using bank-level random effects.

4. Empirical Findings

Our primary hypotheses are: (1) that banks in countries with English legal origin enjoy superior institutions that enable them to make more loans; and (2) banks in countries with less legal formalism enjoy superior creditors' rights that enable them to make more loans. The logic behind our hypotheses is that bankers are concerned about the total risk exposure of their loan portfolio. When they enjoy better legal protection reducing their risk of expropriation by borrowers, then they are able to take on increased portfolio risk by making more loans per dollar of assets.

We also test how profitability and bank capitalization are affected by differences in legal origin and legal protection. We have no prior expectations about either measure. Profitability should be higher if the banks increase portfolio risk beyond what they gain from reduced risk of expropriation attributable to superior legal protection, but should be lower if banks choose to reduce their overall level of risk. Capitalization as measured by the ratio of equity to asset should

be higher if better legal protection comes in the form of more stringent banking supervision; alternatively, it should be lower if better legal protection reduces the need to hold capital as a reserve against expected losses. In other words, an alternative to increasing portfolio risk is to increase the risk of financial distress by increasing leverage.

Table 2 shows descriptive statistics on the credit risk exposure, capitalization level and profitability of banks by legal origin and other governance variables.

[Table 2 about here]

Figures appearing in Panel A of Table 2 indicate significant variation in the ratio of total loans to total assets by legal origin—0.449 for French, 0.499 for English and 0.517 for Socialist. The 0.504 difference between English and French, the 0.0679 difference between Socialist and French, and the 0.0175 difference between Socialist and English legal origin each is statistically significant at better than the 0.01 level based upon a *t*-test for difference in means. Hence, the simple descriptive statistic show that banks in countries of French legal origin allocate the smallest portion of their portfolios to loans whereas banks in countries of Socialist legal origin allocate the largest portion of their portfolios to loans, with banks in countries of English legal origin lying in between.

There are even larger differences in capitalization—0.1033 for English, 0.1551 for French and 0.1807 for Socialist. Again, the differences in each pair of these means (0.0774 between Socialist and French, 0.0518 between French and English, and 0.0246 between French and English) are statistically significant at better than the 0.01 level based upon a *t*-test for differences in means.

Differences in profitability are less pronounced—141 basis points for Socialist, 136 basis points for English and 111 basis points for French. Each of these differences (5 basis points

between Socialist and English, 25 basis points between English and French, and 30 basis points between Socialist and French) is statistically significant at better than the 0.05 level, although the economic significance of the 5 basis point difference is debatable.

Panel B of Table 2 examines differences by legal formalism. We split the sample at the median value of the days to recover a debt equal to half of the country's GDP per capita. High Legal Formalism includes banks with greater than the median days of recovery, indicating less efficient legal enforcement. Here, we see that banks in countries with less efficient legal systems allocate significantly less of their asset portfolio to loans (46.39 percent of assets for High Legal Formalism versus 50.96 percent of assets for Low Legal Formalism), hold significantly less capital (14.15 percent of assets versus 15.97 percent of assets), and are significantly less profitable (108 basis points versus 149 basis points).

Panel C of Table 2 examines differences by banking freedom as measured by the Heritage Foundation. Lower values of this index are associated with greater banking freedom. Again, we split our sample at the median value, here 3.0, with banks receiving lower values going into the Strong Banking Freedom group while the remaining banks go into the Weak Banking Freedom group. We find that the Strong Banking Freedom group holds significantly smaller loan portfolios, significantly more capital and is significantly less profitable.

Finally, Panel D of Table 2 examines differences by Property Rights as measured by the Heritage Foundation, where lower values are associated with stronger property rights. We classify banks in countries with less than the median value of 3.0 as Strong while the remaining banks we classify as Weak. Here, we find that banks in countries with Strong Rights allocate significantly less of their assets to loans (47.3 percent versus 50.17 percent), hold significantly

more capital (15.31 percent of assets versus 14.80 percent of assets) and are significantly less profitable (121 basis points versus 137 basis points ROA).

Overall, the univariate statistics in Table 2 paint a murky picture of how portfolio risk, capitalization and profitability differ across governance regimes. In the next section, we attempt to isolate the effects of governance using multivariate analyses.

