Private Credit in 129 Countries.

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Abstract

We investigate cross-country determinants of private credit, using new data on legal creditor rights and private and public credit registries in 129 countries. We find that both creditor protection through the legal system and information sharing institutions are associated with higher ratios of private credit to GDP, but that the former is relatively more important in the richer countries. An analysis of legal reforms also shows that improvements in creditor rights and in information sharing precede faster credit growth. We also find that creditor rights are extremely stable over time, contrary to the convergence hypothesis. Finally, we find that legal origins are an important determinant of both creditor rights and information sharing institutions.

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1. Introduction

There are two broad views of what determines how much private credit a financial system would extend to firms and individuals. According to the first, what matters for the viability of private credit is the power of creditors. When lenders can more easily force repayment, grab collateral, or even gain control of the firm, they are more willing to extend credit. These "power" theories of credit have been formalized by Townsend (1979), Aghion and Bolton (1992), and Hart and Moore (1994, 1998). According to the second view, what matters for lending is information. When lenders know more about borrowers, their credit history, or other lenders to the firm, they are not as concerned about the "lemons" problem of financing non-viable projects, and therefore extend more credit. These "information" theories of credit have been pioneered by Jaffe and Russell (1976) and Stiglitz and Weiss (1981).

In this paper, we study the importance of information and power theories of credit in explaining the variation in the size of private credit markets around the world. To this end, we gather data on private credit for 129 countries during the period 1978-2003. To assess the power theories of credit, we construct a measure of legal rights of creditors in these countries, the "creditor rights" index first proposed by La Porta et al. (1997, 1998), for every year during this period. The index measures the legal rights of creditors against defaulting debtors in different jurisdictions, and has been previously interpreted as a measure of creditor power. To assess the information theories of credit, we collect data on the existence of public (i.e., government-owned) and private credit registries in different countries during the same period. These registries collect information on credit histories and current indebtedness of various borrowers, and share it with lenders. Credit registries exist in many countries, and have been shown to be an important factor in determining credit availability (Japelli and Pagano 2000, 2002, Pagano and Japelli 1993, Sapienza 2002).

Our principal empirical strategy is to run cross-country regressions that explain the private credit to GDP ratio in terms of creditor rights and the presence of registries. In addition, the time series dimension of the data sheds light on several new questions. First, we can ask how stable the institutions of credit are over time and whether they converge or diverge among different groups of countries. In particular, we examine the hypothesis that countries whose laws derive from different legal traditions exhibit convergence in their creditor rights scores.[1] Second, by looking at the changes in either creditor rights or the information institutions, we can ask whether these reforms have any effect on the growth of private credit.

Creditor power and information theories are not mutually exclusive. Both ex ante (and interim) better information and ex post stronger creditor rights can contribute to credit market development. Indeed, these institutions may be substitutes: some countries may specialize in information institutions, others in legal systems giving power to the creditors. Furthermore, there may be a natural progression. Less developed countries, with poorly functioning legal systems, might be unable to sustain an effective lending channel based on ex post creditor rights, and may depend on information sharing for their credit markets to function. In contrast, richer countries might develop more functional systems of bankruptcy and liquidation, so that creditor power can be particularly important in these countries. We examine the relative importance of information and power theories for countries at different levels of development.

There is a further interesting aspect to credit information sharing. Credit registries require some compulsion. Borrowers and lenders must agree to participate, and to provide and share accurate data, with appropriate penalties if they do not. In less developed countries in particular, this might be difficult to accomplish through fully private credit bureaus, so there might be a useful role for the government in organizing public credit registries. We collect data

[1] For a general discussion of convergence in corporate governance systems, see Coffee (1999).

on the existence of both public credit registries and private credit bureaus, and examine their prevalence and effectiveness in our sample.

Our results can be briefly summarized. First, we find a pronounced legal origin effect in credit market institutions, with common law countries having sharply higher creditor rights scores than French civil law countries. The latter, in contrast, have a much higher incidence of public credit registries than do the former. Second, we find very little convergence in creditor rights scores, or in information institutions, among legal origins. At least for these measures of institutions of corporate governance, the differences persist over the 25 year period. Third, we find that both the creditor rights scores, and the incidence of public and private credit registries, are higher in the richer than in the poorer countries. Fourth, we find that both better creditor rights, and the presence of credit registries, are associated with a higher ratio of private credit to GDP. However, creditor rights appear to be particularly important for private credit in the richer countries, whereas public credit registries matter in the poorer countries. Private credit registries encourage private credit in all countries. These results are broadly consistent with some of the earlier research on debt markets, but also point to systematic patterns of institutional substitution among countries in different income groups and from different legal origins.

The next section of the paper presents our data. Section 3 presents the basic results on the effects of various institutions on private credit. Section 4 looks at the effects of changes in creditor rights, and of the introduction of private and public registries, on the growth of private credit. Section 5 examines the variation in the prevalence of these institutions across countries. Section 6 concludes.

2. The Data

Variable Definitions

We gathered data on 133 countries, comprising every economy with a population over 1.5 million people, except countries in civil conflict or inactive members of the World Bank, such as Afghanistan, Iraq, Myanmar, Cuba and Sudan. Table 1 describes the variables used and their sources.

The private credit data is from the IMF's International Financial Statistics, lines 22d and 42d, which measure claims on the private sector by commercial banks and other financial institutions. The variable is expressed as a percentage of GDP. Data are available for all sample economies except Puerto Rico, Serbia and Montenegro, and Uzbekistan. We exclude China, since the credit variable includes credit to state-owned enterprises and stands at a staggering 130% of GDP. In comparison, the share of private credit to GDP in the United Kingdom is 136%, in Germany 118%, and in France 87% (table A1). This leaves us with a maximum of 129 countries in the analysis of private credit.

The creditor rights index follows that constructed by La Porta et al. (1997), with minor differences. We construct the index as at January for every year between 1978 and 2003, and expand their sample from 49 to 133 countries. The creditor rights index measures four powers of secured lenders in bankruptcy. First, whether there are restrictions, such as creditor consent, when a debtor files for reorganization. Second, whether secured creditors are able to seize their collateral after the petition for reorganization is approved, in other words whether there is no 'automatic stay' or 'asset freeze' imposed by the court. Third, whether secured creditors are paid first out of the proceeds of liquidating a bankrupt firm. Finally, whether an administrator, and not management, is responsible for running the business during the reorganization. A value of one is added to the index when a country's laws and regulations provide each of these powers to

secured lenders. The creditor rights index aggregates the scores and varies between 0 (poor creditor rights) and 4 (strong creditor rights).

Our creditor rights data as at 1995 are the same as La Porta et al. (1997) report for over 90% of the observations. The most significant differences arise from coding different insolvency procedures. For India, for example, La Porta et al. code using the reorganization provisions in the Companies Act (1956), while we code with respect to the Sick Industrial Companies Act (1985), which is more relevant for industrial firms. Australia, Pakistan and Sri Lanka are similar. In some instances, such as Malaysia and the Netherlands, differences in coding arise because of the treatment of the power of the administrator in reorganization. We code that "management does not stay" if an administrator is automatically appointed and the debtor does NOT remain in control in the ordinary course of business. In a few cases, differences derive from the moment at which there exist restrictions on entering reorganization. We code with respect to restrictions "at the gate," i.e., the initial point of entering reorganization.

In 2003, twenty one countries, including Benin, Chad, Colombia, France, and Tunisia, had a score of 0. Nine countries, including Hong Kong (China), Kenya, Lebanon, New Zealand, Panama, and the United Kingdom, had a perfect score. The United States has a score of 1, as secured creditors are paid first out of the proceeds of bankruptcy, but there are no restrictions on entering reorganization, the debtor benefits from the automatic stay on assets, and management runs the company during the reorganization process.

We collect time series data on creditor rights in two stages. We begin with a review of insolvency and insolvency-related laws from 1978 to 2003, identifying all major reforms and assessing their impact on the creditor rights index. We then survey local insolvency lawyers, confirming the dates of reforms and their impact on the creditor rights index.

We review insolvency law and reforms primarily using online legal resources, including Foreign Law Guide, the LexisNexis database, the online library of the International Bar Association, the European Restructuring and Insolvency Guide, and the Asia-Pacific Restructuring and Insolvency Guide. [2] Additional legal resources include Collier International Business Insolvency Guide and International Insolvency. [3] In identifying the number of reforms of insolvency law, we exclude changes that affect the insolvency only for financial institutions, state enterprises, or for personal bankruptcy. Likewise, purely procedural law reforms are not considered.

