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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. Both creditor protection through the legal system and information-sharing institutions are associated with higher ratios of private credit to gross domestic product, but the former is relatively more important in the richer countries. An analysis of legal reforms shows that credit rises after improvements in creditor rights and in information sharing. Creditor rights are remarkably stable over time, contrary to the hypothesis that legal rules are converging. Finally, legal origins are an important determinant of both creditor rights and information-sharing institutions. The analysis suggests that public credit registries, which are primarily a feature of French civil law countries, benefit private credit markets in developing countries.

JEL classifications: G3; G32; K22

Keywords: Debt; Legal origin; Investor protection

1. Introduction

Recent research in the development of private credit markets across countries points to an important role of institutions, such as legal investor protection and credit bureaus, in

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supporting these markets (e.g., La Porta, Lopez-de-Silanes, Shleifer, and Vishny, 1997; Jappelli and Pagano, 2002). Although this research has identified several empirical regularities, it suffers from small samples, weak results, and some econometric problems. This paper greatly expands the available data set on credit institutions to cover 129 countries and 25 years of data. The expansion allows an advance on previous research in five directions. First, the greater country coverage yields statistically more reliable results on the effect of alternative credit institutions in a cross-section. Second, the larger sample allows us to examine whether different institutions are more effective in countries at different levels of economic development and judicial efficiency. Third, time-series data on institutions allow us to ask whether these institutions improve over time, converge across countries, or both. Fourth, the new data allow us to analyze the consequences of institutional reforms for financial development, thereby avoiding some econometric concerns about cross-sectional work. Fifth, the much larger sample allows us to better distinguish the roles of legal origins and culture in shaping credit institutions (Stulz and Williamson, 2003).

Economic theory suggests two determinants of 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 nonviable projects and therefore extend more credit. These information theories of credit have been pioneered by Jaffee and Russell (1976) and Stiglitz and Weiss (1981).

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 using a new data set on private credit institutions 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, Lopez-de-Silanes, Shleifer, and Vishny (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 (Jappelli and Pagano, 2000, 2002; Pagano and Jappelli, 1993; Sapienza, 2002).

Our initial empirical strategy is to run cross-country regressions that explain the private credit to gross domestic product (GDP) ratio in terms of creditor rights and the presence of registries. In addition, we take advantage of the time-series dimension of the data. First, we ask how stable the institutions of credit are over time and whether they converge or diverge among different groups of countries. In particular, we test the hypothesis that countries with laws that derive from different legal traditions exhibit convergence in their creditor rights scores. Second, by looking at the changes in either creditor rights or the information institutions, we explore whether these reforms have any effect on private credit. This

differences-in-differences approach gets around the concern that credit institutions are endogenous and presents an alternative to instrumental variable techniques that have also been criticized (e.g., by Glaeser, La Porta, Lopez-de-Silanes, and Shleifer, 2004).

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. As suggested by Jappelli and Pagano (2002), these institutions could be substitutes: Some countries could specialize in information institutions; others, in legal systems giving power to the creditors. We explore the substitution hypothesis in some detail. First, less developed countries, with poorly functioning legal systems, might be unable to sustain an effective lending channel based on ex post creditor rights and could depend on information sharing for their credit markets to function. In contrast, richer countries might develop more functional systems of bankruptcy, 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.

Second, as argued by Djankov, Glaeser, La Porta, Lopez-de-Silanes, and Shleifer (2003) and Mulligan and Shleifer (2005), countries in different legal traditions could specialize in different strategies of social control of business. Specifically, common law countries often rely on private contracting, whereas civil law countries, and especially French civil law countries, rely on government regulation and ownership. Credit markets present an opportunity to evaluate these predictions, because creditor power theories deal with legal creditor rights and their enforcement through courts, whereas information theories deal with mandatory information disclosure and often state-owned institutions for information sharing. We further distinguish between private and public credit registries, and examine the roles of both creditor rights and these information-sharing institutions in supporting credit markets in countries from different legal traditions.

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 legal institutions, the differences persist over the 25-year period. Third, we find that both the creditor rights scores and the incidence of private credit registries are higher in the richer than in the poorer countries. Fourth, we find in a cross-section of countries that both better creditor rights and the presence of credit registries are associated with a higher ratio of private credit to GDP. In addition, we find that private credit to GDP ratio rises following either improvements in creditor rights or the introduction of credit registries. The confirmation of cross-sectional evidence with an analysis of reforms is a significant innovation in this paper. Fifth, we find that creditor rights are particularly important for private credit in the richer countries, whereas credit registries matter in the poorer countries. These results both strengthen and refine earlier findings, but they also point to a beneficial role of public credit registries in poor French legal origin countries, a rare example of an apparently successful state intervention.

Section 2 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 private credit. Section 5 examines the variation in the prevalence of these institutions across countries. Section 6 concludes.

2. The data

In this section, we first describe our variables, and then briefly summarize the data.

2.1. Variable definitions

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

The private credit data are from the *International Financial Statistics* of the International Monetary Fund (IMF), 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, because 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%; Germany, 118%; and France, 87%. 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, Lopez-de-Silanes, Shleifer, and Vishny (1997), with minor differences. We construct the index as at January for every year between 1978 and 2003, and we expand their sample from 49 to 133 countries. The creditor rights index measures four powers of secured lenders in bankruptcy: (1) whether there are restrictions, such as creditor consent, when a debtor files for reorganization; (2) whether secured creditors are able to seize their collateral after the petition for reorganization is approved, that is, whether there is no automatic stay or asset freeze imposed by the court; (3) whether secured creditors are paid first out of the proceeds of liquidating a bankrupt firm; and (4) 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 of 1995 are the same as La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1997) report for over 90% of the observations. The most significant differences arise from coding different bankruptcy procedures. For India, for example, La Porta, Lopez-de-Silanes, Shleifer, and Vishny 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.

Twenty-one countries, including Benin, Chad, Colombia, France, and Tunisia had a score of 0 in 2003. Nine countries, including Hong Kong (China), Kenya, Lebanon,

Table 1
The variables used in the regression analysis.

Variable	Description
Creditor rights	An index aggregating creditor rights, following La Porta, Lopez-de-Silanes, Shleifer, and Vishny (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 one if a public credit registry operates in the country, zero 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 one if a private credit bureau operates in the country, zero otherwise. A private bureau is defined as a private commercial firm or nonprofit 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 one if either a public registry or a private bureau operates in the country, zero otherwise, and is constructed as at January for every year from 1978 to 2003.
Private credit to GDP	Ratio of credit from deposit taking financial institutions to the private sector (International Financial Statistics lines 22d and 42d) to GDP (International Financial Statistics line 99b), expressed as a percentage. 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*: International Monetary Fund, International Financial Statistics (September 2004).
GDP	Logarithm of gross national product (current US dollars), average 2001–2003. *Source*: World Development Indicators (2004).
GDP per capita	Logarithm of gross national product 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 to 2003. *Source*: World Development Indicators (2004).
Inflation	Annual percentage inflation, GDP deflator, average 1999–2003. *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, La Porta, Lopez-de-Silanes, and Shleifer (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.

