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Law, endowments, and finance ☆

Thorsten Beck[a], Asli Demirgüç-Kunt[a], Ross Levine[b,c,*]

[a] *The World Bank, Washington, DC 20433, USA*
[b] *Department of Finance, Carlson School of Management, University of Minnesota, Minneapolis, MN 55455, USA*
[c] *National Bureau of Economic Research, Inc., Cambridge, MA 02138-5398, USA*

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Abstract

Using a sample of 70 former colonies, this paper assesses two theories regarding the historical determinants of financial development. The law and finance theory holds that legal traditions, brought by colonizers, differ in terms of protecting the rights of private investors vis-à-vis the state, with important implications for financial markets. The endowment theory argues that the disease environment encountered by colonizers influences the formation of long-lasting institutions that shape financial development. The empirical results provide evidence for both theories. However, initial endowments explain more of the cross-country variation in financial intermediary and stock market development.

JEL classification: G2; K2; O11; P51

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*Corresponding author. Department of Finance, Carlson School of Management, University of Minnesota, Minneapolis, MN 55455, USA. Tel.: +1-612-624-9551; fax: +1-612-626-1335.
E-mail address: rlevine@csom.umn.edu (R. Levine).

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1. Introduction

A substantial body of work suggests that well-functioning financial intermediaries and markets promote economic growth (see, e.g., Levine, 1997). The view that financial systems exert a first-order impact on economic growth raises critical questions: How have some countries developed well-functioning financial systems, while others have not? Why do some countries have strong laws and property rights protection that support private contracting and financial systems, while others do not? While considerable research examines the finance-growth relationship, much less work examines the fundamental sources of differences among nations in financial development.

This paper empirically evaluates two theories concerning the historical determinants of financial systems. First, the *law and finance* theory holds that: (a) legal traditions differ in terms of the priority they attach to protecting the rights of private investors vis-à-vis the state; (b) private property rights protection forms the basis of financial contracting and overall financial development; and, (c) the major legal traditions were formed in Europe centuries ago and were then spread through conquest, colonization, and imitation (see La Porta et al., 1998, henceforth LLSV). Thus, the law and finance theory predicts that historically determined differences in legal traditions help explain international differences in financial systems today.

The law and finance theory focuses on the differences between the two most influential legal traditions, the British Common law and the French Civil law (see, e.g., Hayek, 1960; LLSV, 1998). According to this theory, the British Common law evolved to protect private property owners against the crown (Merryman, 1985).[1] This facilitated the ability of private property owners to transact confidently, with positive repercussions on financial development (North and Weingast, 1989). In contrast, the French Civil law was constructed to eliminate the role of a corrupt judiciary, solidify state power, and restrain the courts from interfering with state policy.[2] Over time, state dominance produced a legal tradition that focuses more on

[1] While landholding rights in England were originally based on King William I's feudal system, the courts developed legal rules that treated large estate holders as private property owners and not as tenants of the king. Indeed, the common law at the dawn of the 17th century was principally a law of private property (e.g., Littleton, 1481; Coke, 1628). During the great conflict between Parliament and the English kings in the 16th and 17th centuries, the crown attempted to reassert feudal prerogatives and sell monopoly rights to cope with budgetary shortfalls. Parliament (composed mostly of landowners and wealthy merchants) along with the courts took the side of the property owners against the crown. While King James I argued that royal prerogative superseded the common law, the courts asserted that the law is king, *Lex*, *Rex*. The Stuarts were thrown out in 1688.

[2] By the 18th century, there was a notable deterioration in the integrity and prestige of the judiciary. The crown sold judgeships to rich families and the judges unabashedly promoted the interests of the elite. [Refer to Dawson, 1968, p. 373]. Unsurprisingly, the French Revolution strove to eliminate the role of the

the rights of the state and less on the rights of individual investors than the British Common law (Hayek, 1960; Mahoney, 2001). According to the law and finance theory, a powerful state with a responsive legal system will have the incentives and capabilities to divert the flow of society's resources from optimal toward favored ends, and therefore this power will hinder the development of free, competitive financial systems. Thus, the law and finance theory predicts that countries that have adopted a French Civil law tradition will tend to place less emphasis on private property rights protection and will enjoy correspondingly lower levels of financial development than countries with a British Common law tradition.