We record all reforms to insolvency legislation—i.e., rehabilitation, liquidation, foreclosure, and secured transactions laws. Substantive insolvency regulations, however, are not always contained in the Insolvency Law. Thus, we keep track of reforms of Corporate Law, Company Law, Commercial Law, the Civil Code, and other associated laws if such reforms affect insolvency. As an example, take Malawi. In 2002, the passage of the Employment Act, a law seemingly unrelated to insolvency matters, affected the ranking of secured creditors' claims in liquidation. Before the reform, the Companies Act of 1984 ranked secured creditors first. The 2002 Employment Act ranked claims for wages ahead of secured creditor claims. The reform lowered Malawi's creditor rights index from 3 to 2.

We survey a total of 440 lawyers from the 133 countries to verify the results of the legal review. We ask our respondents to either confirm or amend our initial findings on the number and timing of reforms affecting insolvency since 1978. In addition, we verify whether and how the reforms impacted the creditor rights variables. In six countries the respondents amended our findings, generally to correct the timing of the reform to reflect when it came into force.

[2] Foreign Law Database: http://www.foreignlawguide.com, International Bar Association: http://www.ibanet.org The Asia-Pacific Restructuring and Insolvency Guide 2003/2004: http://www.asianrestructuring.com/ The European Restructuring and Insolvency Guide 2002/20003: http://www.europeanrestructuring.com/

[3] Collier International Business Insolvency Guide published by Matthew Bendar and Company Inc. a member of the Lexis-Nexis Group. International Insolvency published by Juris Publishing (2002).

Since 1978, many countries reformed their bankruptcy laws. By our count, 99 countries had at least one reform, and a total number of reforms is 162. We found evidence that richer countries have more reforms, inconsistent with the idea that poorer countries reform more to catch up with the richer ones. However, few reforms affected the La Porta et al. creditor rights index. Only 23 countries had changes in their creditor rights index since 1978, with a total of 30 changes. The correlation between the 2003 and 1978 creditor rights indices is 0.95.

We record the presence of public and private credit registries though a survey of banking supervisors. Public credit registries are databases managed by a government agency, usually the Central Bank or the Superintendent of Banks, that collect information on the standing of borrowers in the financial system and make it available to actual and potential lenders. In 2003, they operated in 71 countries in our sample. Some, such as the German and Saudi Arabian registries, collect only limited information on outstanding loans of large borrowers, and focus on banking supervision. Others, such as those in Belgium, Ecuador, Malaysia, and Taiwan distribute extensive information including on late payments and defaults, demographic data, credit inquiries, ratings, and sometimes even the payment of utility bills and court records of the company and its owners.

A private credit bureau is a private firm or non-profit organization that maintains a database on the standing of borrowers in the financial system. Its primary role is to facilitate exchange of information among banks and financial institutions.[4] As of 2003, private bureaus operated in 55 of our sample countries, including all OECD countries but France. Three international firms—Experian, Equifax and TransUnion—either own or are affiliated with half of the bureaus in our sample. Unlike public registries, private bureaus usually gather information from non bank lenders and public sources, distribute more data, and offer a broader range of

[4] Credit investigative bureaus and credit reporting firms that do not directly facilitate exchange of information between financial institutions exist in many countries, but are not considered here.

services to lenders. The New Zealand bureau, for example, offers credit scoring, borrower monitoring, fraud detection, debt collection and marketing services.

For countries that confirmed the presence of a public or private registry, we conducted a detailed survey of its structure, laws, and associated rules. The survey was filled by the director of the registry or, in cases where the registry is a department of the Central Bank, by the department's head. To build the time series data, respondents were asked the year in which the registry was legally established, as well as the year in which the registry began operations—i.e., distributing credit information. In some cases, the difference is significant. For example, the Turkish credit bureau was incorporated in 1995, but did not become operational until 1999, following years of negotiating with data providers and developing technology. The analysis is based on the year in which the registry began operations.

Legal rules protecting creditors are unlikely to matter unless they are enforced by courts. We control for enforcement with a measure of the number of days it takes to enforce a simple debt contract. Data are based on the methodology developed in Djankov et al. (2003a), with one change, namely that the current series refer to the time to enforce a contract of unpaid debt worth 50% of the country's GDP per capita as of January 2003. This amounts to about $18,000 in the United States, about $11,000 in France and Germany, $5,000 in Korea, and $3,000 in Mexico. We expanded the Djankov et al. data set to 133 countries.[5] It takes only 48 days to enforce a debt contract in the Netherlands, 50 days in New Zealand, 69 in Singapore, 60 in Japan, and 75 in Korea. In contrast, it takes 1,459 days to enforce a debt contract in Guatemala, 1,028 in Serbia, 1,003 in Slovenia, and 1,390 in Italy.

We control for each country's total GDP, as it has been suggested that larger economies may have bigger credit markets because of economies of scale in organizing the supporting

[5] The correlation between our variable and the Djankov et al. (2003a) measure for the overlapping sample of 88 countries is 0.84.

institutions. We also control for growth of GDP, because rapid economic expansion may require more credit. The GDP data come from the World Bank's World Development Indicators (CD-Rom, January 2004), and are not available for many countries in the earlier part of our period.

A country's legal origin has been shown to be an important determinant of both creditor rights and private credit (La Porta et al. 1997, 1998; Levine 1999; Beck et al 2003a, b). There are four main legal origins: English, French, German, and Nordic. The English legal origin includes the common law of England, and the colonies to which it spread, including the U.S., Australia, and Canada. The French legal origin includes the civil law of France, of countries Napoleon conquered (including Portugal and Spain), and of their former colonies. The German legal origin includes the laws of the Germanic countries in Central Europe, but also to countries in East Asia where the German law was transplanted. The Nordic legal origin refers to the laws of the four Scandinavian countries.

We use this La Porta et al. classification and add a fifth category: Socialist (transition). The countries in this category have inherited Soviet laws: these include 12 countries that emerged from the breakup of the Soviet Union, plus Mongolia. We do not apply the Socialist category to countries that have gone back to their pre-Soviet legal systems. Latvia had its laws in the German civil law tradition prior to annexation by the Soviet Union in 1940, and it reverted to these laws in 1991. Lithuania was influenced by French and Dutch law both before its annexation in 1940 and after independence in 1990. It is classified as French legal origin. The remaining former socialist countries in central and eastern Europe – Bulgaria, Croatia, the Czech Republic, Hungary, Poland, Serbia, the Slovak Republic, and Slovenia - followed the German legal tradition, with the exception of Romania, which followed the French tradition, and Albania, which inherited French legal influences via Italy. These countries are assigned to their pre-war legal systems.

Finally, it has been argued that religion is an important determinant of credit institutions (Stulz and Williamson, 2003). We record the religion practiced by the largest proportion of the population, as recorded in the CIA factbook (December 2003, online edition).

Summary of the Data

Table 2 presents the data on credit institutions around the world by legal origin. Panel A shows creditor rights, Panel B public registries, Panel C private bureaus, and Panel D the combined Information Sharing variable, defined as a dummy equal to 1 if a country has either a public or a private registry. We present the data at five year intervals between 1978 and 2003.

Panel A confirms for a much larger sample of countries the finding of La Porta et al. (1997, 1998) that investor protection through creditor rights varies systematically across legal origins, but in particular is much higher in common law than in French civil law countries. This result is highly statistically significant, and is as strong in 1978 as in 2003. The Table also confirms the earlier finding that German civil law countries have strong creditor rights and Nordic countries weak ones, although not as weak as those of French legal origin countries.

In addition, Panel A demonstrates that there has been no trend toward greater creditor rights over time in any legal origin, with the possible exception of the Nordic. Indeed, there is almost no change in average creditor rights score over time in any legal origin. This implies, in particular, that there has been NO CONVERGENCE of creditor rights between legal origins: the French and common law countries are as far apart in 2003 as in 1978. The stability of creditor rights scores over time, and the absence of convergence across legal origins, is broadly consistent with the view that these particular measures of investor protection reflect relatively permanent features of the institutional environment, deeply rooted in national legal traditions.

Panel B presents the results on public registries. It shows that these registries are more common in French and German civil law countries than in Nordic and common law countries. In 2003, public registries existed in 76.6 percent of French legal origin countries, 61.1 percent of German legal origin countries, a quarter of common law countries, and no Nordic countries. The difference between French and common law countries is statistically significant in 2003, but also in every prior year in the Panel.