Table 1 (*continued*)

Variable	Description
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, Lopez-de-Silanes, Shleifer, and Vishny (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).

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 no restrictions are placed 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 bankruptcy and bankruptcy-related laws from 1978 to 2003, identifying all major reforms and assessing their impact on the creditor rights index. We then survey local bankruptcy lawyers, confirming the dates of reforms and their impact on the creditor rights index.

We review bankruptcy law and reforms primarily using online legal resources, including *Foreign Law Guide*, *LexisNexis* database, online library of the *International Bar Association*, *European Restructuring and Insolvency Guide*, and *Asia-Pacific Restructuring and Insolvency Guide*.[1] Additional legal resources include *Collier International Business Insolvency Guide* and *International Insolvency*.[2] In identifying the number of reforms of bankruptcy law, we exclude changes that affect bankruptcy only for financial institutions, state enterprises, or persons. Likewise, purely procedural law reforms are not considered.

We record all reforms to bankruptcy legislation: reorganization, liquidation, foreclosure, and secured transactions laws. Substantive bankruptcy regulations, however, are not always contained in the bankruptcy 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 bankruptcy. As an example, take Malawi. In 2000, the passage of the Employment Act, a law seemingly unrelated to bankruptcy matters, affected the ranking of secured creditors' claims in liquidation. Before the reform, the Companies Act of 1984 ranked secured creditors first. The 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 bankruptcy 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.

[1] *Foreign Law Guide*, 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* 2002/2003, http://www.europeanrestructuring.com/.

[2] *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 the 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, Lopez-de-Silanes, Shleifer, and Vishny creditor rights index. Only 25 countries had changes in their creditor rights index since 1978, with a total of 32 changes. The correlation between the 2003 and 1978 creditor rights indices is 0.95. Appendix A (Table A.1) reports all changes in creditor rights scores. Appendix B (Table B.1) lists all bankruptcy law reforms in this sample.

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 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 nonprofit 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.[3] As of 2003, private bureaus operated in 55 of our sample countries, including all Organization for Economic Cooperation and Development 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 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 in which 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, that is, distributing credit information. In some cases, the difference is significant. For example, the Turkish credit bureau was incorporated in 1995, but it 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.

In addition to laws on the books, the quality of law enforcement is likely to matter. 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, La Porta, Lopez-de-Silanes, and Shleifer (2003), 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

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

capita as of January 2003. This amounts to about $18,000 in the United States, about $12,000 in France and Germany, $6,000 in Korea, and $3,000 in Mexico. We expand the Djankov, La Porta, Lopez-de-Silanes, and Shleifer data set to 133 countries.[4] 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 could have larger credit markets because of economies of scale in organizing the supporting institutions. We also control for growth of GDP, because rapid economic expansion could require more credit. The GDP data come from the World Bank's January 2004 World Development Indicators and, like private credit data, are not available for many countries in the earlier part of our period.[5]

A country's legal origin has been shown to be an important determinant of both creditor rights and private credit (La Porta, Lopez-de-Silanes, Shleifer, and Vishny, 1997, 1998; Levine, 1999; Beck, Demirguc-Kunt, and Levine, 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 Australia, Canada, and the United States. 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 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, Lopez-de-Silanes, Shleifer, and Vishny classification and add a fifth category: Socialist (transition). The countries in this category have inherited Soviet laws–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-communist legal systems. Specifically, the Baltic and East European countries reactivated their pre-World War II laws after the collapse of communism (these laws always stayed on the books but were not used during the communist era), and so we classify them according to the origin of those laws. Latvia's laws belonged to the German civil law tradition prior to annexation by the Soviet Union in 1940; it reverted back to them 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 communist 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 as well are assigned to their pre-war legal systems.[6]

[4]The correlation between our variable and the Djankov, La Porta, Lopez-de-Silanes, and Shleifer (2003) measure for the overlapping sample of 88 countries is 0.84.

[5]Data on the ratio of private credit to GDP are not available for 497 out of 3,225 potential observations, mostly the transition economies during the communist period. In these cases, we use only country-years with available private credit to GDP ratios in the regressions.

[6]The former communist countries began reporting private credit to the IMF only during 1989–1991, so the question of applicable legal origin during the communist era does not arise. This allocation of countries to legal origins is based on their bankruptcy laws and might be different for other business laws.

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

2.2. 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 one 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, Lopez-de-Silanes, Shleifer, and Vishny (1997, 1998) that investor protection through creditor rights varies systematically across legal origins, but in particular is 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 shows no trend toward stronger creditor rights over time in any legal origin, with the possible exception of the socialist countries. There is almost no change in average creditor rights score over time in any legal origin. This implies 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% of French legal origin countries; 61.1% of German legal origin countries; 25% 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; by 2003, over half the countries in the world had them. The results of Panels A and B suggest that public registries could substitute for creditor rights, at least comparing common law 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 they are universal in Nordic countries. However, 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 shown in Panels B and C, however, this is driven by public registries, not private bureaus.

Table 2
Credit institutions by legal origin. This table presents the means of the creditor rights, public registry, private bureau, and information-sharing variables at five-year intervals between 1978 and 2003. The data are shown by legal origin and *t*-tests on the differences between English and French legal origins are provided. The analysis covers 129 countries. [a] = Significant at the 1% level; [b] = Significant at the 5% level; [c] = Significant at the 10% level.

	1978	1983	1988	1993	1998	2003
A. Creditor rights						
English	2.417	2.417	2.444	2.361	2.333	2.278
French	1.311	1.311	1.311	1.328	1.297	1.313
German	2.429	2.429	2.429	2.143	2.333	2.333
Nordic	2.250	2.250	2.500	2.000	1.750	1.750
Socialist	.	.	.	2.000	2.273	2.182
All	1.787	1.787	1.806	1.774	1.812	1.797
t-test, English versus French	4.644[a]	4.644[a]	4.719[a]	4.298[a]	4.364[a]	4.039[a]
B. Public registry						
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 versus French	−4.599[a]	−4.650[a]	−4.179[a]	−3.119[a]	−5.020[a]	−5.738[a]
C. Private bureau						
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 versus French	−0.024	0.819	0.413	0.995	0.720	1.372
D. Information sharing						
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 versus French	−3.786[a]	−2.987[a]	−2.890[a]	−1.318	−2.379[b]	−2.783[a]

In sum, we find 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,

Table 3
Credit institutions by income group in 1978. This table presents the means of the creditor rights, public registry, private bureau, and information-sharing variables at five-year intervals between 1978 and 2003. The data are shown by income group at the beginning of the sample period (1978). The sample is split into two, with rich countries having income per capita above the median value and poor countries having income per capita below the median value. *t*-tests on the differences between rich and poor countries are provided. The analysis covers 129 countries. GDP = gross domestic product. [a] = Significant at the 1% level; [b] = Significant at the 5% level; [c] = Significant at the 10% level.