The law and finance theory focuses on the origin of a country's legal tradition. The French imposed the Napoleonic Code in all conquered lands and colonies. Furthermore, the Code shaped the Spanish and Portuguese legal systems, which further spread the French Civil law to Spanish and Portuguese colonies. Similarly, the British instituted the Common law in its colonies. According to the law and finance theory, the spread of legal traditions had enduring influences on national approaches to private property rights and financial development—British colonizers advanced a legal tradition that stresses private property rights and fosters financial development, whereas in contrast colonizers that spread the French Civil law implanted a legal tradition that is less conducive to financial development.

The endowment theory, on the other hand, emphasizes the roles of geography and the disease environment in shaping institutional development; we apply this theory to the development of private property rights and financial institutions. Acemoglu et al. (2001, henceforth AJR) base their theory on three premises. First, AJR note that Europeans adopted different types of colonization strategies. At one end of the spectrum, the Europeans settled and created institutions to support private property and check the power of the state. These settler colonies include the United States, Australia, and New Zealand. At the other end of the spectrum, Europeans did not aim to settle but rather to extract as much from the colony as possible. In these "extractive states," Europeans did not create institutions to support private property rights; instead, they established institutions that empowered the elite to extract gold, silver, etc. (e.g., Congo, Ivory Coast, and much of Latin America).

The second component of AJR's theory holds that the type of colonization strategy was heavily influenced by the feasibility of settlement. Mortality rates were startlingly high in some places. In the first year of the Sierra Leone Company, 72 percent of the Europeans died. In the 1805 Mungo park expedition in Gambia and Niger, all of the Europeans died before completing the trip. In these inhospitable environments, Europeans tended to create extractive states (AJR, 2001). In areas where endowments favored settlement, Europeans tended to form settler colonies.

(*footnote continued*)
judiciary in making and interpreting the law. Robespierre even argued that, "the word jurisprudence... must be effaced from our language." [Quoted from Dawson, 1968, p. 426] Glaeser and Shleifer (2002) explain how antagonism toward jurisprudence and the exaltation of the role of the state encouraged the development of easily verifiable "bright-line-rules" that do not rely on the discretion of judges. Thus, codification supported the strengthening of the government and relegated judges to a relatively minor, bureaucratic role.

For instance, AJR note that the Pilgrims decided to settle in the American colonies instead of Guyana partially because of the high mortality rates in Guyana. Moreover, Curtin (1964, 1998) documents that European newspapers published colonial mortality rates widely, so that potential settlers would have information about colonial endowments. Thus, according to the endowment theory, the disease environment shaped colonization strategy and the types of institutions established by European colonizers.

The final piece of the AJR theory of institutional development stresses that the institutions created by European colonizers endured after independence. Settler colonies tended to produce post-colonial governments that were more democratic and more devoted to defending private property rights than extractive colonies. In contrast, since extractive colonies had institutions for effectively extracting resources, the post-colonial elite frequently assumed power and readily exploited the pre-existing extractive institutions. Young (1994) presents historical evidence that once authoritarian institutions are efficiently extracting resources from the bulk of society, post-independence rulers tend to use these institutions to their own advantage and profit. This was the case in Sierra Leone, Senegal, and Congo. Latin America was similar. For instance, while Mexicans gained independence from European colonialists, the elite that assumed power took advantage of the existing institutions to extract resources rather than create institutions to protect private property contracts, and foster broad-based economic development. Furthermore, Engerman et al. (1998) demonstrate the long-lasting impact of initial institutions on voting rights: once regimes restrict voting rights to protect the elite from the masses, the government tends to resist changes in suffrage policies for long periods.

While AJR (2001) focus on institutional development in general, their theory is applicable to the financial sector. In an extractive environment, colonizers will not construct institutions that favor the development of free, competitive financial markets because competitive markets may threaten the position of the extractors. In settler colonies, however, colonizers will be much more likely to construct institutions that protect private property rights and hence foster financial development. Thus, according to the endowment theory, differences in endowments shaped initial institutions and these initial institutions have had long-lasting repercussions on private property rights protection and financial development.[3]

Although the law and endowment theories both stress the importance of initial institutions in shaping the financial systems we observe today, they highlight very different causal mechanisms. The law and finance theory focuses on the legal

[3] Engerman and Sokoloff (1997) note another channel through which geographical endowments shape initial institutions with enduring effects on economic development. Namely, they show that agriculture in southern North America and much of South America is conducive to large plantations. Thus, colonists developed long-lasting institutions to protect the few landowners against the many peasants. In contrast, northern North America's agriculture is conducive to small farms, so more egalitarian institutions emerged. Thus, again, endowments influence the formation of institutions associated with openness and competition. Our primary reason for focusing on the AJR (2001) measure of settler mortality and not also examining agricultural endowments is that AJR (2001) have assembled data for a broad cross-section of countries.