Unlike the results of Panel A, which show no time trend, Panel B shows substantial increases in the incidence of public registries in all legal origins but the Nordic. In 1978, there were almost no public registries except in French legal origin countries, whereas by 2003 over half the countries in the world had them. Judging by the results of Panels A and B, public registries appear to be a substitute for creditor rights, at least comparing common and French civil law countries.

Panel C reports the results for private credit registries. They are somewhat more frequent in common law countries than in French legal origin countries, and by 2003 universal in Nordic countries, but the difference between French and English origins is not statistically significant. Like the public registries, private bureaus have become much more common around the world in the last 25 years, and the ranking of legal origins is generally preserved. Panel D shows that some kind of an information sharing institution (i.e., public or private) occurs more frequently in civil than in common law countries. As we saw from Panels B and C, however, this is driven by public registries rather than private bureaus.

The bottom line is that there are pronounced legal origin effects in creditor rights and in public registries, going in opposite directions. However, creditor rights are extremely stable over time, whereas both public and private information sharing institutions are becoming increasingly common during the time period 1978-2003.

Table 3 looks at the same data arranging countries by income level in 1978. Many countries do not have data for GDP per capita in 1978, but the results we report are very similar if we use 2003 (or an interim year) per capita income rankings. Panel A shows that, unlike in the La Porta et al. data, richer countries have statistically significantly higher creditor rights scores than do poorer countries, and that this is true at all points in time. Part of this of course is the composition effect, as Nordic and German countries are both rich and have high creditor rights, so we need to run regressions to examine the validity of this finding. Panel A also shows that in neither the richer nor the poorer countries has there been a change of creditor rights over time.

Panel B shows that the poorer countries have a higher incidence of public registries than do the richer countries; in contrast, Panel C shows that the richer countries have a much higher incidence of private bureaus. Overall, as shown in Panel D, there is a higher incidence of information sharing in the richer than in the poorer countries.

The results of Tables 2 and 3 are suggestive of possible patterns of substitution among credit institutions. First, in the domain of information sharing, richer countries rely relatively more on private institutions, and poorer countries on public ones. Second, common law countries appear to emphasize the ex post mechanism of creditor power more than the ex ante mechanism of information sharing, with the reverse holding for civil law countries. The conspicuous exception to this tradeoff are the German civil law countries, which have both strong creditor rights and extensive information sharing institutions. Third, looking at the information sharing institutions, the French legal origin countries specialize in public ownership relative to the countries in the other origins.

Table 4 presents correlations among our variables. First, it documents a positive correlation between the amount of private credit and creditor rights, the existence of private credit bureaus, aggregate income, income per capita, and income growth, as well as English,

German and Nordic legal origins. Private credit is negatively correlated with French and socialist legal origin, as well as with the inefficiency of the legal system as measured by contract enforcement days. Second, Table 4 confirms the suggestion of Table 2 that creditor rights and public registries are substitutes, and that public and private registries might be substitutes as well. Public registries also appear to be more prevalent in countries with less efficient judicial systems. We revisit this evidence on institutional substitution in the next section.

3. Cross-Country Determinants of Private Credit

In this section, we present cross-sectional results on the determinants of private credit to GDP ratio in 129 countries in 2003. We have replicated these results for the cross-sections every five years from 1978 to 1998, and the results we report obtain in other time periods as well.

Table 5 presents the basic results on creditor rights as a determinant of private credit in a framework similar to La Porta et al. (1997), except using a much larger sample of countries (129 versus 39). We use several controls in the regression. First, as in La Porta et al. (1997), we control for the total GDP on the theory that credit markets might require fixed institutional costs to function, which are only paid when the total economy is large enough. Second, also as in La Porta et al. (1997), we control for per capita income growth, on the theory that more rapidly growing economies are likely to have greater demand for credit. Third, we use our updated measure of days to enforce a simple contract as a proxy for the efficiency of the legal system. Presumably, the more efficient the legal system is, the greater is the spread of contractual arrangements such as debt.

The first column shows that GDP, GDP per capita growth, and contract enforcement days all enter significantly and with theoretically predicted signs. In particular, the objective measure of the quality of courts is a significant predictor of private credit. Further, countries with

stronger legal protection of creditors have deeper credit markets (Figure 1). As the creditor rights index rises by 1 (roughly the difference between the French and the German legal origins), the private credit to GDP ratio rises by .06 (or a fifth of the way from the French to the German legal origin mean). As do La Porta et al. (1997), we find support for the power theories of debt, which hold creditor rights to be a key determinant of the willingness to extend credit.

However, the results presented here are substantially stronger than those presented by La Porta et al. (1997) for a sample of 39 countries as of 1995. Part of the reason for this is that several countries changed their bankruptcy scores between 1995 and 2003 in a way that improved the fit. Yet even if we rerun the La Porta et al. (1997) regression using their 39 countries but our data as of 1995, we get stronger results than they do, indicating that recoding the variables for a few countries, as discussed in Section 2, improves the fit.

The second column in Table 5 includes legal origins as additional controls. Except for the fact that transition countries have less developed debt markets, there is no significant influence of legal origin on private credit beyond that contained in other variables. In fact, the coefficient on the creditor rights index barely changes. There is no additional information in legal origins for the effect of legal rules on private credit markets.

The next four columns revisit these results for the richer and the poorer countries separately. The evidence makes clear that the creditor rights results are driven by the richer countries. For these countries, both contract enforcement days and creditor rights remain significant determinants of private credit (with legal origins remaining unimportant). For the poorer countries, in contrast, the statistical significance of these variables disappears. One interpretation of this evidence is that legal enforcement of debt contracts matters more as a stimulus for the development of debt markets in developed than in developing countries.

We have examined which components of the creditor rights index are responsible for its ability to predict private credit. We find that the absence of automatic stay on assets and respect for the priority of secured creditors matter a great deal. On the other hand, restrictions on entering reorganization and mandatory removal of management in bankruptcy are not particularly important. This evidence suggests that the power to grab and liquidate collateral by secured creditors supports successful debt markets.[6]

We check the robustness of the results in Table 5 in several ways. First, following Mulligan and Shleifer (2004), we replace the overall GDP by population as the scale variable. This would make sense if both the benefits *and* the costs of running institutions rise with per capita income. All of the results we have just described are preserved when we make this substitution. Second, we replace our preferred measure of the efficiency of the judicial system, contract enforcement days, with the more conventional GDP per capita. We find, as in Table 5, that countries with higher per capita income have a higher ratio of private credit to GDP, and that this result is driven by the rich rather than the poor countries. The coefficients on other variables of interest do not change materially. Third, instead of dividing countries into rich and poor, we divide them according to their ICRG "law and order" score, on the theory that it is the law and order environment rather than just development that determines the relevance of specific legal rules. We find, as with per capita income, that creditor rights matter in the high but not in the low "law and order" countries. Fourth, it can be argued that our private credit variable includes too much credit to state enterprises. Accordingly, we replace it by the private bond market capitalization measure from Beck et al (2000), which unfortunately is only available for 36 countries. Even in this small sample, the creditor rights score is a statistically significant predictor of private bond market capitalization. Fifth, we control individually for a number of

[6] In a related vein, Qian and Strahan (2004) find that, in a cross-section of countries, the creditor rights index is associated with a higher likelihood that bank loans are secured.

variables in the regression that might be correlated with the creditor rights score, but also influence the development of private credit. These include the ratio of stock market capitalization to GDP, a measure of the importance of state enterprises in the economy, a measure of fiscal deficit, several proxies for central bank independence, and several proxies of judicial checks and balances.[7] None of these variables change our results. Finally, we considered the possibility that not the creditor rights index itself, but some other aspect of legal or regulatory intervention in debt markets correlated with creditor rights, is responsible for credit market development. Specifically, we include several measures of the quality of bank supervision assembled by Barth, Caprio, and Levine (2004). While some of these variables are statistically significant, they do not eliminate the statistical significance of creditor rights.

In Table 6, we add the three measures of information sharing – the existence of public registries, that of private bureaus, and of either – to the regressions in Table 5. We also eliminate legal origins from the specifications, since they do not influence private credit holding creditor rights constant. The effects of the creditor rights index and of contract enforcement days do not change much at all from the estimates in Table 5 in all six specifications. In addition, the data show that public registries are associated with more private credit, but only in the poorer countries (Figure 2), and that private credit bureaus are associated with more private credit in both the richer and the poorer countries, as well as the overall sample (Figure 3). When we combine these public and private institutions into the information sharing variable, it has a statistically significant and quantitatively large effect on private credit in the poorer countries.

