

**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 from 45 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 English legal origin rather than French or Socialist legal origin; (ii) where enforcement of debt contracts is more efficient and (iii) where banks enjoy fewer restrictions on their operations. These support our hypothesis that superior legal protection leads to more bank credit, which, in turn, should lead to higher economic growth.

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 a thousand banks in 45 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 English legal origin rather than French or Socialist 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.

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

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.

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 portfolio 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, we adopt a micro approach to examining the impact of the business and legal environments on banking operations, using bank-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 1,075 commercial banks from 45 emerging economies over the period 1998-2004. Our sample covers nine different world regions: Latin America, Eastern, Northern, Southern and Central Europe, Middle East and North Africa

(MENA), Gulf Cooperation Council (GCC), and East Asia. Our interest has two justifications: first, there is wide variation in legal protection across countries in these regions; 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 findings 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 initial original sample includes 6,486 bank-year observations on banks located in 48 emerging-market countries from nine world regions, including Latin America, East Asia, Eastern, Northern, Central and Southern Europe, MENA and GCC region. We apply a number of filtering rules to eliminate non-representative data, reducing our analysis sample to 5,648 observations on 1,132 commercial banks².

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 1998-2004 from the BankScope database provided by Fitch-IBCA (International Bank Credit Analysis Ltd). We collect information on total assets (TA), cash (CASH), total loans (LOANS), other earning assets (OEA), fixed assets (FxdAss), deposits (Dep), total equity (EQUITY), off-balance sheet (OffBS) along with net income from the banks' 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/TA), and total loans to total assets (LOANS/TA).

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.

² Specifically, we deleted banks with loan-to-asset ratios of less than 15%, with fixed assets greater than 15% of total assets, with equity-to-asset ratios less than 1%, with off-balance sheet activities greater than five times total assets and with ROA greater than 0.4 or less than -0.2.

Finally, we collect information on legal origin, creditors' rights, and procedural formalism from Professor Andrei Shleifer's Harvard web pages.³ 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.

Creditors' Rights measures the legal rights of creditors against defaulting borrowers in different countries. It is an index based upon the sum of four dummy variables that are coded as one if the answers to the following questions are yes and as zero if no: (1) Are there restrictions, such as creditor consent, for a debtor to file for reorganization? (2) Can secured creditors seize collateral after a reorganization petition is approved? (3) Are secured creditors paid first out of proceeds from liquidating a bankrupt firm? (4) Does management retain control of firm property pending resolution of the reorganization?

Legal Formalism is an estimate of the number of days that are necessary to collect on a bounced check before the courts in the country's largest city. These estimates were prepared by law firms in each country surveyed by Djankov *et al.* (2003). 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).

We then merge these country-level data with our bank-level data. We are unable to obtain governance data for three of our countries, forcing us to delete banks in those countries from our analysis. This leaves us with a sample of 5,543 bank-year observations on 1,075 banks in 45 countries over the period 1998-2004. A description of the country-level governance and macroeconomic variables appears in Table 1.

[Table 1 about here]

³ <http://post.economics.harvard.edu/faculty/shleifer/data.html>

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 hypothesis is that banks in countries with English legal origin enjoy superior institutions 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 little variation in the ratio of total loans to total assets by legal origin—0.502 for English, 0.497 for French and 0.498 for Socialist. In contrast, there are large differences in capitalization—0.095 for English, 0.142 for French and 0.144 for Socialist. Differences in profitability are less pronounced—98 basis points for English, 69 basis points for French and 90 basis points for Socialist. When we calculate test statistics for a *t*-test of significant differences in means, we find no significant differences in portfolio risk exposure, but significant differences in capitalization and profitability levels. Banks of English legal origin hold significantly less capital than banks of either French or Socialist origin. Banks of French legal origin are significantly less profitable than banks of English or Socialist origin.

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. Hi 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 (0.485 for Hi Legal Formalism versus 0.511 for Low Legal Formalism), hold significantly more capital (14.1 percent versus 13.4 percent of assets), and are significantly less profitable (71 basis points versus 87 basis points).

Panel C of Table 2 examines differences by creditor protection as measured by the Creditors' Rights index of La Porta *et al.* 1998. We split our sample at the median value of 2, putting into the Strong protection group only those banks located in countries with an index value greater than 2.0. Surprisingly, we find that banks in the Strong Protection group allocate

significantly less of the asset portfolio to loans (47.0 percent versus 50.7 percent), but hold significantly less capital (13.1 percent versus 14.0 percent). Profitability is not significantly different.