Multivariate Regression Analysis: Loans to Assets

The results of the multivariate analyses of equation (1) appear in Tables 3-5. In each of these tables, we present five specifications estimated using a random-effects model. We begin in specification (1) with dummies for legal origin (French and Socialist, with English being the omitted category); in specification (2), we add a control for differences in economic development (log of GDP per capita); in (3), we add our measure of Legal Formalism; in (4) we add indicators for Banking Freedom and Property Rights; and, finally, in (5), we add two bank-level control variables—bank size as measured by the log of total assets and an indicator variable for foreign ownership.

In Table 3 are the results where the dependent variable is our measure of credit risk exposure—the ratio of total loans to total assets.

[Table 3 about here]

The effect of legal origin is measured relative to the omitted category, which is English legal origin. Hence, the coefficients on French and Socialist measure the difference in the loan-to-asset ratio of these groups from that of the excluded French group of banks. The explanatory variable *French*, is negative but lacks statistical significance, whereas the explanatory variable *Socialist* is positive and highly significant. The coefficient of *Socialist* ranges from 0.0653 to

0.1124, indicating that banks in countries of Socialist legal origin allocate an additional 6.53 to 11.24 percent of their assets to their loan portfolios relative to the omitted English legal origin category. Given the average loan-to-asset ratio of slightly less than 0.50, this represents a 13- to 22-percent increase in the amount of credit that banks are injecting into the economy. These results strongly contradict one of our primary hypothesis: that better legal protection offered in countries of English legal origin enables banks in those countries to take on more portfolio risk without increasing their total risk (portfolio risk plus country-level legal risk).

In specification (2) of Table 3, we add our control of economic development—the natural log of per capita Gross Domestic Product. Surprisingly, this variable is insignificant in all specifications and flips signs.

In specification (3), we add the Djankov *et al*. (2007) measure of legal formalism—the natural logarithm of the number of days needed to recover a debt equal to half of country's GDP per capita—to the explanatory variables in specification (2). Higher values indicate less efficient judicial enforcement of the country's laws. The coefficient of Legal Formalism is negative and highly significant, indicating that banks in countries with greater legal formalism (less efficient enforcement) allocate significantly less of their asset portfolios to loans. The coefficient indicates that a one standard deviation increase in legal formalism would be associated with a loan to asset ratio that is lower by almost two percentage points.

In specification (4), we add the two Heritage Foundation indices—Banking Freedom and Property Rights—to the variables appearing in specification (3). Only the coefficient on Banking Freedom is statistically significant. The negative coefficient on Banking Freedom indicates that banks located in countries with greater banking freedom allocate significantly more of their assets to loans than do banks in countries with less banking freedom, and that moving from the

worst to best value of this indexes (2.5 to -2.5) would increase the loan to asset ratio by approximately 0.0183 x 5 = 0.0916 or 9.16 percentage points.

Finally, in specification (5), we add two bank-level control variables—bank size as measured by the natural log of total assets and an indicator for foreign control of the bank. Bank size is positive and highly significant, indicating that larger banks allocate significantly more of their assets to loans. The dummy variable for foreign control is negative and significant, indicating that foreign-controlled banks allocate fewer of their assets to loans.

At the bottom of Table 3 are the covariance parameters, which are the estimates for the random-effects portion of the model. The intercept coefficient measures the random effects attributable to the differences across banks but not within banks. The residual coefficient measures the random effects attributable to differences across time within a bank. Both covariance parameters are highly significant, but the coefficient for intercept is much larger than that of residual, indicating that most of the total variation in the model occurs among banks rather than across time within a bank.

Multivariate Regression Analysis: Equity to Assets

Thus far, we have focused on the ratio of total loans to total assets, as much of the research on finance and growth has focused on how private sector credit leads to economic growth. However, better creditor protection could provide an incentive for banks to increase their financial risk rather than or in addition to their portfolio risk. Therefore, we also are interested in whether and, if so, how creditor protection affects bank capitalization. In Table 4 are the results where our dependent variable is bank capitalization as measured by the ratio of *Equity to Assets*.