tradition brought by the colonizer. The endowment theory focuses on the disease and geography endowments encountered by the colonizer and how these endowments shaped both colonization strategy and the construction of long-lasting institutions. In the law and finance theory, the identity of the colonizer is crucial, but the identity of the colonizer is irrelevant according to the endowment theory. Similarly, in the endowment theory, the endowments of the lands where Europeans arrived are crucial, but the law and finance theory gives no weight to the mortality rates of European colonizers in explaining the development of today's private property rights and financial systems. This is admittedly overstated. Proponents of the law and finance theory do not argue that endowments are irrelevant. Similarly, proponents of the endowment theory do not contend that legal origin is irrelevant. Rather, each theory articulates very distinct mechanisms about how the colonization period shaped national views toward private property rights and financial development. We stress—and empirically evaluate—these distinct predictions. While these two explanations of financial development offer very different causal mechanisms, they are not necessarily mutually exclusive.

To evaluate empirically the law and endowment theories of financial development, we use cross-country regressions on a sample of 70 former colonies, for reasons described below. We examine whether cross-country differences in financial institutions are accounted for by cross-country differences in legal tradition and/or initial endowments, while controlling for other possible determinants. To measure financial development, we use measures of: (i) financial intermediary development; (ii) equity market development; and, (iii) private property rights protection. For simplicity, we use the term "financial development" to refer to each of these three measures. We measure financial development over the period 1990–1995. To measure legal tradition, we use the LLSV (1999) indicators specifying whether the country has a British or French legal tradition, as determined by the origin of each country's Company/Commercial law. To measure initial endowments, we primarily use the AJR measure of settler mortality rates as European settlers arrived in various parts of the globe. For robustness, we also use the absolute value of the latitude of each country as an alternative, albeit less precise, indicator of initial endowments, since many authors argue that tropical climates are not conducive to institutional and economic development. In conducting the cross-country comparisons, we control for other potential determinants of financial development. Specifically, we include measures of ethnic diversity, religious composition, years of independence since 1776, and continent dummy variables. Further, we also assess whether the political structure of a country is the only mechanism through which the legal tradition and initial endowments influence current financial development.

We focus on a sample of 70 former colonies for two reasons. First, we have the AJR (2001) data on settler mortality, which is a key building block of AJR's (2001) empirical assessment of the endowment theory. Second, some observers stress that European colonization offers a unique break, i.e., a natural identifying condition (AJR, 2001, 2002; Engerman and Sokoloff, 1997). As European conquerors and colonizers landed, they brought different legal traditions. Colonization represents a period during which legal traditions were exogenously established around the globe

and thus provides a natural starting point for examining the law and endowment theories of financial development. For these reasons, we use a sample of 70 former colonies with data on settler mortality. This sample only includes countries with British and French legal origins.

This paper makes four contributions.[4] First, this paper applies AJR's (2001) endowment theory of institutions directly to the study of financial development. Although AJR (2001) carefully document the connections running from endowments to institutions to the level of economic development today, we examine whether initial colonial endowments explain a wide array of current measures of financial development. Since financial development helps explain technological innovation, the efficiency of capital allocation across industries and firms, output volatility, the likelihood of a systemic banking crisis, and economic growth, even when controlling for the levels of economic and institutional development, it is important to assess whether endowments influence financial development.[5] Second, this is the first paper to consider simultaneously the legal and endowment views of financial development. This is crucial to assessing two very different visions of how the institutions founded by Europeans continue to shape national approaches to private property and financial systems in former colonies. Third, although others have shown that legal tradition shapes financial development (LLSV, 1997, 1998, 2000), this paper goes much further in evaluating the robustness of the law and finance view by controlling for endowments, religion, ethnic diversity, length of independence, etc. This assessment is critical if we are to have much confidence in legal theories of financial development. Fourth, while some analysts argue that the structure and competitiveness of the political system shapes institutions and policies, this is the first paper to examine whether legal origin and both disease and geographical endowments explain cross-country differences in financial development beyond their ability to account for differences in national political systems.

The paper is organized as follows. Section 2 describes the data and presents figures that motivate the analysis. Section 3 discusses the regression results, and a series of robustness tests are presented in Section 4. Section 5 concludes.