	1978	1983	1988	1993	1998	2003
A. Creditor rights						
Poor countries	1.490	1.490	1.490	1.469	1.408	1.367
Rich countries	2.106	2.106	2.149	2.042	2.020	2.020
Missing 1978 GDP data	1.750	1.750	1.750	1.852	2.088	2.088
All	1.787	1.787	1.806	1.774	1.812	1.797
t-test, rich versus poor	−2.561[a]	−2.561[a]	−2.702[a]	−2.354[b]	−2.582[a]	−2.801[a]
B. Public registries						
Poor countries	0.367	0.388	0.429	0.510	0.633	0.653
Rich countries	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 versus poor	2.119[b]	1.589	1.328	1.510	2.146[b]	2.157[b]
C. Private bureaus						
Poor countries	0.020	0.020	0.041	0.102	0.184	0.224
Rich countries	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 versus poor	−5.162[a]	−6.400[a]	−6.459[a]	−6.897[a]	−6.958[a]	−6.935[a]
D. Information sharing						
Poor countries	0.388	0.408	0.469	0.592	0.755	0.796
Rich countries	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 versus poor	−1.319	−2.570[a]	−2.601[a]	−2.550[a]	−1.616[c]	−2.150[b]

unlike in the La Porta, Lopez-de-Silanes, Shleifer, and Vishny data, richer countries have statistically significantly higher creditor rights scores than do poorer countries, and that this is true at all times. Part of this is the composition effect, as Nordic and German legal origin countries are both rich and have high creditor rights, so we need to run regressions to validate 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. If we divide the countries by both legal origin and income, we find that, in 2003, 83.3% of the poor French legal origin countries have public credit registries, compared with only 26.3% of the poor common law countries. This is a truly striking difference.

Table 4
This table presents Bonferroni-adjusted simple correlations between all explanatory variables used in the analysis. The definition of each variable is shown in Table 1. The analysis covers 129 countries. GDP = gross domestic product. *p*-values are in parentheses. [a] = significant at the 1% level; [b] = significant at the 5% level; [c] = significant at the 10% level.

	Private credit to 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	Logarithm of 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)		

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 over the ex ante mechanism of information sharing, with the reverse holding for civil law countries. The conspicuous exceptions to this trade-off are the German civil law countries, which have both strong creditor rights and extensive information-sharing institutions. Third, looking at the information-sharing institutions, French legal origin countries specialize in public registries relative to countries in other origins. This specialization is most conspicuous in poor countries.

Table 4 presents correlations among our variables. First, it shows 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.

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 replicate these results for the cross-sections every five years from 1978 to 1998, and the results we report hold in other time periods as well.

Before presenting the results, three points should be noted. First, we try to present the results in the simplest and most transparent form. We estimate other specifications, including various interaction terms, and the conclusions we draw are confirmed. Second, we discuss a number of robustness checks below, and we try others. However, most potential control variables are available for only a small subset of countries, so adding them often results in cutting the sample by two-thirds. Third, although an argument can be made that both legal rules and information-sharing institutions are endogenous, we present in Tables 5 and 6 ordinary least squares (OLS) results. Following La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1997), we confirm these results using legal origins as instruments, but instrumental variables techniques have significant problems in this context, including the fact that both of the key independent variables vary by legal origin. In Section 5, we examine some determinants of private credit institutions, including legal origins (see Table 8).

Table 5 examines the effect of creditor rights on private credit in a framework similar to La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1997), except using a much larger cross-section of countries (129 versus 39). The dependent variable is the average ratio of private credit to GDP, expressed as a percentage, computed over 1999–2003. The creditor rights score is as of 1999. We use several controls in these OLS regressions. First, as in La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1997), we control for the total GDP on the theory that credit markets might require fixed institutional costs to function, which are paid only when the total economy is large enough. Second, also as in La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1997), we control for per capita GDP growth, because faster growing

Table 5
Determinants of private credit. This table presents cross-sectional ordinary least squares regressions, using a sample of 129 countries. The dependent variable is private credit to GDP, averaged over 1999–2003. Results are shown separately for poor and rich countries. Poor countries are countries with income per capita below the sample's median. Rich countries are countries with income per capita above the sample's median. Robust standard errors are in parentheses. [a] = Significant at the 1% level; [b] = Significant at the 5% level; [c] = Significant at the 10% level.

	Dependent variable: private credit to GDP					
Independent variable	All countries		Poor countries		Rich countries	
GDP	10.816[a]	10.376[a]	4.464[a]	4.716[a]	12.109[a]	11.709[a]
	(1.254)	(1.277)	(1.170)	(1.071)	(2.073)	(2.185)
GDP per capita growth	1.976[c]	1.593	0.816[a]	0.283	4.924[b]	4.968[b]
	(1.081)	(1.068)	(0.263)	(0.821)	(2.389)	(2.420)
Contract enforcement days	−14.721[a]	−15.143[a]	−1.713	−7.497	−8.847[b]	−8.289[b]
	(3.249)	(3.379)	(5.573)	(5.365)	(3.642)	(3.858)
Inflation	−0.093	−0.088[c]	−0.054[b]	−0.052[b]	−1.626[a]	−1.673[a]
	(0.061)	(0.053)	(0.025)	(0.023)	(0.285)	(0.333)
Creditor rights	5.841[a]	6.413[a]	0.768	2.399[c]	10.647[a]	9.936[a]
	(2.070)	(2.472)	(1.270)	(1.452)	(2.963)	(3.410)
French legal origin		−0.451	0.000	8.305[c]		−9.466
		(6.113)		(4.710)		(8.372)
German legal origin		−1.351		14.099		−18.204[c]
		(9.571)		(16.977)		(10.373)
Nordic legal origin		4.467		(dropped)		−8.950
		(9.530)				(10.425)
Socialist legal origin		−19.409[a]		−5.941		−10.438
		(6.648)		(4.024)		(10.755)
Constant	−142.240[a]	−128.197[a]	−72.050[c]	−49.519	−209.700[a]	−192.053[a]
	(36.014)	(37.867)	(40.025)	(38.442)	(56.062)	(60.603)
Number of observations	129	129	65	65	64	64
R^2	0.6003	0.6155	0.2622	0.3399	0.6608	0.6823

Table 6
Determinants of private credit, with information-sharing. This table presents cross-sectional ordinary least squares regressions, using a sample of 129 countries. The dependent variable is private credit to GDP, averaged over the 1999–2003 period. Results are shown separately for poor and rich countries. Poor countries are countries with income per capita below the sample's median. Rich countries are countries with income per capita above the sample's median. Private bureaus and public registries established after 1999 are classified as zero in the private bureau and public registry variables. Information-sharing is a discrete variable equal to one is either a private bureau or a public registry exists, zero otherwise. Robust standard errors are in parentheses. [a] = Significant at the 1% level; [b] = Significant at the 5% level; [c] = Significant at the 10% level.