Panel D 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 Freedom group while the remaining banks go into the Weak Freedom group. We find that the Strong Freedom group holds significantly less capital but is significantly less profitable. We find no significant differences in portfolio risk.

Finally, Panel E 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 more of their assets to loans (52.6 percent versus 48.8 percent), but are significantly less profitable (45 basis points versus 91 basis points ROA).

Overall, the statistics in Table 2 paint a murky picture of how portfolio risk, capitalization and profitability differ across governance regimes.

Multivariate Regression Analysis: Loans to Assets

The results of the multivariate analyses of equation (1) appear in Tables 3-5. 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 coefficient on our control variable (log of GDP per capita) is also positive and highly significant. This underscores the importance of controlling for level of economic development when analyzing portfolio risk, and may explain the murky results found in our univariate analysis.

In Table 3, the effect of legal origin is measured relative to the omitted category, which is French legal origin. Hence, the coefficients on English 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 *English*, is positive and its statistical significance improves when governance variables describing the banking environment are factored into the analysis. The coefficient of *English* ranges from 0.0383 to 0.0652, indicating that banks in countries of British legal origin allocate an additional 3.83 to 6.52 percent of their assets to their loan portfolios relative to the omitted French legal origin category. Given the average loan-to-asset ratio of slightly less than 0.50, this represents a seven- to thirteen-percent increase in the amount of credit that banks are injecting into the economy. In contrast, the Socialist legal origin dummy ranges from 0.0048 to 0.0151 but is not statistically significant in any specification. These results support 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 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 (1). 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 assets 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 more than three percentage points. Also of interest is our finding that the effect of legal origin actually increases when we control for legal formalism, indicating that other mechanisms than judicial efficiency explain the differences by legal origin.

In specification (3), we add the La Porta et al. 1998 index of Creditors' Rights to the variables appearing in specification (2). Higher values of this index indicate stronger protection of creditors' rights. Contrary to our expectations, we find a negative and highly significant coefficient for Creditors' Rights, indicating that banks located in countries with higher values of this index allocate significantly less of their assets to loans. The coefficient of Creditors' Rights indicates that a one unit change in this index reduces the loan-to-asset ratio by 2.5 percentage points, or approximately five percent. In an attempt to better understand this result, we replace the index with dummy variables corresponding to each of the four components of the index. We find that only one of the four dummy variables is significant—the dummy indicating that a bank can seize its collateral after a borrower's reorganization petition is approved (not shown in the table but available from the authors).

Finally, 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 $0.0167 \times 5 = 0.0835$ or 8.35 percentage points.

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 governance variables and French legal origin is the omitted category, so coefficients on English and Socialist measure the difference in the equity to asset ratio for banks in these countries relative to banks in French countries. In specification (1), we enter the logarithm of GDP per capita along with our dummies for English and Socialist legal origin. The coefficient on our control for level of financial development is negative and significant, indicating that banks in countries with higher GDP per capita hold significantly less capital. Also negative and significant is the coefficient on English, and its magnitude indicates that banks in English countries have capital ratios that are 7.05 percentage points lower than those in French countries, which is more than half of the 13.8 percent average capital ratio for our full sample. The coefficient on Socialist is not significantly different from zero, indicating no significant differences in the capitalization of banks in Socialist countries relative to banks in French countries. In specification (2), we add our measure of Legal Formalism to the variables included in specification (1) and find that its coefficient is positive and highly significant, indicating that banks in countries with less efficient judicial systems hold significantly more

capital. Our finding regarding legal origin is robust to including this governance measure. In specification (3), we add our index of Creditors' Rights to the variables included in specification (2). We find its coefficient to be positive and significant, indicating that banks in countries with better protection of creditors' rights hold significantly less capital. Finally, in specification (4), we add our two Heritage indices, for Banking Freedom and Property Rights. Neither of coefficients on these variables is statistically significant. However, we find that our remaining results are robust to inclusion of these two variables. 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*. The coefficients of both *English* and *Socialist* legal origin are positive, but not significantly different from zero. Hence, it appears that legal origin has no significant impact on bank profitability, which would be consistent with banks leaving their total risk exposure constant, substituting portfolio risk and financial risk for expropriation risk.