2. Data and initial assessments

This section describes the data and presents figures that document: (1) British Common law countries tend to have higher levels of financial development than

[4] Pivovarsky (2001) also examines the relationship between institutions and financial development. He analyzes the impact of current institutions, instrumented by settler mortality and legal origin, on financial development and finds a strong effect of the exogenous component of institutions on financial development. Our contribution is distinct, however, in that we compare the direct effects of endowments and legal origin on financial system development.

[5] In particular, see Beck et al. (2000) on the finance and productivity growth relationship, Wurgler (2000) on the finance and industry allocation of capital relationship, Demirgüç-Kunt and Maksimovic (1998) on the finance and firm growth link, Demirgüç-Kunt and Detragiache (2002) on the finance and crisis relationship, Easterly et al. (2000) on the finance and output volatility link, and Levine and Zervos (1998), Rajan and Zingales (1998), and Beck and Levine (2002, 2003) on the finance–growth relationship.

French Civil law countries; and, (2) countries with high levels of European mortality during the initial stages of colonization tend to have lower levels of financial development than those countries with initially low settler-mortality rates.

2.1. Financial development

To measure financial development, we use indicators of financial intermediary development, stock market development, and property rights protection. The goal is to proxy for the degree to which national financial systems facilitate the acquisition of firm information, ease corporate governance, help agents manage risk, and mobilize savings effectively. Unfortunately, we do not have direct and comparable measures of the ability of national financial systems to provide these benefits for a broad cross-section of countries. Thus, we use a variety of indicators of financial development to assess the connections between law, endowments, and finance.

PRIVATE CREDIT equals financial intermediary credits to the private sector divided by gross domestic product (GDP) and is measured over 1990–1995. PRIVATE CREDIT excludes credit to the public sector and cross-claims between financial intermediaries, and thus measures the amount of savings that is channeled through debt-issuing financial intermediaries to private borrowers. For most countries, PRIVATE CREDIT is obtained from data available from the International Monetary Fund (IMF). To maximize the size of the sample, however, we also use World Bank data sources for a few countries that lack IMF data; the countries and sources are specified in the data appendix. Past work shows a strong connection between PRIVATE CREDIT and economic growth (see Levine et al., 2000). PRIVATE CREDIT ranges from values above 0.9 in the United States, Hong Kong, Singapore, South Africa, and Malaysia, to values less than 0.03 in Sierra Leone, Uganda, Angola, and Zaire.

STOCK MARKET DEVELOPMENT equals the total value of outstanding equity shares as a fraction of GDP and is averaged over the period 1990–1995.[6] This measures the overall size of the equity market relative to the size of the economy.[7] The data are primarily collected from the World Bank's International Finance Corporation. However, we use additional data sources to complete the dataset, as specified in the appendix. There are large cross-country differences as shown in

[6] For both STOCK MARKET DEVELOPMENT and PRIVATE CREDIT, we have conducted the analyses using data averaged over the 1975–1995 period instead of the 1990–1995 period. We get the same results. Since there are fewer countries with data over the 1975–1995 period, we present the results with the 1990–1995 averages.

[7] Since there are differences in ownership concentration across countries, LLSV (1998) suggest using an adjustment whereby STOCK MARKET DEVELOPMENT is multiplied by one minus the median ownership share of the three largest shareholders in the ten largest non-financial, privately-owned domestic firms in the country. This paper obtains the same conclusions using this adjusted measure. Since we only have these ownership share figures for a sub-sample of countries, however, making this adjustment substantially reduces our dataset. Thus, we report the results using the standard STOCK MARKET DEVELOPMENT indicator for market size.

Table 1, Panel A. STOCK MARKET DEVELOPMENT is greater than 0.65 in the United States, Chile, Singapore, South Africa, Hong Kong, and Malaysia, and is indistinguishable from zero in 29 countries.

PROPERTY RIGHTS is an index of the degree to which the government enforces laws that protect private property. The data are for 1997 and were obtained from LLSV (1999) and the Index of Economic Freedom. While PRIVATE CREDIT and STOCK MARKET DEVELOPMENT are direct measures of the size of financial intermediaries and equity markets respectively, PROPERTY RIGHTS does not directly measure the size of a component of the financial sector. Rather, PROPERTY RIGHTS measures a key input into the efficient operation of financial contracts and the development of formal financial institutions: the degree of protection of private property rights. The law and endowment theories stress the degree to which national institutions emphasize private property rights versus the rights of the state. This difference in emphasis may influence a variety of indicators of financial development. While PROPERTY RIGHTS as defined is one attempt to measure this difference, there may be measurement problems or other differences in emphasis on state versus private rights that affect financial contracting beyond narrow indicators of property rights protection. Hence, we examine a variety of financial development indicators. The maximum value of PROPERTY RIGHTS is five, while a value of one indicates the weakest property rights protection. Nine former colonies have the maximum value of five. Only Haiti and Rwanda have the minimum value of one, while 15 countries have a value of two for PROPERTY RIGHTS. We do not have data on PROPERTY RIGHTS for the Central African Republic, so there are only 69 countries in the PROPERTY RIGHTS regressions.