[Table 4 about here]

As in Table 3, we sequentially enter our variables and English legal origin is the omitted category, so coefficients on French and Socialist measure the difference in the equity to asset ratios for banks in these countries relative to banks in English countries. In specification (1), we enter our dummies for French and Socialist legal origin. The coefficient on French is 0.024, indicating that capital ratios for banks of French legal origin are 2.4 percentage points higher than for banks of English legal origin. The coefficient on Socialist is even higher at 0.0638, indicating that banks of Socialist legal origin are 6.38 percentage points higher than those of English legal origin. It is important to point out that the average capital ratio is about 15 percent of assets so these differences are extremely large in percentage terms—around 15 percent for the difference between English and French and around forty percent for Socialist.

In specification (2), we add our control for financial development. The coefficient on this variable is positive and significant, indicating that banks in countries with higher GDP per capita hold significantly more capital. This difference may be attributable to more stringent banking supervision at countries with higher levels of financial development.

In specification (3), we add our measure of Legal Formalism to the variables included in specification (1) and find that its coefficient is positive but only marginally significant. This result indicates that creditors' rights have a limited effect on bank capitalization.

In specification (4), we add our two Heritage indices—Banking Freedom and Property Rights. Banking Freedom is positive and highly significant, indicating that banks in countries with less banking freedom must hold significantly more capital than banks in countries with more banking freedom. The coefficient on Property Rights is statistically insignificant.

Finally, in specification (5), we add our two bank-level control variables. Bank size is negative and highly significant, indicating that larger banks hold significantly less capital than their smaller counterparts. Foreign control is positive, but statistically insignificant.

The random-effects covariance parameters once again indicate that most of the explained variation in the capital ratio is attributable to differences across banks rather than differences across time.

Overall, the results in Table 4 suggest that banks in countries of English legal origin are more highly levered than banks in countries of other legal origins, which is consistent with the substitution of solvency risk for expropriation risk, similar to what we observed in Table 3, where portfolio risk was substituted for expropriation risk.

Multivariate Regression Analysis: Return on Assets

In Table 5 are the results where our dependent variable is bank profitability as measured by *Return on Assets*.

[Table 5 about here]

In specification (1), the coefficient of *French* is negative and highly significant, indicating that banks of French legal origin have an average ROA that is lower than banks of English legal origin by 56 basis points. The average ROA is 130 basis points so this is a huge difference in profitability. The coefficient on *Socialist* legal origin is only 3 basis points, which is not statistically (or economically) different from zero. Hence, it appears that banks of French legal origin are significantly less profitable than other banks.

In specification (2), we add our measure of financial development. The coefficient on log of GDP per capita is negative but statistically insignificant. Similarly, when we add Legal

Formalism (specification (3)), it also is negative but statistically insignificant. In specification (4), we add our two Heritage indicators—Banking Freedom and Property Rights. Both are positive and significant at better than the 0.05 level, indicating that less banking freedom and fewer property rights are associated with lower bank profitability. We interpret these results as showing that less banking freedom and fewer property rights result in banks earning lower returns.

Finally, we add our two bank-level controls in specification (5). We find that larger banks are significantly more profitable, but that banks under foreign control are no less profitable than banks under domestic control.

5. Conclusions

In this article, we extend the law and finance literature by using firm-level data from almost three-thousand banks in 102 emerging-market countries to analyze how lenders respond to differences in legal origin and investor protection. Using a random-effects model that controls for bank heterogeneity, we find that lenders allocate a significantly higher portion of their assets to loans (i) where they enjoy Socialist legal origin rather than French or English legal origin; (ii) where enforcement of debt contracts is more efficient and (iii) where banks enjoy fewer restrictions on their operations. These results indicate that, when banks operate in countries with strong business and legal environments, they substitute portfolio risk and solvency risk for expropriation risk. These findings support our hypothesis that superior legal protection leads to more bank credit, which, in turn, should lead to higher economic growth, but contradict our hypothesis that banks in countries of English legal origin enjoy superior legal protection that leads them to provide more bank credit. We find mixed results for bank capitalization and

profitability. Creditor protection does not appear to influence bank capitalization or profitability. Legal origin does appear to influence both bank capitalization and profitability. Banks in countries of Socialist legal origin hold significantly more capital, but make significantly more loans. Banks in countries of French legal origin hold more capital and are less profitable.