	Dependent variable: private credit to GDP					
Independent variables	All countries		Poor countries		Rich countries	
GDP	9.751[a]	8.401[a]	3.945[a]	3.686[a]	11.712[a]	11.368[a]
	(1.262)	(1.403)	(1.014)	(1.179)	(2.222)	(2.382)
GDP per capita growth	2.203[b]	1.921[b]	1.015[a]	1.050[a]	5.002[b]	4.499[c]
	(0.999)	(0.928)	(0.247)	(0.224)	(2.474)	(2.513)
Contract enforcement days	−15.014[a]	−14.680[a]	−4.476	−4.029	−8.873[b]	−9.065[b]
	(3.170)	(2.994)	(5.428)	(5.287)	(3.538)	(3.603)
Inflation	−0.071	−0.064	−0.039	−0.037	−1.564[a]	−1.514[a]
	(0.070)	(0.058)	(0.035)	(0.032)	(0.292)	(0.304)
Creditor rights	6.988[a]	6.112[a]	2.272[c]	2.154[c]	10.571[a]	10.623[a]
	(2.116)	(2.139)	(1.328)	(1.272)	(2.985)	(3.021)
Information sharing	17.000[a]		10.861[a]		7.183	
	(4.713)		(3.284)		(7.292)	
Private bureau		20.788[a]		14.238[b]		7.401
		(6.225)		(5.892)		(7.131)
Public registry		7.218		9.926[a]		−0.095
		(4.588)		(3.616)		(6.696)
Constant	−129.954[a]	−96.666[a]	−53.507	−50.473	−205.707[a]	−194.169[a]
	(35.429)	(38.764)	(37.678)	(34.995)	(57.949)	(64.304)
Number of observations	129	129	65	65	64	64
R^2	0.6323	0.6463	0.3536	0.391	0.6646	0.6658

economies could 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, debt contracts are more prevalent in the more efficient legal systems. Fourth, because inflation could devalue the stock of outstanding debt or otherwise undermine debt contracting, we control for contemporaneous inflation.

The first column shows that GDP, GDP per capita growth, and contract enforcement days (but not inflation) 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 (Fig. 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 6 percentage points (or a fifth of the way from the French to the German legal origin mean). As do La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1997), we find support for the power theories of debt, in which creditor rights determine the willingness to extend credit.

However, the results presented here are substantially stronger than those presented by La Porta, Lopez-de-Silanes, Shleifer, and Vishny (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, Lopez-de-Silanes, Shleifer, and Vishny (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 1, 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, we find 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.

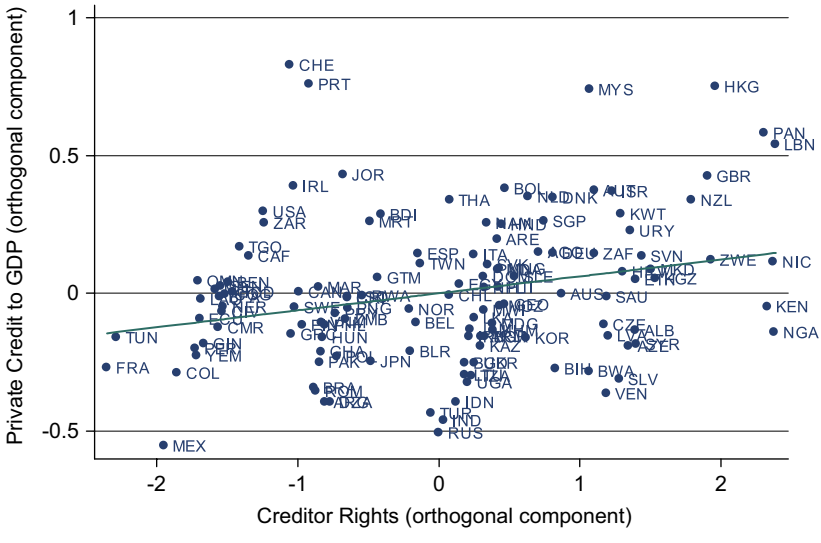


Fig. 1. Creditor rights and private credit to GDP: all countries.

The next four columns revisit these results for the richer and the poorer countries separately. Note first that the quality of courts measure is significant only for the richer countries, which suggests that the legal mechanism enforcing debt contracts is not important in the poorer ones. Note second that inflation in these specifications exacts an adverse effect on debt markets, especially in the richer countries. Turning to our main results, 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. This result again suggests that the legal mechanism of enforcing debt contracts is more important in the richer 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. In contrast, 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.[7]

We check the robustness of the results in Table 5 in several ways. First, following Mulligan and Shleifer (2005), 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, not 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 *International Country Risk Guide* law-and-order score, on the theory that it is the law-and-order environment instead of 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, Demirguc-Kunt, and Levine (2000), which unfortunately is available only 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 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.[8] None of these variables changes 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.

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

[8]For motivation for including these controls, see Beck, Demirguc-Kunt, and Levine (2003a, b, 2005).

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 to the regressions in Table 5 the three measures of information sharing: the existence of a public registry, that of a private bureau, and that of either (information sharing = 1 if either a public registry or a private bureau exists in a country). Like creditor rights, these variables are measured as of 1999. We eliminate legal origins from the specifications, because they do not influence private credit holding creditor rights constant.[9] 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 (Fig. 2) and that private credit bureaus are associated with more private credit in both the poorer ones and the overall sample (Fig. 3). When we combine these public and private registries into the information-sharing variable, it has a statistically significant and quantitatively large effect on private credit in both the poorer countries and the overall sample.

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 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, are distributed; (2) data on both firms and individual borrowers are distributed; (3) data from retailers, trade creditors, or utilities, as well as from financial institutions, are distributed; (4) five or more years of historical data are available; (5) data are collected on all loans of value above 1% 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, instead of interpreting them as causal.