2.2. Legal origin

LLSV (1998, 1999) identify the legal origin of each country's company or commercial law as French, British, German, Scandinavian, or Socialist.[8] Given we are examining former colonies with data on settler mortality from AJR (2001), we

[8] One may further refine the categorization of legal traditions, as described by the following examples. First, Franks and Sussman (1999) and Coffee (2000) describe differences in two Common law countries: the United Kingdom and the United States. While in the U.K. there is freedom of contracting (Glendon et al., 1982), in the U.S. the judiciary has a more important role to play in developing law. In both systems, however, the legislature does not have a monopoly on creating law, as in the original French legal system, as designed by Napoleon. In both the U.K. and the U.S., case law is a source of law, while not in France. Second, different colonization strategies may have intensified differences across legal traditions. England did not try to replace Islamic, Hindu, or African law. English courts in the colonies, therefore, used local laws and customs in deciding cases. This quickly produced an Indian Common law distinct from English Common law. While perhaps chaotic, this allowed for the integration of common law with local circumstances. In contrast, the French imposed the Code although serious conflicts frequently existed with local customs. Also, legal scholars study differences across the French Civil law countries of Latin America. While recognizing that each country's legal system is special, the comparative law literature clearly emphasizes that there are key differences across the major legal families

have data for only French and British legal-origin countries.[9] Thus, we do not include many of the most developed countries in the LLSV (1998, 1999) sample. The FRENCH LEGAL ORIGIN dummy variable equals one if the country adopted its company/commercial law from the French Civil law and zero otherwise. In the regressions, British legal origin is captured in the constant.

Fig. 1 clearly shows that financial development is substantially higher in countries with a British Common law tradition than in countries with a French Civil law tradition. French Civil law countries have, on average, lower levels of PRIVATE CREDIT, STOCK MARKET DEVELOPMENT, and PROPERTY RIGHTS than British Common law countries. There are 45 French Civil law countries and 25 British Common law countries. Table 1, Panel B correlations confirm Fig. 1: the FRENCH LEGAL ORIGIN dummy variable is significantly, negatively correlated with each of the three financial development indicators. Furthermore, Fig. 2 illustrates that in Common law countries, eight countries have PRIVATE CREDIT greater than 0.6 (Australia, Canada, New Zealand, Malaysia, Singapore, South Africa, Hong Kong, and the United States), while among French Civil law countries, only Malta has PRIVATE CREDIT greater than 0.6.

Fig. 2 also demonstrates clearly that legal origin does not completely explain the cross-country variation observed in financial systems today. Fig. 2 documents that there are many Common law countries with poorly developed financial intermediaries, and a few French legal origin countries that have well-developed financial intermediaries. For instance, many Common law countries have PRIVATE CREDIT less than 0.3, with countries such as Uganda, Sierra Leone, Ghana, Sudan, and Tanzania registering extremely low PRIVATE CREDIT levels. Thus, we need to know more than legal origin to account for cross-country differences in financial systems.

2.3. Endowments

As Europeans arrived around the world, they encountered very different environments. In some lands, Europeans found hospitable environments. In others, conditions were less hospitable and Europeans died in large numbers. According to AJR (2001), these location specific endowments fundamentally influenced the types of long-lasting institutions created by European colonists.

To measure endowments, we use the AJR (2001) measure of SETTLER MORTALITY. AJR (2001) compile data on the death rates faced by settlers. Curtin (1989) constructs data on the mortality and disease rates of European soldiers in colonies during the early nineteenth century. The raw data come from the British,

[9] Although we have data on settler mortality for Vietnam and Myanmar (which are classified as socialist legal origin countries by LLSV, 1999), we do not include these two countries because we do not have comparable information on financial development for these economies. Also, there are 70 countries in our sample of former colonies with settler mortality data. We also constructed a larger sample of 95 non-European countries. This 95-country sample, however, does not have settler mortality data. For the 95-country sample, we conducted the analyses using latitude instead of settler mortality and obtained the same results reported below.