As noted earlier, credit registries vary significantly in their design. We analyze the extent to which particular characteristics of registries are associated with more private credit with a detailed survey of the structure, rules, and governing laws of credit registries. We find that

[7] For motivation for inclusion several of these controls, see Beck, Demirguc-Kunt, and Levine 2003a, 2003b, 2004.

registries that distribute a broader range of data and provide legal incentives to ensure quality are associated with significantly more private credit. We identify six characteristics that in the data encourage private credit: 1) both positive information, meaning loans outstanding and payment history on accounts in good standing, and negative information, meaning defaults and arrears, is distributed; 2) data on both firms and individual borrowers is distributed; 3) data from retailers, trade creditors, and/or utilities, as well as from financial institutions, is distributed; 4) five or more years of historical data is available; 5) data are collected on all loans of value above 1 percent of income per capita; and 6) laws provide for borrowers' right to inspect their own data. Many of these characteristics might be endogenous, and so we merely note these results, rather than interpret them as causal.

The results in Tables 5 and 6 confirm some of the patterns of institutional substitution that we discussed earlier. Whereas creditor rights and court efficiency influence private credit in the richer countries, public credit registries are not. In contrast, public registries are particularly important for private credit in poor countries. Private registries are important everywhere, although here the concern about reverse causality is more severe than with either creditor rights or public registries. The data thus suggest that the power mechanism for sustaining credit is especially important in rich countries, while the information mechanism matters relatively more in poor countries.[8] Moreover, there appears to be a constructive role for government in maintaining public credit registries in the poorer countries, where for reasons of cost or compliance private credit registries are uncommon. These results identify a role for both the power and the information theories of debt, but under different circumstances.

[8] An important caveat to this interpretation is that the La Porta et al. index of creditor rights is computed from the perspective of secured creditors, and that this particular measure of investor protection – as opposed to creditor rights more generally, might be especially relevant to debt finance in the richer countries.

4. An Analysis of Reforms

Cross-country regressions are often criticized because they may omit important country characteristics. An alternative empirical strategy is to look at the change in the growth rate of private credit to GDP ratio around institutional reforms that either change the creditor rights score or introduce a public registry or a private bureau[9]. This is done in Table 7. For the creditor rights index, some reforms raise and some reduce it, so we regress the change in the growth rate of private credit to GDP ratio after versus before the reform on the change in the score. For information agencies, there are just points of introduction, so we simply compare before and after growth rates.

In the sample, there are 30 episodes of changes in the creditor rights index. This result is consistent with the evidence of Tables 2 and 3 of virtually no changes in average creditor rights index by income level or by legal origin over the 25 year period. Unfortunately, many of the 30 changes occur in former communist countries close to the end of the sample, and so we cannot compute the difference between private credit growth after and before the reform. We can only compute the difference in 5 year growth rates around the change in creditor rights for 15 observations, and the difference in three year growth rates for 21.

The results in Panel A of Table 7 show clearly that, for 3 and 5 year windows, an increase in the creditor rights score accelerates the growth of private credit to GDP ratio. An increase of 1 in the creditor rights index is associated with a 14.0 percentage point increase in the average annual growth rate in private credit to GDP ratio in the 5 years after the reform relative to the 5 years before, and 16.5 percentage point increase in that rate in the 3 years after the reform relative to 3 years before.

[9] For these regressions, we deflate private credit using the methodology of Beck, Levine, and Loayza (2000).

The results in Panel B further show that the growth rate of private credit to GDP ratio rises after the introduction of public registries, and even more so of private bureaus. For public registries, the result is statistically significant for the difference in 3 but not 5 year windows, and shows – for the three year windows -- that the introduction of the registry raises the annual growth rate by 2.2 percentage points. For private bureaus, the corresponding number for the three year window is 4.2 percentage points. The introduction of informational institutions, like the improvement of creditor rights, appears to significantly benefit private credit growth.

These differences in differences results support the findings from the cross-section. Both the power and the information channel of credit play a role and improvements in either channel lead to an increase in the growth of the private credit to GDP ratio. We recognize that the results in this section are subject to the criticism that the timing of the introduction of registries is endogenous, and in particular may occur when the growth of private credit is accelerating. Still, the consistency of results across methodologies is encouraging.

5. Determinants of Credit Institutions

We have shown that credit institutions have a significant effect on credit market development. But what shapes these institutions? We have already seen in Tables 2 and 3 that the level of economic development and legal origin are potentially important determinants of which countries have which institutions. In a recent paper, Stulz and Williamson (2003) emphasize that culture is an important determinant of creditor rights. Using the La Porta et al. (1997) sample, they find that creditor rights are weaker in catholic countries, and that holding religious composition constant, legal origin does not help predict creditor rights.

Table 8 revisits some of these issues, looking at the potential determinants of creditor rights, public registries, and private bureaus using our larger 2003 sample. With respect to

creditor rights, the first column shows that French legal origin countries have sharply weaker rights than the (omitted) common law category without controlling for religion. The second column shows that, consistent with Stulz and Williamson (2003), protestant countries have statistically significantly stronger creditor rights than others, without controlling for legal origin. However, when we put legal origin and religious orientation together in the regression, as we do in columns 3 and 4, religious variables are no longer significant. We also could not get religion to matter when we construct the more complex variables suggested by Stulz and Williamson.[10]

The two additional panels in Table 8 examine the determinants of the presence of public registries and private bureaus. French and German legal origin countries are more likely to have public credit registries than their common law counterparts, and transition countries are less likely to have private credit bureaus than the common law countries. Richer countries as well are more likely to have private credit bureaus. Protestant countries are less likely to have public credit registries than others, but the result loses its significance once we control for legal origin. There is no difference between catholic and protestant countries in the incidence of private credit bureaus, although muslim and orthodox countries are less likely to have them. In this sample, legal origin appears to matter more for credit institutions than culture.

6. Conclusion

Using a much larger sample of countries, the evidence presented in this paper confirms the earlier finding of La Porta et al. (1997) that stronger legal rights of creditors are associated with a higher level of development of private credit markets. The evidence also shows that the benefits of stronger creditor rights are only significant in the richer countries, which have better

[10] These include interactive variables between legal origin and religion, and legal origin and language.

developed legal systems. This evidence is broadly consistent with power theories of credit.

The results further suggest that information sharing through public and private credit registries is also an important determinant of credit, consistent with information theories. In addition, public credit bureaus are strongly associated with private credit in the poorer, but not the richer, countries, pointing to a possible role of government in facilitating information sharing. These results echo recent research on the important role of free media – another mechanism of information sharing – in promoting good outcomes in both economic and political markets (Zingales 2000, Djankov et al. 2003b). Unlike in the case of the media, however, our data suggest that information sharing through public firms is beneficial rather than detrimental. A possible reason for the difference is that the scope for public abuse of information collected about the debtors is more limited than that for distortion of news reporting by state-owned media.

We further found that legal origin is an important determinant of both creditor rights and the existence of public credit registries. This finding lines up with some earlier work on comparative institutions, summarized and interpreted most recently by Djankov et al. (2003c). This interpretation holds that different legal traditions stand for different approaches to social control of business, with common law emphasizing ex post private dispute resolution, and civil law (particularly of the French variety) emphasizing public ownership and ex ante regulation. The data here are consistent with this perspective. Specifically, it appears that common law countries sustain their debt market through the mechanism of creditor rights, which is a form of ex post court-enforced private contracting. French legal origin countries, in contrast, appear to rely less on this contractual mechanism, and more on public credit registries, which are an ex ante regulatory approach to supporting business transactions. This evidence on institutions supporting private credit lines up with a more general view of legal origins and social control of business.