These results provide new evidence on the importance of legal origin and investor protection to financial sector development and economic growth. Researchers in the "finance and growth" literature have established that better financial sector development as measured by aggregate domestic private credit lead to higher levels of economic growth. We extend the literature by documenting one channel by which legal protection leads to financial sector development. With better investor protection, bankers increase the portion of their assets allocated to loans. In aggregate, this should lead to higher levels of private sector credit, which the "finance and growth" literature has shown to be positively related to economic growth.

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Table 1:
Definitions of Country-Level Governance and Macroeconomic Variables

Variable Name	Description
Banking and Finance Freedom	An indicator of relative openness of banking & financial system. The index ranges in value from 1 (very high) to 5 (very low). It reflects • Government ownership of financial institutions • Restrictions on the ability of foreign banks to open branches and subsidiaries • Government influence over the allocation of credit • Government regulations Source: *Heritage Foundation's Index of Economic Freedom*
Property Rights	Freedom from government influence over the judicial system • Commercial code defining contracts • Sanctioning of foreign arbitration of contract disputes • Government expropriation of property • Corruption within the judiciary • Delays in receiving judicial decisions • Legally granted and protected private property A lower score indicates better protection of property rights in the country. Source: *Heritage Foundation's Index of Economic Freedom*
Legal Origin	Identifies the legal origin of the company law or commercial code of each country (English, French, Socialist, German, Scandinavian). Source: Djankov *et al.* (2003).
Legal Formalism	[1] An estimate of the number of days that necessary to collect on a bounced check before the courts in the country' largest city. These estimates were prepared by law firms in each country surveyed by Djankov *et al*. (2003). Source: Djankov *et al*. (2003) [2] An alternative measure is an estimate of the number of days necessary to collect an unpaid debt equal to 50% of the country's GDP per capita, which is used by Djankov *et al*. (2007). Source: Djankov *et al*. (2007) Higher values indicate greater procedural formalism and greater inefficiency in judicial enforcement.
Per Capita GDP	Logarithm of per capita GDP. Source: *International Financial Statistics*

Table 2
Descriptive Statistics
By Legal Origin, Legal Formalism, Banking Freedom and Property Rights

Based upon an unbalanced panel of 2,723 banks in 102 emerging markets over the years 2000-2006. Loans to Assets is the ratio of total loans to total assets; Equity to Assets is the ratio of total equity to total assets; ROA is the ratio of net income to total assets. Each of these three variables is measured at the bank level in each year. Means appear above standard errors. English, French and Socialist are dummy variables indicating English, French or Socialist legal origin as first defined by La Porta et al. 1998. Legal Formalism is the number of days needed to recover a debt equal to half of the country's GDP per capita. Creditor Rights is the index of creditors rights first described in La Porta et al 1998. Banking Freedom is an index of banking freedom defined by the Heritage Foundation. Property Rights is an index of Property Rights defined by the Heritage Foundation. Table 1 provides more details on each variable. High versus Low and Strong versus Weak refer to a split of the variable at the median value.

	Observations	Loans to Asset	Equity to Assets	ROA
All	16,975	0.4870	0.1507	0.0129
		0.0015	0.0010	0.0002
English	4,500	0.4994	0.1033	0.0136
		0.0026	0.0013	0.0003
French	6,324	0.4490	0.1551	0.0111
		0.0027	0.0017	0.0004
Socialist	6,151	0.5169	0.1807	0.0141
		0.0023	0.0018	0.0003
Hi Legal Formalism	8,570	0.4639	0.1415	0.0108
		0.0021	0.0015	0.0003
Low Legal Formalism	8,405	0.5096	0.1597	0.0149
		0.0021	0.0014	0.0002
Strong Banking Freedom	8,805	0.4733	0.1531	0.0121
		0.0022	0.0014	0.0030
Weak Banking Freedom	8,170	0.5017	0.1480	0.0137
		0.0020	0.0015	0.0002
Strong Property Rights	8,805	0.4733	0.1531	0.0121
		0.0022	0.0014	0.0003
Weak Property Rights	8,170	0.5017	0.1480	0.0137
		0.0020	0.0015	0.0002

Table 3
Random-Effects Regressions to Explain the Ratio of Total Loans to Total Assets