The results in Tables 5 and 6 confirm some of the patterns of institutional substitution identified earlier. Whereas creditor rights and judicial efficiency influence private credit in the richer countries, neither public nor private credit registries do. In contrast, both public and private registries benefit private credit in poorer countries. The data thus suggest that the power mechanism for sustaining credit works in the richer countries, while the information mechanism matters in the poorer ones.[10] 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 (see Table 3). Table 2 suggests that governments in poor French legal origin countries are more likely to play this constructive role. These results identify a role for both the power and the information theories of debt, but under different circumstances.

[9]The results are robust to the inclusion of legal origins. Also, we perform the same robustness checks for the results in Table 6 as for those in Table 5, and the results remain robust.

[10]An important caveat to this interpretation is that the La Porta, Lopez-de-Silanes, Shleifer, and Vishny index of creditor rights is computed from the perspective of secured creditors in bankruptcy 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.

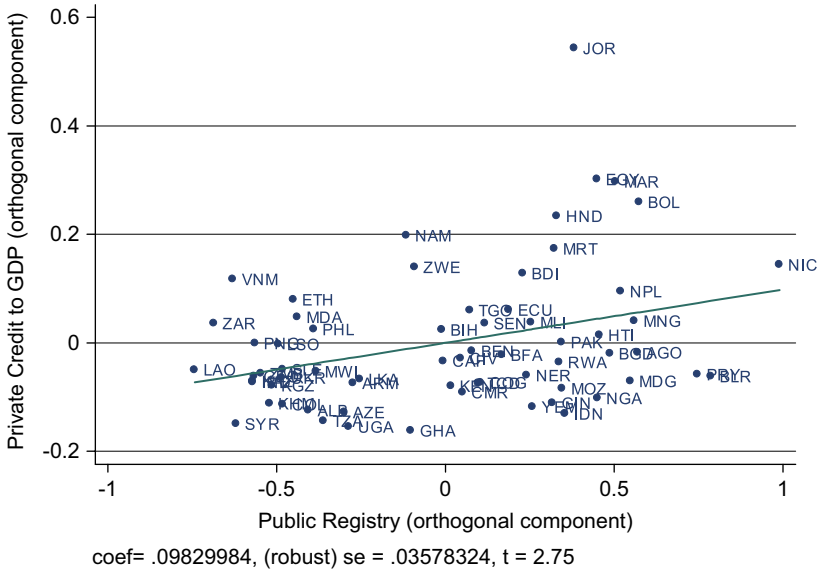


Fig. 2. Public registries and private credit to GDP: poor countries.

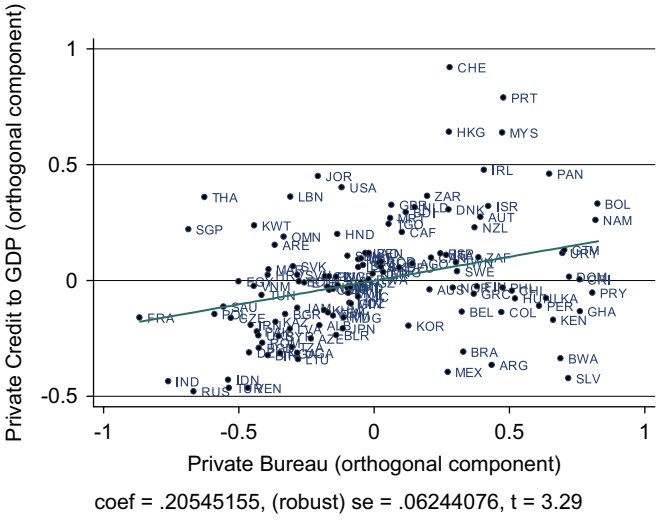


Fig. 3. Private bureaus and private credit to GDP: all countries.

4. An analysis of reforms

Cross-country regressions are often criticized because they omit important country characteristics or because the independent variables are endogenous. An alternative empirical strategy is to look at the change in the private credit to GDP ratio around institutional reforms that either change the creditor rights score or introduce a public

registry or a private bureau. We do this in two alternative ways recommended by Bertrand, Duflo, and Mullainathan (2004) and report the results in Table 7.

The first strategy, pursued in Panel A, is to collapse the data. Specifically, we restrict the sample to countries that undertook reforms and run a cross-sectional regression of the change in the average levels of private credit to GDP ratio after versus before the reform on the change in institutions. For concreteness, begin with reforms of creditor rights. Suppose country i changes its creditor rights score in year t. Let AC(i, before) be the average private credit to GDP ratio of the reforming country i taken over the five years before year t, and let AC(i, after) be the average private credit to GDP ratio in this country in the five years after the reform year t. Let $\Delta AC(i) = AC(i, \text{after}) - AC(i, \text{before})$ be the change in the average credit to GDP ratio of the reforming country i following the reform. We are interested in how $\Delta AC(i)$ is affected by the change in the creditor rights score in country i (occurring in year t), $\Delta CR(i)$.

However, we need to worry that, during the period $t-5,\ldots,t,\ldots,t+5$, the private credit to GDP ratio changed systematically in non-reforming countries as well. To this end, for each country i reforming in year t, consider all countries $j = 1,\ldots, J$ that did not have a creditor rights change in the years $t-5,\ldots,t,\ldots,t+5$, i.e., the whole ten-year window around the year t of reform in country i. For each of these countries, compute $\Delta AC(j)$ as above, i.e., the change in private credit to GDP ratio in the five-year window around the year t of reform of country i. Finally, compute $\Delta AC(\text{control}, i)$ as the average $\Delta AC(j)$ over all the countries j not reforming in the window around t. This $\Delta AC(\text{control}, i)$ can be computed for every reforming country i and is used as a control variable. Obviously, $\Delta AC(\text{control}, i)$ differs for every year.

We run on the cross-section of only the countries that experienced a change in creditor rights score the following ordinary least squares regression:

$$\Delta AC(i) = \alpha + \beta \Delta CR(i) + \gamma \Delta AC(\text{control}, \ i). \tag{1}$$

The coefficient γ captures world trends in private credit to GDP ratio around reform years, while the coefficient β captures the effect of a unit change in the creditor rights score on private credit. The same regression can be run for three-year windows around creditor rights score reforms.

For the public and private registries, the change in institutions (the counterpart of $\Delta CR(i)$) is always equal to one, because we have only the introductions of private bureaus or public registries in the data. Accordingly, we follow the procedures above (including the calculation of the corresponding control variables) for introductions of private and public registries (instead of changes in creditor rights score) and then run

$$\Delta AC(i) = \alpha + \gamma \Delta AC(\text{control}, \ i), \tag{2}$$

on the subsamples of countries introducing registries or bureaus. The average effect of the introduction of an information-sharing institution is picked up by the constant term.