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Table 1: Description of the Variables

Variable	Description
Creditor rights	An index aggregating creditor rights, following La Porta and others (1998). A score of one is assigned when each of the following rights of secured lenders are defined in laws and regulations: First, there are restrictions, such as creditor consent or minimum dividends, for a debtor to file for reorganization. Second, secured creditors are able to seize their collateral after the reorganization petition is approved, i.e. there is no "automatic stay" or "asset freeze." Third, secured creditors are paid first out of the proceeds of liquidating a bankrupt firm, as opposed to other creditors such as government or workers. Finally, if management does not retain administration of its property pending the resolution of the reorganization. The index ranges from 0 (weak creditor rights) to 4 (strong creditor rights) and is constructed as at January for every year from 1978 to 2003.
Public registry	The variable equals 1 if a public credit registry operates in the country, 0 otherwise. A public registry is defined as a database owned by public authorities (usually the Central Bank or Banking Supervisory Authority), that collects information on the standing of borrowers in the financial system and makes it available to financial institutions. The variable is constructed as at January for every year from 1978 to 2003.
Private bureau	The variable equals 1 if a private credit bureau operates in the country, 0 otherwise. A private bureau is defined as a private commercial firm or non profit organization that maintains a database on the standing of borrowers in the financial system, and its primary role is to facilitate exchange of information amongst banks and financial institutions. Private credit reporting firms, which collect information from public sources but not banks and financial institutions, operate in several other countries but are not considered here. The variable is constructed as at January for every year from 1978 to 2003.
Information sharing	The variable equals 1 if either a public registry or a private bureau operates in the country, 0 otherwise, and is constructed as at January for every year from 1978 to 2003.
Private Credit/GDP	Ratio of credit from deposit taking financial institutions to the private sector (IFS lines 22d and 42d) relative to GDP (IFS line 99b). Line 22d measures claims on the private sector by commercial banks and other financial institutions that accept transferable deposits such as demand deposits. Line 42d measures claims on the private sector given by other financial institutions that do not accept transferable deposits but that perform financial intermediation by accepting other types of deposits or close substitutes for deposits (e.g. savings and mortgage institutions, post office savings institutions, building and loan associations, certain finance companies, development banks and offshore banking institutions). Source: *IMF International Financial Statistics September 2004.*
GDP	Logarithm of gross national income (current U.S. Dollars), average 2001-2003. Source: *World Development Indicators 2004.*
GDP per capita	Logarithm of gross national income per capita (Atlas method), 2003. Source: *World Development Indicators 2004.*
GDP per capita growth	Average annual growth in gross domestic product per capita from 1979 - 2003. Source: *World Development Indicators 2004.*
Contract enforcement days	The number of days to resolve a payment dispute through courts. The data are based on the methodology in Djankov and others (2003) but describe the number of calendar days to enforce a contract of unpaid debt worth 50% of the country's GDP per capita. The variable is constructed as at January 2003.
Legal origin	A dummy variable that identifies the legal origin of the Company law or Commercial Code of each country. The five origins are English, French, German, Nordic and Socialist. Source: *La Porta and others (1999) and the CIA Factbook 2003.*
Religion	A dummy variable that identifies the religion practiced by the largest proportion of the population. There are nine religions: Athiest, Buddhist, Catholic, Hindu, Indigenous, Judaism, Muslim, Orthodox Christian and Protestant. Source: *Stulz and Williamson (2003) and the CIA Factbook 2003.*

Table 2: Credit Institutions by Legal Origin

A. Creditor Rights

Legal Origin	1978	1983	1988	1993	1998	2003
English	2.389	2.389	2.389	2.306	2.278	2.222
French	1.311	1.311	1.311	1.328	1.297	1.328
German	2.429	2.429	2.429	2.357	2.500	2.333
Nordic	1.750	1.750	2.000	2.000	1.750	1.750
Socialist				2.000	2.273	2.182
All	1.759	1.759	1.769	1.782	1.820	1.789
T-Test, English vs French	4.458 a	4.458 a	4.458 a	4.046 a	4.110 a	3.721 a

Note: a=significant at the 1% level, b=significant at the 5% level, c=significant at the 10% level

B. Public Registries

Legal Origin	1978	1983	1988	1993	1998	2003
English	0.028	0.056	0.111	0.222	0.250	0.250
French	0.422	0.469	0.500	0.531	0.719	0.766
German	0.056	0.056	0.111	0.167	0.333	0.611
Nordic	0.000	0.000	0.000	0.000	0.000	0.000
Socialist	0.000	0.000	0.000	0.000	0.182	0.182
All	**0.218**	**0.248**	**0.286**	**0.338**	**0.474**	**0.534**
T-Test, English vs French	-4.599 a	-4.650 a	-4.179 a	-3.119 a	-5.020 a	-5.738 a

Note: a=significant at the 1% level, b=significant at the 5% level, c=significant at the 10% level

C. Private Bureaus

Legal Origin	1978	1983	1988	1993	1998	2003
English	0.139	0.222	0.222	0.361	0.417	0.500
French	0.141	0.156	0.188	0.266	0.344	0.359
German	0.222	0.278	0.278	0.278	0.389	0.556
Nordic	0.750	0.750	1.000	1.000	1.000	1.000
Socialist	0.000	0.000	0.000	0.000	0.000	0.000
All	**0.158**	**0.195**	**0.218**	**0.293**	**0.361**	**0.414**
T-Test, English vs French	-0.024	0.819	0.413	0.995	0.720	1.372

Note: a=significant at the 1% level, b=significant at the 5% level, c=significant at the 10% level

D. Information Sharing

Legal Origin	1978	1983	1988	1993	1998	2003
English	0.167	0.278	0.333	0.556	0.639	0.694
French	0.531	0.578	0.625	0.688	0.844	0.906
German	0.222	0.278	0.278	0.278	0.556	0.944
Nordic	0.750	0.750	1.000	1.000	1.000	1.000
Socialist	0.000	0.000	0.000	0.000	0.182	0.182
All	**0.353**	**0.414**	**0.459**	**0.549**	**0.699**	**0.797**
T-Test, English vs French	-3.786 a	-2.987 a	-2.890 a	-1.318	-2.379 b	-2.783 a

Note: a=significant at the 1% level, b=significant at the 5% level, c=significant at the 10% level

Table 3: Credit Institutions by Income Group in 1978

A. Creditor Rights

Income Group	1978		1983		1988		1993		1998		2003	
Poor	1.490		1.490		1.490		1.469		1.408		1.367	
Rich	2.043		2.043		2.064		2.000		1.980		1.980	
Missing 1978 GDP data	1.750		1.750		1.750		1.963		2.176		2.118	
All	**1.759**		**1.759**		**1.769**		**1.782**		**1.820**		**1.789**	
T-Test, Rich vs Poor	-2.266	b	-2.266	b	-2.346	b	-2.182	b	-2.413	b	-2.629	a

Note: a=significant at the 1% level, b=significant at the 5% level, c=significant at the 10% level

B. Public Registries

Income Group	1978		1983		1988		1993		1998		2003	
Poor	0.367		0.388		0.429		0.510		0.633		0.653	
Rich	0.180		0.240		0.300		0.360		0.420		0.440	
Missing 1978 GDP data	0.059		0.059		0.059		0.059		0.324		0.500	
All	**0.218**		**0.248**		**0.286**		**0.338**		**0.474**		**0.534**	
T-Test, Rich vs Poor	2.119	b	1.589		1.328		1.510		2.146	b	2.157	b

Note: a=significant at the 1% level, b=significant at the 5% level, c=significant at the 10% level

C. Private Bureaus

Income Group	1978		1983		1988		1993		1998		2003	
Poor	0.020		0.020		0.041		0.102		0.184		0.224	
Rich	0.400		0.500		0.540		0.660		0.760		0.800	
Missing 1978 GDP data	0.000		0.000		0.000		0.029		0.029		0.118	
All	**0.158**		**0.195**		**0.218**		**0.293**		**0.361**		**0.414**	
T-Test, Rich vs Poor	-5.162	a	-6.400	a	-6.459	a	-6.897	a	-6.958	a	-6.935	a

Note: a=significant at the 1% level, b=significant at the 5% level, c=significant at the 10% level

D. Information Sharing

Income Group	1978		1983		1988		1993		1998		2003	
Poor	0.388		0.408		0.469		0.592		0.755		0.796	
Rich	0.520		0.660		0.720		0.820		0.880		0.940	
Missing 1978 GDP data	0.059		0.059		0.059		0.088		0.353		0.588	
All	**0.353**		**0.414**		**0.459**		**0.549**		**0.699**		**0.797**	
T-Test, Rich vs Poor	-1.319		-2.570	a	-2.601	a	-2.550	a	-1.616	c	-2.150	b

Note: a=significant at the 1% level, b=significant at the 5% level, c=significant at the 10% level