Table 1
Summary statistics and correlations
Summary statistics are presented in Panel A and correlations are presented in Panel B, respectively. Private Credit is the value of credits by financial intermediaries to the private sector as a share of GDP. Stock Market Development measures the value of shares listed on the stock exchange as a share of GDP. Property Rights reflects the degree to which government enforces laws that protect private property, with higher numbers indicating better enforcement. French Legal Origin is a dummy variable that takes on the value one for countries with French Civil law tradition, and zero otherwise. Settler Mortality is the log of the annualized deaths per thousand European soldiers in European colonies in the early 19th century. Latin America and Africa are dummy variables that take the value one if the country is located in Latin America or Sub-Saharan Africa, respectively. Catholic, Muslim, and Other Religion indicate the percentage of the population that follows a particular religion (Catholic, Muslim, or religions other than Catholic, Muslim, or Protestant, respectively). Independence is the percentage of years since 1776 that a country has been independent. Ethnic Fractionalization is the probability that two randomly selected individuals in a country will not speak the same language. Legislative Competition is an indicator of competition in the last legislative election. Checks measures the number of veto-players in the political decision making process. These last two measures are averaged over 1990–1995. Detailed variable definitions and sources are given in the data appendix.

Panel A: *Summary statistics*:

	N	Mean	Std. dev	Min	Max
Private Credit	70	0.32	0.30	0.01	1.48
Stock Market Development	70	0.19	0.40	0.00	1.89
Property Rights	69	3.12	0.99	1.00	5.00
French Legal Origin	70	0.64	0.48	0.00	1.00
Settler Mortality	70	4.67	1.24	2.15	7.99
Africa	70	0.40	0.49	0.00	1.00
Latin America	70	0.36	0.48	0.00	1.00
Catholic	70	39.44	36.89	0.10	97.3
Muslim	70	23.90	33.87	0.00	99.4
Other Religion	70	25.79	23.58	0.30	86.0
Independence	70	0.32	0.32	0.00	1.00
Ethnic Fractionalization	70	0.42	0.31	0.00	0.89
Legislative Competition	68	5.81	1.62	1.00	7.00
Checks	68	2.68	1.40	1.00	6.00

Panel B: *Correlation matrix of variables*

	Private Credit	Stock Market Develop-ment	Property Rights	French Legal Origin	Settler Mortality	Africa	Latin America	Catholic	Muslim	Other Religion	Indepen-dence	Ethnic Fractiona-lization	Legislative Competi-tion
Stock Market Development													
Property Rights	0.618***	0.487***											
French Legal Origin	−0.370***	−0.430***	−0.461***										
Settler Mortality	−0.669***	−0.528***	−0.438***	0.238**									
Africa	−0.408***	−0.228*	−0.426***	0.061	0.651***								
Latin America	−0.105	−0.140	0.064	0.244**	−0.178	−0.609***							
Catholic	−0.133	−0.194	−0.114	0.479***	−0.118	−0.356***	0.706***						
Muslim	−0.157	−0.141	−0.103	0.006	0.271**	0.240**	−0.500***	−0.652***					
Other Religion	0.283**	0.421***	0.187	−0.552***	−0.137	0.166	−0.379***	−0.548***	−0.175				
Independence	0.057	−0.016	0.041	0.330***	−0.323***	−0.475***	0.630***	0.700***	−0.421***	−0.384***			
Ethnic Fractionalization	−0.269**	−0.062	−0.213*	−0.076	0.433***	0.718***	−0.551***	−0.370***	0.229*	0.229*	−0.437***		
Legislative Competition	0.408***	0.271**	0.401***	−0.032	−0.601***	−0.699***	0.513***	0.425***	−0.387***	−0.143	0.392***	−0.506***	
Checks	0.378***	0.323**	0.373***	−0.202*	−0.497***	−0.543***	0.383***	0.248**	−0.285**	−0.010	0.317***	−0.306**	0.664***

*, **, *** indicate significance levels of 10%, 5%, and 1%, respectively.