[Table 5 about here]

Our measure of economic development is positive but only marginally significant until we add the index of Banking Freedom to the model. The coefficient on *Banking Freedom* is positive and statistically significant. This implies that banks in countries with more restrictions on banking activities achieve higher profitability. We interpret this result as showing that less

banking freedom leads banks to require higher returns in order to compensate for bearing this cost. Also, tight governmental constraints on the banking sector constitute an entry barrier to the industry and discourage other financial institutions from entering the market. This could eventually lead to more concentration in banking and a higher degree of market power where incumbent banks are able to reap additional profits.

5. Conclusions

In this article, we extend the law and finance literature by using firm level data from more than a thousand banks in 45 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 English legal origin rather than French or Socialist legal origin; (ii) where enforcement of debt contracts is more efficient and (iii) where banks enjoy fewer restrictions on their operations. The 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 generally support our hypothesis that superior legal protection leads to more bank credit, which, in turn, should lead to higher economic growth. We find no significant differences in profitability, suggesting that bankers substitute one type of risk for another (portfolio vs. solvency risk) rather than change the overall risk exposure of the bank.

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.

References

- Aghion, Phillippe. and P. Bolton. (1992). An incomplete contracts approach to corporate bankruptcy. *Review of Economic Studies* 59: 473–494.
- Aghion, Phillippe, Oliver Hart, John Moore. (1992). The economics of bankruptcy reform. *Journal of Law, Economics and Organization* 8(3): 523–546.
- Beck, Thorsten, Asli Demirguc-Kunt, Ross Levine. (2003a). Law and finance: Why does legal origin matter? *Journal of Comparative Economics* 31: 653–675.
- Beck, Thorsten, Asli Demirguc-Kunt, Ross Levine (2003b). Law, endowments, and finance. *Journal of Financial Economics* 70: 137–181.
- Beck, Thorsten, Ross Levine, N. Loayza, (2000). Finance and the source of growth. *Journal of Financial Economics* 58: 261-300.
- Demirguc-Kunt, Asli and Vogislav Maksimovic (1998). Law, finance, and firm growth. *The Journal of Finance* 53: 2107-2137.
- Demirguc-Kunt, Asli and Vogislav Maksimovic (2002). Funding growth in bank-based and market-based financial systems: evidence from firm-level data. *Journal of Financial Economics* 65: 337-363.
- Djankov, Simeon, Rafael La Porta, Florencio Lopez-de-Silanes and Andrei Shleifer (2003). Courts. *Quarterly Journal of Economics*: 453-517.
- Djankov, Simeon, Caralee McLiesh and Andrei Shleifer (2007). Private credit in 129 countries. *Journal of Financial Economics* 84:299-329 .
- Glaeser, Edward Ludwig, Simon Johnson and Andrei Shleifer (2001). Coase Versus The Coasians. *The Quarterly Journal of Economics* 116 (3): 853-899.
- Hart, Oliver and J. Moore. (1994). A theory of debt based on the inalienability of human capital. *Quarterly Journal of Economics* 109: 841–879.
- Hart, Oliver and J. Moore. (1998). Default and renegotiation: a dynamic model of debt. *Quarterly Journal of Economics* 113: 1–42.
- Kaufmann D., A. Kraay and M. Mastruzzi (2003). Governance Matters III: Governance Indicators for 1996–2002. World Bank Policy Research Working Paper 3106.
- King, Robert and Ross Levine (1993). Finance and growth: Schumpeter might be right. *Quarterly Journal of Economics* 108: 717-738.
- La Porta, Rafael, Florencio Lopez-de-Silanes, Andrei Shleifer and Robert W. Vishny (1997). Legal determinants of external finance. *The Journal of Finance* 52(3): 1131-1150.

La Porta, Rafael, Florencio Lopez-de-Silanes, Andrei Shleifer and Robert W. Vishny (1998). Law and finance. *The Journal of Political Economy* 106 (6): 1113-1155.

La Porta, Rafael, Florencio Lopez-de-Silanes, Andrei Shleifer and Robert W. Vishny (1999). The Quality of Government, *Journal of Law, Economics and Organization* 15 (1): 222-279.

La Porta, Rafael, Florencio Lopez-de-Silanes, Andrei Shleifer and Robert W. Vishny (2002). [Investor Protection and Corporate Valuation](#). *Journal of Finance* 57(3): 1147-1170.

Levine, Ross, 1999, Law, finance, and economic growth, *Journal of Financial Intermediation* 8: 36-67.