In the sample, there are only 32 episodes of changes in the creditor rights index (see Appendix A). 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 32 changes occur in former communist countries close to the end of the sample, so we cannot compute the average private credit to GDP ratio five or even three years after the reform. We can compute only changes in

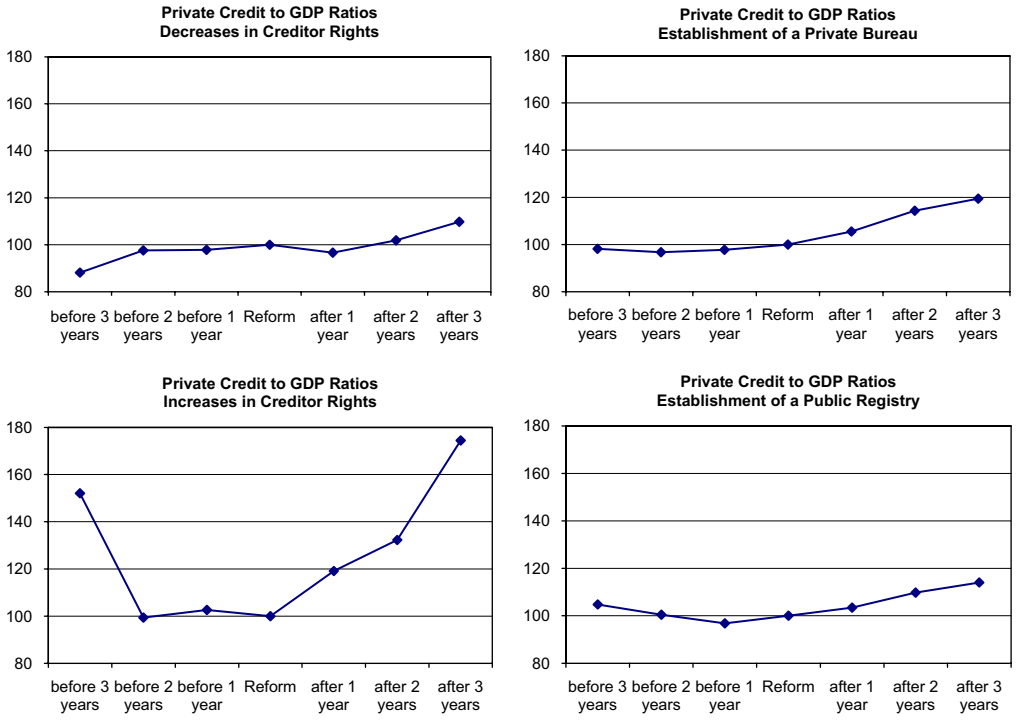
Table 7
Change in the ratio of private credit to gross domestic product (GDP) following reforms of credit institutions. Panel A presents cross-sectional regressions for all countries that experienced reforms in credit institutions over the 1978–2003 period. The dependent variable is average private credit to GDP ($t+5$, $t+4$, $t+3$, $t+2$, $t+1$)−average private credit to GDP ($t-5$, $t-4$, $t-3$, $t-2$, $t-1$) and average private credit to GDP ($t+3$, $t+2$, $t+1$)−average private credit to GDP ($t-3$, $t-2$, $t-1$), where t is the year of reform. The magnitude of creditor rights change measures the difference in the creditor rights score (0 to 4) before and after reform. The explanatory variable, change in private credit to GDP (no reform countries), is average private credit to GDP ($t+5$, $t+4$, $t+3$, $t+2$, $t+1$)−average private credit to GDP ($t-5$, $t-4$, $t-3$, $t-2$, $t-1$) and average private credit to GDP ($t+3$, $t+2$, $t+1$)−average private credit to GDP ($t-3$, $t-2$, $t-1$), averaged over countries in which there was no reform during the window period around t. In the first and fifth column, change in private credit to GDP (no reform countries) refers to countries that did not experience reforms in creditor rights during the window period around t. In the second and sixth column, change in private credit to GDP (no reform countries) refers to countries that did not experience reforms in information-sharing during the window period around t. In the third and seventh column, change in private credit to GDP (no reform countries) refers to countries that did not experience reforms in public registry during the window period around t. In the fourth and eighth column, change in private credit to GDP (no reform countries) refers to countries that did not experience reforms in private bureau during the window period around t. Robust standard errors are in parenthesis. Panel B presents panel regressions for all 129 countries in the sample over the period 1978–2003. Information-sharing is a discrete variable equal to one if either a private bureau or a public registry exists, zero otherwise. Two controls are used in the analysis: GDP and inflation. Robust standard errors are in parentheses below the coefficient estimates. Standard errors clustered by country are shown as well. All regressions include year and country fixed effects. [a] = Significant at the 1% level; [b] = Significant at the 5% level; [c] = Significant at the 10% level.

A. Regressions of the change in the average ratio of private credit to GDP on the change in credit institutions. Dependent variable: difference between the average of the ratio of private credit to GDP taken X years after reform and the average of the same ratio taken X years prior to reform

	$X=5$ years				$X=3$ years			
Independent variable	Creditor rights	Information sharing	Public registry	Private bureau	Creditor rights	Information sharing	Public registry	Private bureau
Magnitude of creditor rights change	7.976[c]				6.463[b]			
	(4.416)				(3.129)			
Change in average private credit to GDP (no reform countries)	−119.428	−47.156	−56.877	−27.170	27.947	2.970	−0.148	9.903
	(183.650)	(74.891)	(109.177)	(108.255)	(72.369)	(99.359)	(132.180)	(151.939)
Constant	4.900	7.619[a]	7.089[c]	8.099[a]	4.069	4.015	3.743	4.271
	(4.905)	(2.514)	(4.051)	(2.964)	(3.271)	(3.232)	(4.733)	(3.948)
Number of observations	21	65	36	29	25	65	36	29
R^2	0.1850	0.0059	0.0000	0.0019	0.1838	0.0000	0.0000	0.0002