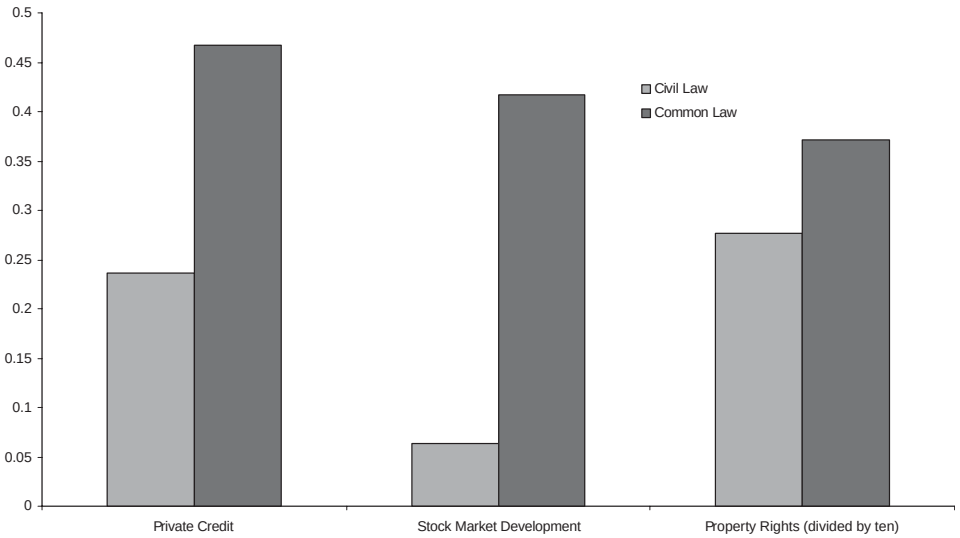


Fig. 1. Financial development across Common and Civil law countries. Private Credit is the value of credits by financial intermediaries to the private sector as a share of GDP. Stock Market Development measures the value of shares listed on the stock exchange as a share of GDP. Property Rights reflects the degree to which government enforces laws that protect private property, with higher numbers indicating better enforcement. Civil law countries are countries whose legal system is of French Civil law origin, whereas Common law countries are countries whose legal system is of British Common law origin.

French, and United States governments during the period 1817–1848. The standard measure is annualized deaths per thousand soldiers, with each death replaced by a new soldier. Curtin (1998) adds similar data on soldier mortality during the second half of the nineteenth century. Finally, Gutierrez (1986) uses Vatican records to construct estimates of the mortality rates of bishops in Latin America from 1604 to 1876. Since some of these data overlap with Curtin's separate estimates, AJR confirm the compatibility of the two data series before constructing an overall measure of the logarithm of annualized deaths per thousand Europeans, SETTLER MORTALITY, for a large group of former colonies. As in AJR (2001), we use the logarithm to diminish the impact of outliers. The AJR (2001) measure forms the core of our analysis of the relation between endowments and finance. This measure ranges from 2.15 (Australia and New Zealand) to 7.99 (Mali).

Fig. 3 shows a generally negative, though certainly not linear, relation between SETTLER MORTALITY and financial development.[10] The absence of a linear relationship is especially pronounced for STOCK MARKET DEVELOPMENT since many countries have stock market capitalization ratios of zero. Consequently, we use a Tobit estimator to check our results. Table 1, Panel B shows that there is a

[10] When we experimented with a non-linear transformation (e.g., the inverse of the log settler mortality rate), we obtain the same conclusions discussed below. Furthermore, we re-ran the analyses using the logarithm of PRIVATE CREDIT. Again, we confirm the conclusions discussed below.