Levine, Ross 2004. Finance and growth: theory, evidence, and mechanisms. NBER Working paper No. 10776.

Levine, Ross, S. Zervos (1998). Stock markets, banks and economic growth. *American Economic Review* 88: 537-558.

Qian, Jun, Philip Strahan (2007). How laws and institutions shape financial contracts: The case of bank loans. *The Journal of Finance*, forthcoming.

Rajan, Raghuram and Luigi Zingales (1995). Financial Systems, Industrial Structure and Growth, *Oxford Review of Economic Policy* 17 (4): 467-482

Rajan, Raghuram and Luigi Zingales (1998). Financial dependence and growth. *American Economic Review* 88: 559-586.

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

Variable Name	Description
Banking and Finance Freedom	<p>An indicator of relative openness of banking & financial system. The index ranges in value from 1 (very high) to 5 (very low). It reflects</p> <ul style="list-style-type: none"> • 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 <p>Source: <i>Heritage Foundation's Index of Economic Freedom</i></p>
Property Rights	<p>Freedom from government influence over the judicial system</p> <ul style="list-style-type: none"> • 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 <p>A lower score indicates better protection of property rights in the country. Source: <i>Heritage Foundation's Index of Economic Freedom</i></p>
Legal Origin	<p>Identifies the legal origin of the company law or commercial code of each country (English, French, Socialist, German, Scandinavian). Source: Djankov <i>et al.</i> (2003).</p>
Legal Formalism	<p>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 <i>et al.</i> (2003). Source: Djankov <i>et al.</i> (2003)</p> <p>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 <i>et al.</i> (2007). Source: Djankov <i>et al.</i> (2007)</p> <p>Higher values indicate greater procedural formalism and greater inefficiency in judicial enforcement.</p>
Creditors' Rights	<p>An index ranging from zero to four based upon the sum of four dummy variables that are coded as one if the answers to the following questions are yes and as zero if no: (1) Are there restrictions, such as creditor consent, for a debtor to file for reorganization? (2) Can secured creditors seize collateral after a reorganization petition is approved? (3) Are secured creditors paid first out of proceeds from liquidating a bankrupt firm? (4) Does management retain control of firm property pending resolution of the reorganization? Higher scores indicate better protection of creditors' rights. Source: Djankov <i>et al.</i> (2007)</p>
Per Capita GDP	<p>Logarithm of per capita GDP. Source: <i>International Financial Statistics</i></p>

Table 2
Descriptive Statistics

by Legal Origin, Legal Formalism, Creditor Rights, Banking Freedom and Property Rights

Based upon an unbalanced panel of 1,075 banks in 45 emerging markets over the years 1998-2004. Loans/TA is the ratio of total loans to total assets; Equity/TA is the ratio of total equity to total assets; ROA is the ratio of net income to total assets. 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. Hi versus Low refers to a split of the variable at the median value.

	Observations	Loans/TA	Equity/TA	ROA
All	5,543	0.498 0.0024	0.138 0.0016	0.0079 0.0005
<i>Panel A:</i>				
English	528	0.502 0.0065	0.095 0.0031	0.0098 0.0010
French	3,294	0.497 0.0034	0.142 0.0021	0.0069 0.0008
Socialist	1,721	0.498 0.0038	0.144 0.0030	0.009 0.0006
<i>Panel B:</i>				
Hi Legal Formalism ²	2,797	0.485 0.0034	0.141 0.0022	0.0071 0.0008
Low Legal Formalism ²	2,851	0.511 0.0033	0.134 0.0023	0.0087 0.0006
<i>Panel C:</i>				
Strong Creditor Rights	1,409	0.470 0.0054	0.131 0.0033	0.0080 0.0010
Weak Creditor Rights	4,239	0.507 0.0026	0.140 0.0018	0.0079 0.0006
<i>Panel D:</i>				
Strong Banking Freedom	1,817	0.493 0.0045	0.132 0.0027	0.0031 0.0012
Weak Banking Freedom	3,831	0.500 0.0028	0.140 0.0019	0.0102 0.0005
<i>Panel E:</i>				
Strong Property Rights	1,482	0.526 0.0047	0.138 0.0032	0.0045 0.0011
Weak Property Rights	4,166	0.488 0.0027	0.138 0.0018	0.0091 0.0006

Table 3

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

Based upon an unbalanced panel of 1,075 banks in 45 emerging markets over the years 1998-2004 for a total of 5,543 observations. $\ln(\text{GDP per capita})$ 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. French 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). 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. Coefficients appear above robust standard errors. a, b and c indicate statistical significance at the 0.01, 0.05 and 0.10 levels, respectively.