Based upon an unbalanced panel of 2,723 banks in 102 emerging markets over the years 2000-2006 for a total of 16,887 observations. ln(GDP per capita) is the natural logarithm of the country's per capita Gross Domestic Product in each year. English, French and Socialist are dummy variables indicating English, French or Socialist legal origin as first defined by La Porta et al. 1998. English is the omitted category. Legal Formalism is the natural logarithm of the number of days needed to recover a debt equal to half of the country's GDP per capita, as defined by Djankov et al. (2007). Banking Freedom is an index of banking freedom defined by the Heritage Foundation. Property Rights is an index of Property Rights defined by the Heritage Foundation. Bank Size is the natural logarithm of total assets. Foreign Control of Bank is an indicator variable that takes on a value of one if the largest shareholder is from another country and zero otherwise. Table 1 provides more details on each variable. Coefficients appear above robust standard errors. a, b and c indicate statistical significance at the 0.01, 0.05 and 0.10 levels, respectiv

	(1)	**(2)**	**(3)**	**(4)**	**(5)**
Intercept	0.4587 **a**	0.4568 **a**	0.7140 **a**	0.7070 **a**	0.3928 **a**
	0.0075	0.0082	0.0552	0.0656	0.0726
French Legal Origin	-0.0125	-0.0115	-0.0050	-0.0130	-0.0086
	0.0093	0.0094	0.0095	0.0097	0.0096
Socialist Legal Origin	0.0701 **a**	0.0696 **a**	0.0653 **a**	0.0746	0.1124 **a**
	0.0086	0.0091	0.0093	0.0105	0.0108
Ln(GDP per capita)		0.0014	0.0022	-0.0010	-0.0055
		0.0027	0.0027	0.0031	0.0032
Legal Formalism			-0.0436 **a**	-0.0356 **a**	-0.0326 **a**
			0.0091	0.0106	0.0104
Banking Freedom				-0.0183 **a**	-0.0143 **a**
				0.0036	0.0035
Property Rights				0.0079	0.0020
				0.0047	0.0046
Bank Size (Ln(Bank Assets))					0.0246 **a**
					0.0024
Foreign Control of Bank					-0.0136 **b**
					0.0067
COVARIANCE					
Intercept	0.0326 **a**	0.0324 **a**	0.0321 **a**	0.0328 **a**	0.0340 **a**
	0.0009	0.0009	0.0009	0.0010	0.0010
Residual	0.0074 **a**	0.0074 **a**	0.0074 **a**	0.0074 **a**	0.0069 **a**
	0.0001	0.0001	0.0001	0.0001	0.0001
Observations	16,887	16,887	16,887	16,887	16,887

Table 4
Random-Effects Regressions to Explain the Ratio of Total Equity to Total Assets

Based upon an unbalanced panel of 2,723 banks in 102 emerging markets over the years 2000-2006 for a total of 16,887 observations. ln(GDP per capita) is the natural logarithm of the country's per capita Gross Domestic Product in each year. English, French and Socialist are dummy variables indicating English, French or Socialist legal origin as first defined by La Porta et al. 1998. English is the omitted category. Legal Formalism is the natural logarithm of the number of days needed to recover a debt equal to half of the country's GDP per capita, as defined by Djankov et al. (2007). Banking Freedom is an index of banking freedom defined by the Heritage Foundation. Property Rights is an index of Property Rights defined by the Heritage Foundation. Bank Size is the natural logarithm of total assets. Foreign Control of Bank is an indicator variable that takes on a value of one if the largest shareholder is from another country and zero otherwise. Table 1 provides more details on each variable. Coefficients appear above robust standard errors. a, b and c indicate statistical significance at the 0.01, 0.05 and 0.10 levels, respectiv