Table 4: Correlations

	Private credit / GDP	Creditor rights	Public registry	Private bureau	Information sharing	GDP	GDP per capita growth	Contract enforcement days	English legal origin	French legal origin	German legal origin	Nordic legal origin	Socialist legal origin	Ln GDP per capita	Catholic	Protestant	Muslim
Creditor rights	0.299 a																
	(0.001)																
Public registry	-0.164 c	-0.219 a															
	(0.063)	(0.011)															
Private bureau	0.599 a	0.163 c	-0.286 a														
	(0.000)	(0.061)	(0.001)														
Information sharing	0.357 a	-0.106	0.540 a	0.424 a													
	(0.000)	(0.224)	(0.000)	(0.000)													
GDP	0.686 a	0.150 c	-0.123	0.555 a	0.291 a												
	(0.000)	(0.086)	(0.158)	(0.000)	(0.001)												
GDP per capita growth	0.341 a	0.080	-0.082	0.337 a	0.244 a	0.272 a											
	(0.000)	(0.357)	(0.347)	(0.000)	(0.005)	(0.002)											
Contract enforcement days	-0.457 a	-0.130	0.260 a	-0.222 a	-0.040	-0.279 a	-0.166 c										
	(0.000)	(0.137)	(0.003)	(0.010)	(0.649)	(0.001)	(0.057)										
English legal origin	0.154 c	0.256 a	-0.347 a	0.107	-0.155 c	0.065	0.041	-0.124									
	(0.081)	(0.003)	(0.000)	(0.220)	(0.074)	(0.456)	(0.640)	(0.155)									
French legal origin	-0.208 b	-0.409 a	0.447 a	-0.106	0.262 a	-0.162 c	-0.163 c	0.218 a	-0.587 a								
	(0.018)	(0.000)	(0.000)	(0.225)	(0.002)	(0.062)	(0.061)	(0.012)	(0.000)								
German legal origin	0.193 b	0.186 b	0.061	0.114	0.145 c	0.213 a	0.347 a	-0.022	-0.241 a	-0.381 a							
	(0.029)	(0.032)	(0.483)	(0.191)	(0.096)	(0.014)	(0.000)	(0.803)	(0.005)	(0.000)							
Nordic legal origin	0.184 b	-0.007	-0.188 b	0.210 b	0.089	0.165 c	0.058	-0.236 a	-0.107	-0.170 b	-0.070						
	(0.037)	(0.934)	(0.030)	(0.015)	(0.309)	(0.058)	(0.509)	(0.006)	(0.219)	(0.051)	(0.426)						
Socialist legal origin	-0.227 a	0.101	-0.212 a	-0.252 a	-0.459 a	-0.177 b	-0.237 a	-0.022	-0.183 b	-0.289 a	-0.119	-0.053					
	(0.010)	(0.247)	(0.014)	(0.003)	(0.000)	(0.042)	(0.006)	(0.802)	(0.035)	(0.001)	(0.173)	(0.546)					
GDP per capita	0.715 a	0.239 a	-0.144 c	0.573 a	0.303 a	0.729 a	0.222 a	-0.327 a	-0.039	-0.151 c	0.298 a	0.237 a	-0.180 b				
	(0.000)	(0.006)	(0.099)	(0.000)	(0.000)	(0.000)	(0.010)	(0.000)	(0.655)	(0.082)	(0.000)	(0.006)	(0.039)				
Catholic	0.104	-0.120	0.148 c	0.284 a	0.222 a	0.156 c	-0.076	0.126	-0.305 a	0.382 a	0.062	-0.120	-0.204 b	0.223 a			
	(0.241)	(0.169)	(0.088)	(0.001)	(0.010)	(0.073)	(0.383)	(0.150)	(0.000)	(0.000)	(0.477)	(0.170)	(0.019)	(0.010)			
Protestant	0.214 a	0.204 b	-0.351 a	0.224 a	-0.061	0.123	-0.019	-0.308 a	0.380 a	-0.393 a	-0.036	0.431 a	-0.123	0.129	-0.277 a		
	(0.015)	(0.018)	(0.000)	(0.009)	(0.485)	(0.157)	(0.827)	(0.000)	(0.000)	(0.000)	(0.682)	(0.000)	(0.160)	(0.140)	(0.001)	.	
Muslim	-0.184 b	-0.070	0.128	-0.340 a	-0.155 c	-0.181 b	-0.026	0.132	0.048	0.091	-0.192	b -0.107	0.063	-0.266	a -0.414 a	-0.249 a	
	(0.036)	(0.427)	(0.141)	(0.000)	(0.074)	(0.037)	(0.766)	(0.129)	(0.585)	(0.299)	(0.027)	(0.219)	(0.473)	(0.002)	(0.000)	(0.004)	.
Buddhist	0.136	0.026	-0.076	0.108	0.073	0.072	0.273 a	-0.178 b	0.019	-0.103	0.137	-0.050	0.018	0.003	-0.194 b	-0.116	-0.174 b
	(0.125)	(0.769)	(0.381)	(0.216)	(0.404)	(0.409)	(0.001)	(0.041)	(0.830)	(0.236)	(0.115)	(0.566)	(0.838)	(0.974)	(0.025)	(0.182)	(0.046)

Note: numbers in parentheses are p-values; a=significant at the 1% level, b=significant at the 5% level, c=significant at the 10% level

Table 5: Private Credit/GDP Regressions

Independent Variables	Dependent Variable: Private Credit/GDP (average 1999 - 2003)											
	All Countries				Poor Countries				Rich Countries			
GDP	0.109	a	0.104	a	0.045	a	0.046	a	0.125	a	0.124	a
	(0.013)		(0.013)		(0.012)		(0.010)		(0.022)		(0.023)	
GDP per capita growth	0.022	b	0.018		0.010	a	0.008		0.072	a	0.066	a
	(0.011)		(0.011)		(0.002)		(0.008)		(0.026)		(0.026)	
Contract enforcement days	-0.159	a	-0.164	a	-0.044		-0.103	b	-0.120	a	-0.113	a
	(0.031)		(0.032)		(0.050)		(0.049)		(0.035)		(0.038)	
Creditor rights index	0.059	a	0.065	a	0.005		0.022		0.123	a	0.111	a
	(0.020)		(0.024)		(0.012)		(0.014)		(0.032)		(0.038)	
French legal origin			-0.005				0.088	c			-0.128	
			(0.060)				(0.046)				(0.095)	
German legal origin			-0.012				0.052				-0.149	
			(0.095)				(0.164)				(0.112)	
Nordic legal origin			0.040				(dropped)				-0.071	
			(0.093)								(0.106)	
Socialist legal origin			-0.202	a			-0.056				-0.611	a
			(0.072)				(0.041)				(0.072)	
Constant	-1.382	a	-1.233	a	-0.573		-0.312		-2.182	a	-2.060	a
	(0.364)		(0.382)		(0.364)		(0.349)		(0.585)		(0.661)	
Obs	129		129		65		65		64		64	
R-sq	0.5966		0.613		0.2392		0.3211		0.5798		0.6186	

Note: a=significant at the 1% level, b=significant at the 5% level, c=significant at the 10% level

Table 6: Private Credit/GDP Regressions, with Information Sharing

Independent Variables	Dependent Variable: Private Credit/GDP (average 1999 - 2003)											
	All Countries				Poor Countries				Rich Countries			
GDP	0.0978	a	0.0840	a	0.0394	a	0.0369	a	0.1178	a	0.1097	a
	(0.013)		(0.014)		(0.010)		(0.012)		(0.023)		(0.026)	
GDP per capita growth	0.0238	b	0.0208	b	0.0115	a	0.0117	a	0.0723	a	0.0606	b
	(0.010)		(0.010)		(0.002)		(0.002)		(0.027)		(0.027)	
Contract enforcement days	-0.1605	a	-0.1562	a	-0.0659		-0.0603		-0.1189	a	-0.1206	a
	(0.031)		(0.029)		(0.048)		(0.047)		(0.033)		(0.034)	
Creditor rights index	0.0694	a	0.0612	a	0.0207		0.0196		0.1203	a	0.1209	a
	(0.021)		(0.021)		(0.013)		(0.012)		(0.032)		(0.032)	
Information sharing	0.1719	a			0.1130	a			0.1212			
	(0.047)				(0.032)				(0.083)			
Private bureau			0.2109	a			0.1451	b			0.1487	c
			(0.062)				(0.060)				(0.078)	
Public registry			0.0746	c			0.1037	a			-0.0042	
			(0.045)				(0.036)				(0.072)	
Constant	-1.2579	a	-0.9245	b	-0.4167		-0.3940		-2.1072	a	-1.8654	a
	(0.358)		(0.390)		(0.337)		(0.318)		(0.606)		(0.700)	
Obs	129		129		65		65		64		64	
R-sq	0.6300		0.6449		0.3423		0.3811		0.591		0.6014	

Note: a=significant at the 1% level, b=significant at the 5% level, c=significant at the 10% level

Private bureaus and public registries established after 1999 are classified as 0 in public registry and private bureau variables