B. Panel regressions

Independent variables	Dependent variable: annual private credit to GDP (1978–2003)					
	All countries		Poor countries		Rich countries	
Creditor rights	4.303	3.870	0.191	−0.144	8.155	7.429
(Robust standard errors)	(1.448)[a]	(1.354)[a]	(1.600)	(1.522)	(1.809)[a]	(1.832)[a]
(Errors clustered by country)	(3.732)	(3.447)	(2.459)	(2.188)	(4.749)[c]	(4.833)
Private bureau	8.047	4.579	8.047	6.548	4.018	2.220
	(1.482)[a]	(1.516)[a]	(1.361)[a]	(1.349)[a]	(1.949)[b]	(2.005)
	(3.705)[b]	(3.753)	(3.530)[b]	(3.564)[c]	(4.907)	(4.962)
Public registry	1.348	1.273	8.389	7.782	−5.164	−4.158
	(1.073)	(1.039)	(0.979)[a]	(0.943)[a]	(1.840)[a]	(1.858)[b]
	(3.423)	(3.140)	(2.722)[a]	(2.605)[a]	(5.988)	(5.885)
Inflation	−0.026	−0.009	−0.094	−0.091	0.319	0.416
	(0.056)[a]	(0.063)[a]	(0.029)[a]	(0.028)[a]	(0.234)	(0.271)
	(0.056)	(0.063)	(0.029)[b]	(0.028)[b]	(0.234)	(0.271)
GDP		13.616		5.858		13.229
		(0.949)[a]		(0.934)[a]		(1.857)[a]
		(2.869)[a]		(2.216)[a]		(6.073)[b]
Constant	18.783	−292.346	−2.243	−125.331	94.891	−313.983
	(7.383)[a]	(19.635)[a]	(1.414)	(24.113)[a]	(9.046)[a]	(38.719)[a]
	(12.835)	(58.824)[a]	(2.383)	(57.919)[a]	(22.556)[a]	(125.366)[a]
Year effects	Yes	Yes	Yes	Yes	Yes	Yes
Country effects	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations	2,660	2,645	1,285	1,277	1,375	1,368
R^2	0.8579	0.8697	0.7317	0.7439	0.8370	0.8440



Note: Figures show the average private credit to GDP ratio for all countries with reforms, where private credit to GDP ratios are normalized to 100 at the year of reform.

Fig. 4. Private credit to GDP ratios before and after reforms.

the dependent variable for 21 observations with five-year averages and for 25 with three-year averages.[11]

The results, presented in Panel A, show that, for three- and five-year windows, a one-point increase in the creditor rights score raises the ratio of private credit to GDP by between 6.5 and 8.0 percentage points. The result (displayed in Fig. 4) is statistically significant, and the estimate is quantitatively similar to those in Tables 5 and 6. The control for the average change in the ratio of private credit to GDP among non-reforming countries is not statistically significant. The results also show that, over a five-year horizon, the private credit to GDP ratio rises after the introduction of both public registries and private bureaus by 7 to 8 percentage points. The magnitudes of the effects are smaller than those reported in Table 6, but the results are statistically significant. However, although parameter estimates show a rise in the private credit to GDP ratio over a three-year window around the reform, these results are insignificant.

Panel B presents the results of an alternative strategy of measuring the effects of reform, namely, panel regressions. Here the dependent variable is the ratio of private credit to GDP each year in each sample country, but we introduce both country effects and year effects. Identification here takes advantage only of within-country variation in institutional

[11]In a recent paper, Haselmann, Pistor, and Vig (2005) focus specifically on transition economies to examine the effects of changes in creditor protections on bank lending. Their conclusions are broadly consistent with ours.

variables. A key question in this specification is what standard errors to compute. One possibility is to compute robust standard errors. This strategy does not take account of possible serial correlation of error terms within each country. Another possibility is to cluster standard errors by country, as recommended by Bertrand, Duflo, and Mullainathan (2004), which imposes no restrictions on the possible serial correlation of error terms. With many time-series observations (there are 25 years of data), such a specification could blow up standard errors excessively.[12] Because both strategies have problems, we present both standard errors in Table 7, Panel B.

These panel results yield lower parameter estimates than the findings from the cross-sections in Tables 5 and 6 as well as those in Panel A (a 4 percentage point rise in the private credit to GDP ratio per 1 point improvement in the creditor rights score). The effect is statistically significant for both all and the rich countries using robust standard errors, but only for the rich countries (at the 10% level) using standard errors clustered by country. The effects of private bureaus and of public registries remain of the same magnitude as in the earlier specifications, although again standard errors rise sharply when clustered by country. The evidence on the information-sharing institutions confirms the previous findings; the evidence on creditor rights is weaker both in magnitude and in statistical significance.

Except for the large standard errors clustered by country, the results for reforms, including those from Panel A, support the findings from the cross-section. Both the power and the information channel of credit play a role, and improvements in either channel raise the ratio of private credit to GDP. We recognize that the results in this section are subject to the criticism that the timing of reforms is endogenous and, in particular, could occur when policy makers expect private credit to grow. 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, Lopez-de-Silanes, Shleifer, and Vishny (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

[12]In a conversation, James Stock suggests that, while clustering of standard errors has a modest impact for three- to five-year panels, it often blows up standard errors for longer panels (e.g., 20 years) by a factor of 2–3.

Table 8
Determinants of credit institutions. This table presents ordinary least squares regressions for the year 2003, using a sample of 133 countries that have data on credit institutions. The legal origin variables come from La Porta, Lopez-de-silanes, Shleifer, and Vishny (1999) and are updated with *CIA Factbook* (2003). The religion variables come from Stulz and Williamson (2003) and are updated with *CIA Factbook* (2003). Robust standard errors are shown in parentheses. GDP = gross domestic product. [a] = Significant at the 1% level; [b] = Significant at the 5% level; [c] = Significant at the 10% level.

Independent variable	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)
Number of observations	133	133	133	133	133	133	133	133	133	133	133	133
R^2	0.2191	0.0842	0.2253	0.2295	0.2936	0.1351	0.3099	0.3247	0.4094	0.3814	0.4119	0.4824

significant. We also could not get religion to matter when we construct the more complex variables suggested by Stulz and Williamson.

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.

The result that French legal origins predicts the presence of public credit registries, which in turn benefit credit markets in poorer countries, is consistent with the argument of Djankov, Glaeser, La Porta, Lopez-de-Silanes, and Shleifer (2003) that public ownership and regulation represent solutions to the problem of disorder practiced especially by French civil law countries. Research on the regulation of entry, civil procedure, bank ownership, and the regulation of labor markets has not, however, been able to identify any benefits of this approach to social control of business in developing countries. Perhaps because public registries neither employ significant numbers of people nor can be easily used to discriminate among borrowers for political reasons, they appear to be beneficial. This evidence, then, illustrates a successful public ownership solution to the problem of supporting credit markets in developing countries.

6. Conclusion

Using a new sample of credit institutions in 129 countries over 25 years, we revisit some old and establish some new results on private credit around the world. First, in this large sample, both the cross-sectional evidence and the analysis of reforms show that legal creditor rights and information-sharing institutions are statistically significant and quantitatively important determinants of private credit development. Second, there is no evidence the creditor rights are converging among legal origins, or among rich and poor countries. This evidence contradicts the legal convergence hypothesis, which holds that institutions converge toward the more successful ones over time. Because credit institutions vary so much across countries and legal origins, and because these differences matter for the development of debt markets, this evidence also contradicts the functional convergence hypothesis, which holds that institutions in different countries, while distinct on the surface, functionally converge to accomplish the same goals.