	(1)	**(2)**	**(3)**	**(4)**	**(5)**
Intercept	0.1376 **a**	0.1316 **a**	0.07478 **b**	0.08737 **b**	0.6662 **a**
	0.00482	0.00501	0.0345	0.03814	0.0444
French Legal Origin	0.02404 **a**	0.02031 **a**	0.01888 **a**	0.02184 **a**	0.01316 **b**
	0.00629	0.00642	0.0064	0.00645	0.0057
Socialist Legal Origin	0.06383 **a**	0.05889 **a**	0.05984 **a**	0.04938 **a**	-0.0202 **a**
	0.00604	0.00662	0.00667	0.00739	0.00727
Ln(GDP per capita)		0.00422 **b**	0.00404 **b**	0.00761 **a**	0.01628 **a**
		0.00171	0.00171	0.00201	0.00183
Legal Formalism			0.00964 **c**	0.00227	-0.0033
			0.00567	0.00586	0.00524
Banking Freedom				0.00755 **a**	0.00038
				0.00252	0.00228
Property Rights				0.0000	0.0100 **a**
				0.0030	0.0027
Bank Size (Ln(Bank Assets))					-0.0449 **a**
					0.00223
Foreign Control of Bank					0.00093
					0.00323
COVARIANCE					
Intercept	0.0181 **a**	0.0182 **a**	0.0181 **a**	0.0179 **a**	0.0140 **a**
	0.0005	0.0005	0.0005	0.0005	0.0004
Residual	0.0034 **a**	0.0034 **a**	0.0034 **a**	0.0033 **a**	0.0027 **a**
	0.0000	0.0000	0.0000	0.0000	0.0000
Observations	16,887	16,887	16,887	16,887	16,887

Table 5
Random-Effects Regressions to Explain the Ratio of Net Income to Total Assets

Based upon an unbalanced panel of 2,723 banks in 102 emerging markets over the years 2000-2006 for a total of 16,887 observations. ln(GDP per capita) is the natural logarithm of the country's per capita Gross Domestic Product in each year. English, French and Socialist are dummy variables indicating English, French or Socialist legal origin as first defined by La Porta et al. 1998. English is the omitted category. Legal Formalism is the natural logarithm of the number of days needed to recover a debt equal to half of the country's GDP per capita, as defined by Djankov et al. (2007). Banking Freedom is an index of banking freedom defined by the Heritage Foundation. Property Rights is an index of Property Rights defined by the Heritage Foundation. Bank Size is the natural logarithm of total assets. Foreign Control of Bank is an indicator variable that takes on a value of one if the largest shareholder is from another country and zero otherwise. Table 1 provides more details on each variable. Coefficients appear above robust standard errors. a, b and c indicate statistical significance at the 0.01, 0.05 and 0.10 levels, respectiv

	(1)	**(2)**	**(3)**	**(4)**	**(5)**
Intercept	0.01478 **a**	0.01539 **a**	0.01956 **a**	0.00242 **a**	0.00201 **a**
	0.00087	0.0010	0.0062	0.0067	0.0075
French Legal Origin	-0.0056 **a**	-0.0054 **a**	-0.0053 **a**	-0.0058 **a**	-0.0056 **a**
	0.0011	0.0011	0.0011	0.0011	0.0011
Socialist Legal Origin	0.0003	0.0008	0.0007 **a**	-0.0029 **b**	-0.0006
	0.0010	0.0010	0.0010	0.0012	0.0013
Ln(GDP per capita)		-0.0004	-0.0004	-0.0009 **b**	0.00069 **c**
		0.0003	0.0003	0.0004	0.0004
Legal Formalism			-0.0007	-0.0012	-0.0011
			0.0010	0.0010	0.0010
Banking Freedom				0.00145 **b**	0.0016 **a**
				0.0006	0.0006
Property Rights				0.0039 **a**	0.0040 **a**
				0.0007	0.0007
Bank Size (Ln(Bank Assets))					0.0017 **a**
					0.0003
Foreign Control of Bank					-0.0002
					0.0010
COVARIANCE					
Intercept	0.0004 **a**	0.0004 **a**	0.0004 **a**	0.0004 **a**	0.0004 **a**
	0.0000	0.0000	0.0000	0.0000	0.0000
Residual	0.0003 **a**	0.0003 **a**	0.0003 **a**	0.0003 **a**	0.0003 **a**
	0.0000	0.0000	0.0000	0.0000	0.0000
Observations	16,887	16,887	16,887	16,887	16,887

Appendix Table 1
Country-Level Goverance, Macro-economic and Banking Data

Based upon an unbalanced panel of 2,723 banks in 103 emerging markets over the years 2000-2006. Loans to Assets is the ratio of total loans to total assets; Equity to Assets is the ratio of total equity to total assets; ROA is the ratio of net income to total assets. Each of these three variables is measured at the bank level in each year. Means appear above standard errors. English, French and Socialist are dummy variables indicating English, French or Socialist legal origin as first defined by La Porta et al. 1998. Legal Formalism is the number of days needed to recover a debt equal to half of the country's GDP per capita. Banking Freedom is an index of banking freedom defined by the Heritage Foundation. Property Rights is an index of Property Rights defined by the Heritage Foundation. Table 1 provides more details on each variable.