Table 7: Private Credit/GDP Growth Before and After Reforms

A. Regressions of Change in Private Credit Growth on Change in Creditor Rights

	5 Year Increase in Average Annual Growth in Private Credit/GDP		3 Year Increase in Average Annual Growth in Private Credit/GDP	
Magnitude of Creditor rights change	0.140	b	0.165	b
	(0.059)		(0.065)	
Constant	0.153	a	0.089	
	(0.052)		(0.063)	
N	15		21	
R-squared	0.4392		0.3314	

a=significant at the 1% level, b=significant at the 5% level, c=significant at the 10% level

B. T-Tests of Means in Private Credit Growth: Information Variables

	5 Year Increase in Average Annual Growth in Private Credit/GDP		3 Year Increase in Average Annual Growth in Private Credit/GDP	
Public Registry	1.065		1.605	b
	(0.148)		(0.058)	
Private Bureau	2.197	b	1.466	b
	(0.017)		(0.075)	
Information Sharing	2.334	a	2.162	b
	(0.011)		(0.017)	

Note: Table shows T-statistics, with p-values in parentheses. H0: Increase in private credit growth after reforms = 0
a=significant at the 1% level, b=significant at the 5% level, c=significant at the 10% level

Table 8: Determinants of Credit Institutions

Independent Variables	Dependent Variable: Creditor Rights				Dependent Variable: Public Registry				Dependent Variable: Private Bureau			
GDP per capita	0.364 b	0.337 b	0.356 b	0.377 b	-0.120 b	-0.079	-0.115 b	-0.091	0.415 a	0.409 a	0.413 a	0.359 a
	(0.148)	(0.141)	(0.149)	(0.157)	(0.059)	(0.058)	(0.059)	(0.067)	(0.049)	(0.042)	(0.049)	(0.054)
French legal origin	-0.951 a		-0.833 a	-0.801 a	0.506 a		0.422 a	0.448 a	-0.107		-0.074	-0.143
	(0.230)		(0.243)	(0.272)	(0.092)		(0.116)	(0.118)	(0.086)		(0.096)	(0.088)
German legal origin	-0.151		-0.065	-0.007	0.429 a		0.369 b	0.395 a	-0.180		-0.157	-0.205
	(0.272)		(0.267)	(0.274)	(0.138)		(0.156)	(0.155)	(0.126)		(0.133)	(0.137)
Nordic legal origin	-0.987 b		-1.187 b	-1.202 b	-0.098		0.044	0.021	-0.024		-0.079	-0.025
	(0.494)		(0.544)	(0.552)	(0.099)		(0.093)	(0.097)	(0.093)		(0.112)	(0.113)
Transition legal origin	0.020		0.136	0.298	-0.107		-0.189	-0.207	-0.367 a		-0.336 a	-0.240 b
	(0.225)		(0.238)	(0.286)	(0.143)		(0.160)	(0.198)	(0.078)		(0.087)	(0.104)
Protestant		0.543 c	0.328	0.371		-0.469 a	-0.232 c	-0.166		0.154	0.090	-0.093
		(0.291)	(0.330)	(0.393)		(0.090)	(0.123)	(0.143)		(0.104)	(0.132)	(0.139)
Buddhist				-0.038				-0.082				0.020
				(0.283)				(0.181)				(0.116)
Muslim				0.045				0.118				-0.321 a
				(0.286)				(0.122)				(0.099)
Orthodox				-0.208				0.117				-0.359 a
				(0.269)				(0.183)				(0.124)
Other religion				0.169				0.120				-0.210 b
				(0.348)				(0.111)				(0.099)
Constant	1.095 b	0.601	1.000 b	0.879	0.642 a	0.862 a	0.709 a	0.558 b	-0.850 a	-0.958 a	-0.876 a	-0.501 b
	(0.505)	(0.471)	(0.508)	(0.630)	(0.215)	(0.191)	(0.222)	(0.284)	(0.174)	(0.127)	(0.166)	(0.216)
Obs	133	133	133	133	133	133	133	133	133	133	133	133
R-Sq	0.2191	0.0842	0.2253	0.2295	0.2936	0.1351	0.3099	0.3247	0.4094	0.3814	0.4119	0.4824

Note: a=significant at the 1% level, b=significant at the 5% level, c=significant at the 10% level

APPENDIX A: DATA

Country	Private Credit/GDP	Creditor Rights	Information Sharing	Public Registry	Private Bureau	Contract Enforcement Days	Legal Origin	Religion
Albania	0.06	3	0	0	0	340	French	Muslim
Algeria	0.06	1	0	0	0	407	French	Muslim
Angola	0.04	3	1	1	0	1011	French	Indigenous
Argentina	0.19	1	1	1	1	520	French	Catholic
Armenia	0.08	2	0	0	0	195	Socialist	Orthodox
Australia	0.88	3	1	0	1	157	English	Protestant
Austria	1.04	3	1	1	1	374	German	Catholic
Azerbaijan	0.05	3	0	0	0	267	Socialist	Muslim
Bangladesh	0.26	2	1	1	0	365	English	Muslim
Belarus	0.09	2	1	1	0	250	Socialist	Orthodox
Belgium	0.78	2	1	1	0	112	French	Catholic
Benin	0.12	0	1	1	0	570	French	Indigenous
Bolivia	0.56	2	1	1	1	591	French	Catholic
Bosnia and Herzegovina	0.39	3	1	0	1	330	German	Muslim
Botswana	0.18	3	1	0	1	154	English	Indigenous
Brazil	0.35	1	1	1	1	566	French	Catholic
Bulgaria	0.16	2	1	1	0	440	German	Orthodox
Burkina Faso	0.12	0	1	1	0	458	French	Muslim
Burundi	0.21	1	1	1	0	512	French	Catholic
Cambodia	0.07	2	0	0	0	401	French	Buddhist
Cameroon	0.09	0	1	1	0	585	French	Indigenous
Canada	0.81	1	1	0	1	346	English	Catholic
Central African Republic	0.05	0	1	1	0	660	French	Indigenous
Chad	0.04	0	1	1	0	526	French	Muslim
Chile	0.61	2	1	1	1	305	French	Catholic
China	.	2	1	1	0	241	German	Athiest
Colombia	0.27	0	1	0	1	363	French	Catholic
Congo, Dem. Rep.	0.01	1	0	0	0	909	French	Catholic
Congo, Rep.	0.05	0	1	1	0	560	French	Catholic
Costa Rica	0.27	1	1	1	1	550	French	Catholic
Cote d'Ivoire	0.14	0	1	1	0	525	French	Muslim
Croatia	0.44	3	0	0	0	415	German	Catholic
Czech Republic	0.42	3	1	1	1	300	German	Athiest
Denmark	1.23	3	1	0	1	83	Nordic	Protestant
Dominican Republic	0.38	2	1	1	1	580	French	Catholic
Ecuador	0.27	0	1	1	0	388	French	Catholic
Egypt, Arab Rep.	0.61	2	1	1	0	410	French	Muslim
El Salvador	0.05	3	1	1	1	275	French	Catholic
Ethiopia	0.28	3	0	0	0	420	English	Muslim
Finland	0.58	1	1	0	1	240	Nordic	Protestant
France	0.87	0	1	1	0	75	French	Catholic
Georgia	0.08	2	0	0	0	375	Socialist	Orthodox
Germany	1.18	3	1	1	1	184	German	Protestant
Ghana	0.12	1	1	0	1	200	English	Protestant
Greece	0.6	1	1	0	1	151	French	Orthodox
Guatemala	0.2	1	1	0	1	1459	French	Catholic
Guinea	0.04	0	1	1	0	306	French	Muslim
Haiti	0.16	2	1	1	0	368	French	Catholic
Honduras	0.41	2	1	1	0	545	French	Catholic
Hong Kong, China	1.54	4	1	0	1	211	English	Indigenous
Hungary	0.34	1	1	0	1	365	German	Catholic
India	0.3	2	0	0	0	425	English	Hindu
Indonesia	0.2	2	1	1	0	570	French	Muslim
Iran, Islamic Rep.	0.31	2	1	1	0	545	English	Muslim
Ireland	1.1	1	1	0	1	217	English	Catholic