Intercept	0.0462	0.401	a	0.417	a	0.524	a	
	0.0451	0.064		0.063		0.0671		
$\ln(\text{GDP per capita})$	0.0566	a	0.0613	a	0.0628	a	0.0564	a
	0.0057		0.0058		0.0058		0.0581	
English	0.0383	b	0.0444	a	0.0526	a	0.0652	a
	0.0164		0.0166		0.0166		0.0167	
Socialist	0.0108		0.0048		0.0137		0.0151	
	0.0110		0.0109		0.0112		0.0113	
Legal Formalism			-0.0648	a	-0.0621	a	-0.0612	a
			0.0102		0.0100		0.0101	
Creditors' Rights					-0.0248	a	-0.0246	a
					0.0053		0.0054	
Banking Freedom							-0.0167	a
							0.0041	
Property Rights							-0.0052	
							0.0043	

Table 4

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

Based upon an unbalanced panel of 1,075 banks in 45 emerging markets over the years 1998-2004 for a total of 5,543 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. French 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). 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. Coefficients appear above robust standard errors. a, b and c indicate statistical significance at the 0.01, 0.05 and 0.10 levels, respectively.

Intercept	0.314 a	0.212 a	0.216 a	0.219 a
	0.029	0.042	0.041	0.043
Ln(GDP per capita)	-0.0205 a	-0.0217 a	-0.0212 a	-0.0209 a
	0.0037	0.0038	0.0038	0.0039
English	-0.0705 a	-0.0721 a	-0.0698 a	-0.0700 a
	0.0108	0.0107	0.0108	0.0109
Socialist	-0.0016	0.0001	0.0026	0.0021
	0.0083	0.0082	0.0081	0.0081
Legal Formalism		0.0183 a	0.0190 a	0.0185 a
		0.0064	0.0064	0.0064
Creditors' Rights			-0.0069 b	-0.0068 b
			0.0033	0.0033
Banking Freedom				0.0003
				0.0026
Property Rights				-0.0011
				0.0026

Table 5

Random-Effects Regressions to Explain the Ratio of Return on Assets (ROA)

Based upon an unbalanced panel of 1,075 banks in 45 emerging markets over the years 1998-2004 for a total of 5,543 observations. $\ln(\text{GDP per capita})$ 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. French 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). 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. Coefficients appear above robust standard errors. a, b and c indicate statistical significance at the 0.01, 0.05 and 0.10 levels, respectively.

Intercept	0.0039 0.0070	0.0033 0.0072	0.0033 0.0071	-0.0158 0.0089	c
$\ln(\text{GDP per capita})$	0.0014 0.0008	0.0016 0.0009	0.0016 0.0009	0.0029 0.0010	a
English	0.0033 0.0019	0.0036 0.0019	0.0034 0.0019	0.0006 0.0019	c
Socialist	0.0022 0.0014	0.0021 0.0014	0.0020 0.0014	0.0015 0.0014	
Legal Formalism		-0.0015 0.0010	-0.0015 0.0010	-0.0019 0.0010	c
Creditors' Rights			0.0003 0.0006	0.0004 0.0006	
Banking Freedom				0.0035 0.0010	a
Property Rights				0.0003 0.0009	

Appendix 1

Country-level governance, macro-economic and average bank-level data for a panel of 1,075 banks in 45 emerging-market countries
 Variables are defined in Table 1. Countries are grouped by legal origin (English, Socialist or French).