Country Name	Obs.	Legal Formalism	GDP per capita	Loans to Assets	Equity to Assets	ROA
English						
BANGLADESH	354	365	400	0.631	0.062	0.0099
BOTSWANA	45	154	3,430	0.468	0.115	0.0302
ETHIOPIA	50	420	90	0.552	0.098	0.0153
GHANA	191	200	320	0.411	0.128	0.0246
INDIA	987	425	530	0.486	0.064	0.0084
IRAN	39	545	2,000	0.540	0.226	0.0335
JAMAICA	35	202	2,760	0.250	0.147	0.0247
KENYA	238	360	390	0.535	0.175	0.0128
LESOTHO	20	285	590	0.150	0.096	0.0162
MALAWI	32	277	170	0.297	0.143	0.0400
MALAYSIA	409	300	3,780	0.547	0.104	0.0109
NAMIBIA	20	270	1,870	0.749	0.321	0.0222
NEPAL	159	350	240	0.591	0.118	0.0091
NIGERIA	371	730	320	0.320	0.128	0.0225
PAKISTAN	339	395	470	0.451	0.072	0.0090
PAPUA NEW GUINEA	37	295	510	0.332	0.099	0.0412
SAINT LUCIA	3	360		0.652	0.098	0.0111
SIERRA LEONE	27	305	150	0.199	0.186	0.0627
SOUTH AFRICA	61	277	2,780	0.555	0.184	0.0134
SRI LANKA	230	440	930	0.653	0.087	0.0077
TANZANIA	56	242	290	0.376	0.130	0.0136
THAILAND	537	390	2,190	0.627	0.105	0.0090
UGANDA	84	209	240	0.419	0.138	0.0278
YEMEN	66	360	520	0.211	0.195	-0.0067
ZAMBIA	66	274	380	0.262	0.153	0.0454
ZIMBABWE	44	350	480	0.354	0.115	0.0474
Average		**338**	**1,033**	**0.447**	**0.134**	**0.0216**

Appendix 1: (continued)

Country Name	Obs.	Legal Formalism	GDP per capita	Loans to Assets	Equity to Assets	ROA
French						
ALBANIA	73	390	1,740	0.442	0.172	0.0035
ALGERIA	55	407	1,890	0.410	0.132	0.0092
ANGOLA	55	1,011		0.211	0.130	0.0215
ARGENTINA	475	520	3,650	0.379	0.235	-0.0060
BENIN	32	570	440	0.518	0.092	-0.0019
BOLIVIA	72	591	890	0.544	0.173	-0.0043
BRAZIL	705	566	2,710	0.372	0.200	0.0202
BURKINA FASO	44	458	300	0.603	0.091	0.0090
BURUNDI	36	512	100	0.632	0.142	0.0305
CAMBODIA	42	401	310	0.333	0.266	0.0042
CAMEROON	61	585	640	0.513	0.090	0.0126
CENTRAL AFRICAN REPUBLIC	7	660	260	0.789	0.114	0.0126
CHAD	14	526	250	0.631	0.127	0.0205
CHILE	216	305	4,390	0.610	0.159	0.0094
COLOMBIA	241	363	1,810	0.567	0.129	0.0186
CONGO	31	909	100	0.255	0.108	0.0109
CONGO REP. OF	2	560	640	0.252	0.060	0.0236
COSTA RICA	118	550	4,280	0.607	0.153	0.0170
DOMINICAN REPUBLIC	178	580	2,070	0.526	0.216	0.0109
ECUADOR	194	388	1,790	0.415	0.127	-0.0106
EGYPT	216	410	1,390	0.456	0.089	0.0089
EL SALVADOR	81	275	2,200	0.558	0.169	0.0074
GUATEMALA	185	1,459	1,910	0.492	0.104	0.0041
GUINEA	8	306	430	0.451	0.108	0.0401
HONDURAS	139	545	970	0.566	0.114	0.0099
INDONESIA	489	570	810	0.446	0.115	0.0158
IVORY COAST	47	525	660	0.640	0.096	0.0033