Country	Private Credit/GDP	Creditor Rights	Information Sharing	Public Registry	Private Bureau	Contract Enforcement Days	Legal Origin	Religion
Israel	0.89	3	1	0	1	585	English	Judaism
Italy	0.79	2	1	1	1	1390	French	Catholic
Jamaica	0.22	2	0	0	0	202	English	Protestant
Japan	1.07	2	1	0	1	60	German	Buddhist
Jordan	0.74	1	1	1	0	342	French	Muslim
Kazakhstan	0.15	2	0	0	0	400	Socialist	Muslim
Kenya	0.26	4	1	0	1	360	English	Protestant
Korea, Rep.	0.93	3	1	0	1	75	German	Buddhist
Kuwait	0.68	3	1	0	1	390	French	Muslim
Kyrgyz Republic	0.04	3	0	0	0	492	Socialist	Muslim
Lao PDR	0.07	0	1	1	0	443	French	Buddhist
Latvia	0.23	3	1	1	0	189	German	Protestant
Lebanon	0.84	4	1	1	0	721	French	Muslim
Lesotho	0.13	1	0	0	0	285	English	Protestant
Lithuania	0.14	2	1	1	0	154	French	Catholic
Macedonia, FYR	0.19	3	1	1	0	509	German	Orthodox
Madagascar	0.08	2	1	1	0	280	French	Indigenous
Malawi	0.08	2	0	0	0	277	English	Protestant
Malaysia	1.38	3	1	1	1	300	English	Muslim
Mali	0.17	0	1	1	0	340	French	Muslim
Mauritania	0.28	1	1	1	0	410	French	Muslim
Mexico	0.18	0	1	0	1	421	French	Catholic
Moldova	0.15	2	0	0	0	280	Socialist	Orthodox
Mongolia	0.16	2	1	1	0	314	Socialist	Buddhist
Morocco	0.55	1	1	1	0	240	French	Muslim
Mozambique	0.09	2	1	1	0	580	French	Indigenous
Namibia	0.47	2	1	0	1	270	English	Protestant
Nepal	0.29	2	1	1	0	350	English	Hindu
Netherlands	1.42	3	1	0	1	48	French	Catholic
New Zealand	1.17	4	1	0	1	50	English	Protestant
Nicaragua	0.27	4	1	1	0	155	French	Catholic
Niger	0.05	0	1	1	0	330	French	Muslim
Nigeria	0.15	4	1	1	0	730	English	Muslim
Norway	0.83	2	1	0	1	87	Nordic	Protestant
Oman	0.4	0	0	0	0	455	French	Muslim
Pakistan	0.28	1	1	1	1	395	English	Muslim
Panama	0.92	4	1	0	1	355	French	Catholic
Papua New Guinea	0.15	1	0	0	0	295	English	Indigenous
Paraguay	0.24	1	1	1	1	285	French	Catholic
Peru	0.25	0	1	1	1	441	French	Catholic
Philippines	0.41	1	1	0	1	380	French	Catholic
Poland	0.28	1	1	0	1	1000	German	Catholic
Portugal	1.4	1	1	1	1	320	French	Catholic
Puerto Rico	.	1	1	0	1	270	French	Catholic
Romania	0.08	1	1	1	0	335	French	Orthodox
Russian Federation	0.16	2	0	0	0	330	Socialist	Orthodox
Rwanda	0.1	1	1	1	0	395	French	Catholic
Saudi Arabia	0.56	3	1	1	0	360	English	Muslim
Senegal	0.19	0	1	1	0	485	French	Muslim
Serbia and Montenegro	.	2	1	1	0	1028	German	Orthodox
Sierra Leone	0.03	2	0	0	0	305	English	Muslim
Singapore	1.17	3	1	0	1	69	English	Buddhist
Slovak Republic	0.43	2	1	1	0	565	German	Catholic
Slovenia	0.38	3	1	1	0	1003	German	Catholic
South Africa	0.76	3	1	0	1	277	English	Protestant
Spain	1.06	2	1	1	1	169	French	Catholic

Country	Private Credit/GDP	Creditor Rights	Information Sharing	Public Registry	Private Bureau	Contract Enforcement Days	Legal Origin	Religion
Sweden	0.72	1	1	0	1	208	Nordic	Protestant
Switzerland	1.64	1	1	0	1	170	German	Catholic
Syrian Arab Republic	0.09	3	0	0	0	672	French	Muslim
Taiwan, China	0.99	2	1	1	1	210	German	Buddhist
Tanzania	0.06	2	0	0	0	242	English	Muslim
Thailand	1	2	1	0	1	390	English	Buddhist
Togo	0.16	0	1	1	0	535	French	Indigenous
Tunisia	0.67	0	1	1	0	27	French	Muslim
Turkey	0.2	2	1	1	1	330	French	Muslim
Uganda	0.05	2	0	0	0	209	English	Catholic
Ukraine	0.15	2	0	0	0	269	Socialist	Orthodox
United Arab Emirates	0.52	2	1	1	0	614	English	Muslim
United Kingdom	1.36	4	1	0	1	288	English	Protestant
United States	1.46	1	1	0	1	250	English	Protestant
Uruguay	0.53	3	1	1	1	620	French	Catholic
Uzbekistan	.	2	0	0	0	368	Socialist	Muslim
Venezuela, RB	0.11	3	1	1	0	445	French	Catholic
Vietnam	0.39	1	1	1	0	404	French	Buddhist
Yemen, Rep.	0.06	0	1	1	0	360	English	Muslim
Zambia	0.07	1	0	0	0	274	English	Protestant
Zimbabwe	0.28	4	0	0	0	350	English	Protestant

Figure 1: Creditor Rights and Private Credit to GDP: All Countries

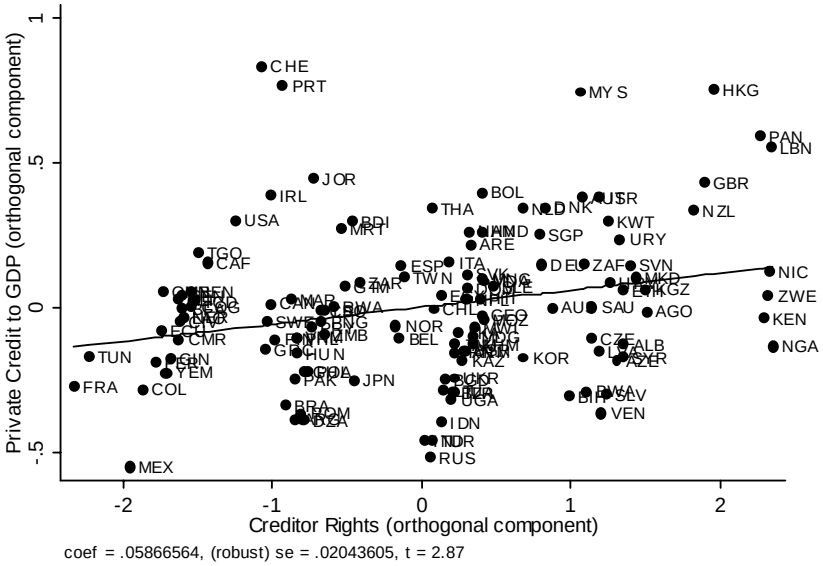

Figure 2: Public Registries and Private Credit to GDP: Poor Countries

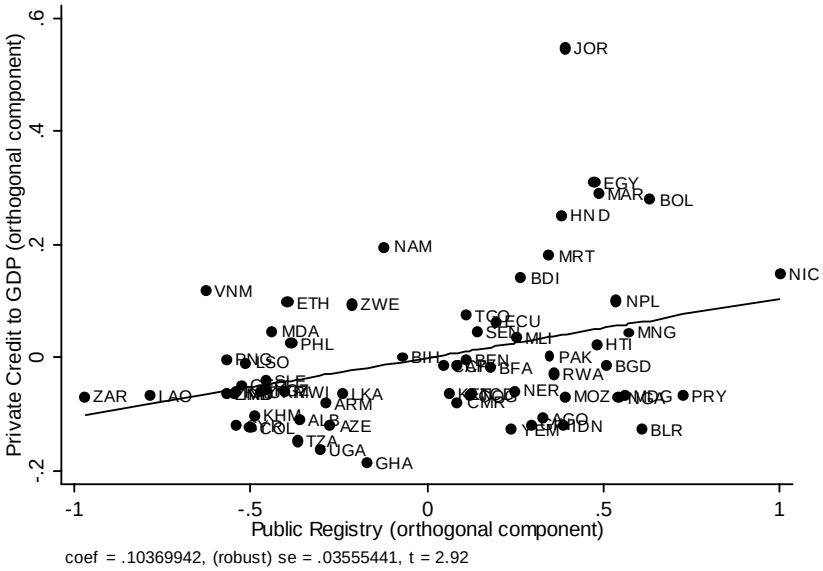

Figure 3: Private Bureaus and Private Credit to GDP: All Countries