Third, the data show that the effectiveness of alternative institutions varies systematically across countries at different levels of economic development. Most interesting, both private and public credit bureaus are strongly associated with private credit in the poorer, but not the richer, countries, suggesting a role for government in facilitating information sharing.[13] Because public credit registries are especially common in French

[13]These results echo recent research on the role of free media (another mechanism of information sharing) in promoting good outcomes in both economic and political markets (Zingales, 2000; Djankov, La Porta, Lopez-de-Silanes, and Shleifer, 2003). Unlike in the case of the media, however, our data suggest that information sharing through public firms is beneficial, not 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.

legal origin countries, these results highlight a successful civil law response to financial underdevelopment. Such successes have been difficult to identify in other domains of social control of business. These results suggest that the choice between common and civil law approaches to solving economic problems is a matter of comparative advantage of alternative strategies of social control and not just of the absolute advantage of common law solutions.

Appendix A

Table A.1
Reforms to creditor rights index

This table lists the 32 changes in the variable creditor rights during the 1978–2004 period.

Country	Year of reform	Change in creditor rights
Austria	1982	−1
Denmark	1984	1
United Kingdom	1985	1
Ireland	1990	−1
Canada	1992	−1
Finland	1993	−2
India	1993	−1
Russian Federation	1994	1
Romania	1994	1
Israel	1995	−1
Sweden	1995	−1
Lithuania	1995	1
Armenia	1996	−1
Azerbaijan	1997	1
Kazakhstan	1997	1
Mongolia	1997	1
Niger	1998	−2
Indonesia	1998	−1
Russian Federation	1998	−1
Kazakhstan	1998	1
Lithuania	1998	1
Thailand	1999	−1
Ukraine	1999	−1
Japan	2000	−1
Malawi	2000	−1
Bulgaria	2000	1
Kazakhstan	2001	−1
Uruguay	2001	1
Japan	2002	1
Romania	2003	1
Russian Federation	2004	1
Spain	2004	1

Appendix B

Table B.1
Reforms in bankruptcy laws

This table lists the 162 reforms in bankruptcy laws in 99 countries, during the 1978–2004 period.

Country	Reforms 1978–2004	Country	Reforms 1978–2004	Country	Reforms 1978–2004
Albania	1992, 1995, 1996, 2002	Guinea	1992, 1998	Papua New Guinea	None
Algeria	None	Haiti	None	Paraguay	None
Angola	None	Honduras	None	Peru	1992, 1996, 1999, 2002
Argentina	1995, 2002	Hong Kong, China	None	Philippines	2000
Armenia	1995, 2003	Hungary	1986, 1991, 1993, 1997, 2000	Poland	1990, 2003
Australia	1989, 1991, 1992, 2001	India	1985, 1986, 1993, 2002	Portugal	1986, 1993, 1998, 2004
Austria	1982	Indonesia	1998	Puerto Rico	1978, 1994
Azerbaijan	1994, 1997	Iran	None	Romania	1990, 1995, 2004
Bangladesh	1997	Ireland	1990, 1999, 2001	Russian Federation	1992, 1998, 2002, 2004
Belarus	1991, 2001,	Israel	1995, 1999, 2002	Rwanda	None
Belgium	1997, 2002	Italy	1979, 1999, 2003	Saudi Arabia	1996
Benin	1998	Jamaica	None	Senegal	1984, 1998
Bolivia	2003	Japan	2000, 2002	Serbia and Montenegro	1989, 1993, 1996
Bosnia and Herzegovina	1989, 1994, 1998, 2003	Jordan	None	Sierra Leone	None
Botswana	1981	Kazakhstan	1992, 1995, 1997, 1998, 2001	Singapore	1994, 1995
Brazil	2004	Kenya	None	Slovak Republic	1991, 1993, 1998, 2000
Bulgaria	1989, 1994, 2000, 2003	Korea, Republic of	1991, 1998	Slovenia	1994, 1997
Burkina Faso	1991, 1998	Kuwait	1980	South Africa	1984, 1998
Burundi	None	Kyrgyz Republic	1994, 1997, 1999, 2002	Spain	2004
Cambodia	None	Lao People's Democratic Republic	1994	Sri Lanka	1982

Table B.1 (*continued*)

This table lists the 162 reforms in bankruptcy laws in 99 countries, during the 1978–2004 period.

Country	Reforms 1978–2004	Country	Reforms 1978–2004	Country	Reforms 1978–2004
Cameroon	1998	Latvia	1991, 1996, 2002	Sweden	1979, 1987, 1996, 2003
Canada	1992, 1997	Lebanon	None	Switzerland	1994
Central African Republic	1998	Lesotho	None	Syrian Arab Republic	None
Chad	1998	Lithuania	1992, 1995, 1997, 2001	Taiwan, China	1980
Chile	1982	Macedonia	1989, 1997	Tanzania	None
China	1986, 1991	Madagascar	None	Thailand	1998, 1999
Colombia	1989, 1995, 1999	Malawi	1984, 2000	Togo	1988, 1998
Congo, Democratic Republic of	None	Malaysia	1998, 2000	Tunisia	1995, 1999, 2003
Congo, Republic of the	1998	Mali	1986, 1992, 1998	Turkey	2003, 2004
Costa Rica	1989, 1996	Mauritania	2000	Uganda	None
Cote d'Ivoire	1998	Mexico	2000	Ukraine	1992, 1999, 2002
Croatia	1989, 1994, 1997, 2000	Moldova	1992, 1996, 2001	United Arab Emirates	1984, 1993
Czech Republic	1991	Mongolia	1991, 1997	United Kingdom	1985, 1986, 2000, 2002
Denmark	1984	Morocco	1996	United States	1978, 1994
Dominican Republic	None	Mozambique	None	Uruguay	2001
Ecuador	1997	Namibia	None	Uzbekistan	1994, 1998, 2003
Egypt, Arab Republic of	1999	Nepal	None	Venezuela	None
El Salvador	None	Netherlands	1992	Vietnam	1993
Ethiopia	None	New Zealand	1993	Yemen, Republic of	1991, 1998
Finland	1985, 1991, 1993, 1995	Nicaragua	None	Zambia	1994
France	1984, 1985, 1994	Niger	1997, 1998	Zimbabwe	1998
Georgia	1996, 2001	Nigeria	1990		
Germany	1994, 1999	Norway	1984		
Ghana	None	Oman	1990		
Greece	1983, 1990	Pakistan	1984		
Guatemala	None	Panama	None		

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