Appendix 1: (continued)

JORDAN	26	342	1,850	0.413	0.094	0.0102
KUWAIT	32	390	330	0.486	0.119	0.0211
LAOS	5	443	320	0.278	0.010	0.0005
LEBANON	218	721	4,040	0.210	0.116	-0.0009
MADAGASCAR	34	280	290	0.458	0.110	0.0282
MALI	35	340	290	0.592	0.119	0.0060
MAURITANIA	34	410	430	0.511	0.214	0.0189
MEXICO	165	421	6,230	0.520	0.172	0.0054
MOROCCO	99	240	1,320	0.487	0.097	0.0122
MOZAMBIQUE	53	580	210	0.411	0.144	0.0118
NICARAGUA	40	155	730	0.439	0.085	0.0111
NIGER	25	330	200	0.532	0.104	0.0104
OMAN	55	455	7,830	0.722	0.111	0.0134
PANAMA	305	355	4,250	0.527	0.135	0.0145
PARAGUAY	111	285	1,100	0.444	0.146	0.0125
PERU	84	441	2,150	0.552	0.136	0.0072
PHILIPPINES	294	380	1,080	0.391	0.168	0.0134
RWANDA	51	395	220	0.381	0.269	0.0098
SENEGAL	86	485	550	0.537	0.100	0.0123
SYRIA	36	672	1,160	0.156	0.201	0.0077
TOGO	19	535	310	0.510	0.074	0.0092
TUNISIA	110	27	2,240	0.688	0.113	0.0060
TURKEY	340	330	2,790	0.313	0.162	0.0138
VENEZUELA	251	445	3,490	0.361	0.226	0.0335
Average		**478**	**1,601**	**0.473**	**0.136**	**0.012**

Appendix 1: (continued)

Country Name	Obs.	Legal Formalism	GDP per capita	Loans to Assets	Equity to Assets	ROA
Socialist						
ARMENIA	44	195	950	0.378	0.238	0.0167
AZERBAIJAN	84	267	810	0.519	0.257	0.0168
BELARUS	97	250	1,590	0.447	0.236	0.0151
BOSNIA-HERZEGOVINA	150	330	1,540	0.515	0.227	0.0080
BULGARIA	144	440	2,130	0.489	0.171	0.0115
CHINA-PEOPLE'S REP.	509	241	1,100	0.542	0.064	0.0049
CROATIA	252	415	5,350	0.545	0.155	0.0120
CZECH REPUBLIC	113	300	6,740	0.354	0.099	0.0071
GEORGIA REP. OF	41	375	830	0.541	0.206	0.0203
HUNGARY	105	365	6,330	0.536	0.124	0.0129
KAZAKHSTAN	70	400	1,780	0.520	0.242	0.0206
KYRGYZSTAN	30	492		0.318	0.256	0.0206
LATVIA	144	189	4,070	0.416	0.125	0.0118
LITHUANIA	62	154	4,490	0.514	0.113	0.0045
MACEDONIA (FYROM)	68	509	1,980	0.470	0.316	0.0134
MOLDOVA REP. OF	92	280	590	0.546	0.248	0.0313
MONGOLIA	38	314	480	0.536	0.181	0.0102
POLAND	493	1,000	5,270	0.471	0.130	0.0123
ROMANIA	170	335	2,310	0.444	0.179	0.0054
RUSSIAN FEDERATION	2678	330	2,610	0.548	0.207	0.0171
SERBIA	245	1,028	1,910	0.429	0.273	0.0116
SLOVAKIA	55	565	4,920	0.402	0.095	0.0055
UKRAINE	210	269	970	0.587	0.168	0.0116
UZBEKISTAN	121	368	420	0.429	0.164	0.0298
VIETNAM	136	404	480	0.573	0.132	0.0092
Average		**392.599977**	**2,485**	**0.483**	**0.184**	**0.014**