Country	Obs.	Creditors' Rights	Legal Formalism ¹	Legal Formalism ²	Banking Freedom	Property Rights	GDP per capita	Loans to Assets	Equity to Assets	ROA
<i>English</i>										
India	276	2	106	425	4.00	3.00	0.508	0.444	0.060	0.008
Saudi Arabia	56	3	428	360	3.57	2.57	8.330	0.414	0.102	0.017
Thailand	87	2	210	390	3.00	2.17	2.125	0.624	0.100	-0.004
UAE	109	2	559	614	3.71	4.00	19.644	0.598	0.177	0.021
<i>Average</i>		2.25	326	447	3.57	2.94	7.652	0.520	0.110	0.010
<i>Socialist</i>										
Bosnia	88	3	330	330	3.52	5.00	1.677	0.502	0.238	0.007
Bulgaria	142	2	410	440	2.84	3.16	2.124	0.466	0.185	0.010
China	286	2	180	241	3.64	4.00	1.089	0.516	0.097	0.000
Croatia	174	3	330	415	2.87	4.00	5.220	0.516	0.172	0.008
Czech Republic	123	3	270	300	1.00	2.00	7.653	0.401	0.092	0.006
Hungary	129	1	365	365	2.00	2.00	6.265	0.533	0.113	0.011
Latvia	75	3	189	189	2.00	3.00	4.112	0.434	0.130	0.010
Macedonia	43	3	330	509	2.00	4.00	2.054	0.407	0.252	0.021
Poland	214	1	1000	1000	3.00	2.00	5.174	0.520	0.130	0.007
Slovakia	81	2	1003	565	2.33	3.00	5.075	0.426	0.088	0.005
Slovenia	83	3	1003	1003	2.72	2.45	12.158	0.526	0.099	0.011
Belarus	72	2	287	250	3.93	4.00	1.249	0.507	0.219	0.021
Moldova	40	2	287	280	3.00	3.65	0.417	0.498	0.233	0.042
Ukraine	171	2	224	269	3.18	1.51	0.844	0.560	0.161	0.014
<i>Average</i>		2.29	443	440	2.72	3.13	3.936	0.487	0.158	0.012

Appendix 1 (cont.)

Country	Obs.	Creditors' Rights	Legal Formalism ¹	Legal Formalism ²	Banking Freedom	Property Rights	GDP per capita	Loans to Assets	Equity to Assets	ROA
<i>French</i>										
Albania	28	3	330	390	3.36	4.00	1.692	0.349	0.161	0.009
Algeria	32	1	134	407	3.38	3.72	1.902	0.442	0.112	0.006
Argentina	309	1	300	520	2.56	2.87	5.356	0.416	0.183	-0.019
Bolivia	69	2	464	591	2.00	3.28	0.949	0.650	0.139	-0.001
Brazil	474	1	180	566	3.00	3.00	3.102	0.458	0.173	0.019
Chile	126	2	200	305	2.55	1.00	4.897	0.597	0.197	0.009
Columbia	116	0	527	363	2.00	3.49	1.965	0.580	0.122	0.003
Costa Rica	97	1	370	550	3.00	3.00	3.937	0.620	0.147	0.016
Ecuador	84	0	333	388	3.38	3.85	1.901	0.523	0.127	0.016
Egypt	145	2	202	410	3.45	3.00	1.198	0.489	0.096	0.011
Honduras	96	2	225	545	3.00	3.31	0.937	0.562	0.113	0.010
Indonesia	197	2	225	570	3.91	3.65	0.867	0.461	0.133	0.015
Jordan	64	1	147	342	2.00	2.42	1.771	0.420	0.096	0.008
Kuwait	37	3	357	390	3.00	1.62	16.038	0.434	0.114	0.016
Lebanon	238	4	721	721	2.00	3.32	4.769	0.301	0.089	0.007
Lithuania	44	2	150	154	2.48	3.00	4.387	0.530	0.134	0.004
Morocco	50	1	192	240	2.58	4.00	1.323	0.517	0.094	0.010
Nicaragua	42	4	319	155	3.43	2.71	0.762	0.460	0.077	0.017
Oman	43	0	428	455	1.12	3.35	7.561	0.721	0.186	0.014
Panama	315	4	197	355	2.70	4.00	4.073	0.534	0.122	0.012
Paraguay	96	1	222	285	2.00	3.23	1.199	0.497	0.156	0.010
Peru	99	0	441	441	3.00	2.69	2.142	0.585	0.128	0.003
Philippines	56	1	164	380	2.45	2.14	0.963	0.559	0.189	0.007
Romania	130	1	225	335	3.32	4.00	2.081	0.445	0.193	0.002
Tunisia	94	0	7	27	2.87	3.00	2.234	0.686	0.120	0.008
Turkey	107	2	105	330	2.69	2.52	2.578	0.391	0.129	0.001
Uruguay	107	3	360	620	2.19	2.00	4.412	0.719	0.150	-0.019
<i>Average</i>		1.63	279	401	2.72	3.04	3.148	0.517	0.136	0.007