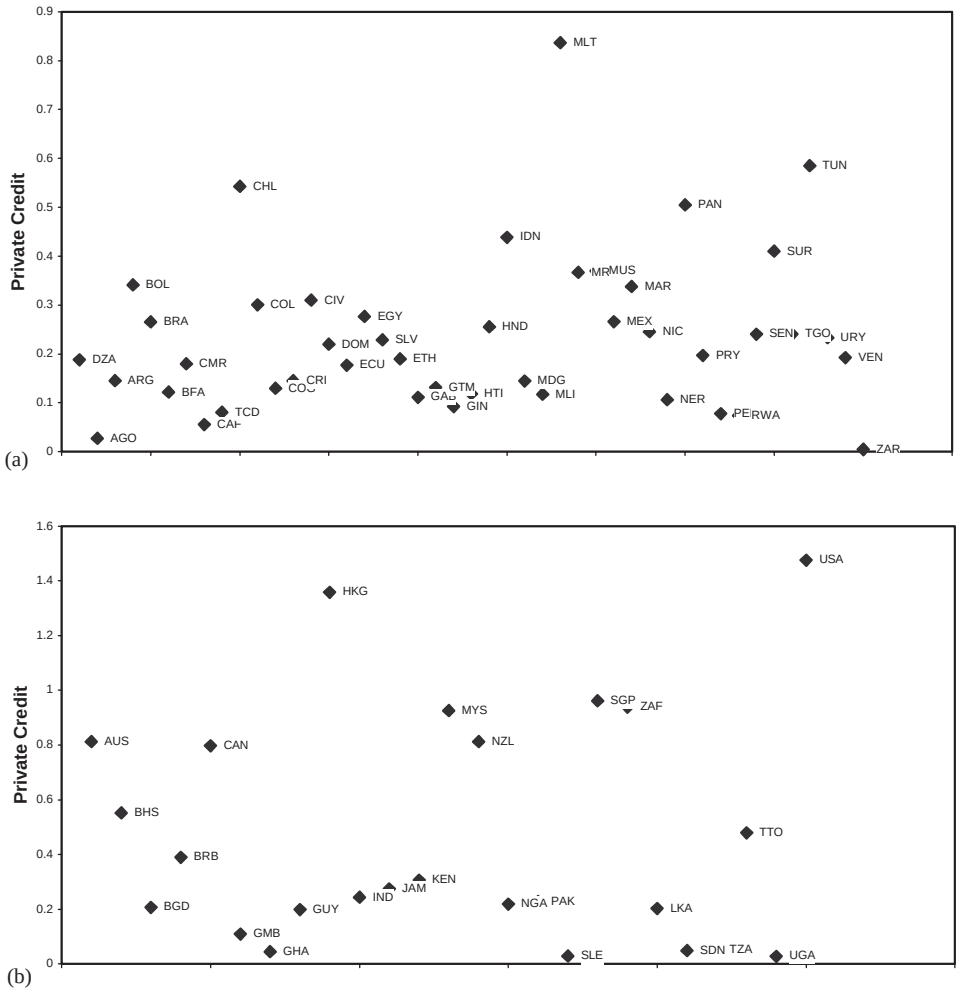
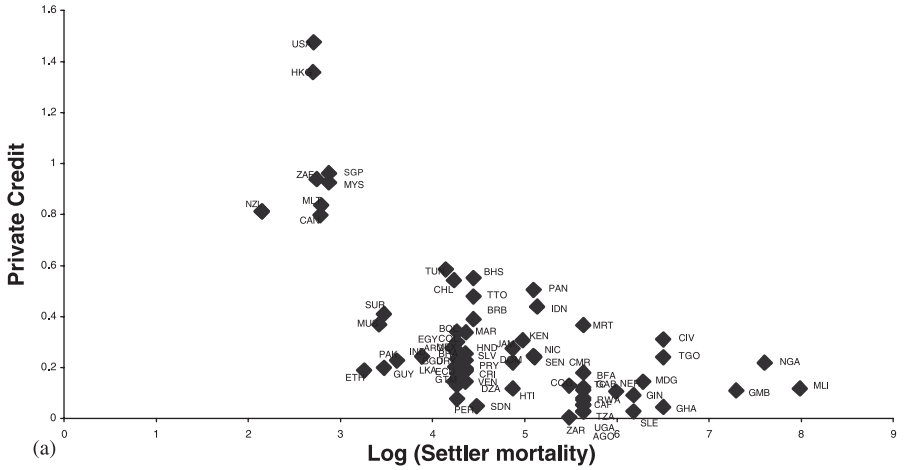


Fig. 2. (a) Private credit in Civil law countries: Private Credit is the value of credits by financial intermediaries to the private sector as a share of GDP. Civil law countries are countries whose legal system is of French Civil law origin, whereas Common law countries are countries whose legal system is of British Common law origin. There are 45 Civil law and 25 Common law countries in the sample. (b) Private Credit in Common law countries: Private Credit is the value of credits by financial intermediaries to the private sector as a share of GDP. Civil law countries are countries whose legal system is of French Civil law origin, whereas Common law countries are countries whose legal system is of British Common law origin. There are 45 Civil law and 25 Common law countries in the sample.

significant, negative correlation between SETTLER MORTALITY and each of the three financial development indicators at the one-percent significance level. The data indicate that in colonies where early settlers found very inhospitable environments, we do not observe well-developed financial systems today.


Private Credit
Log (Settler mortality)
(a)
Stock Market Development
Log(Settler Mortality)
(b)
Property Rights
Log (Settler Mortality)
(c)

2.4. Other possible determinants of financial development

To assess the robustness of our results, we include several other potential determinants of financial development in our empirical analysis. ETHNIC FRACTIONALIZATION measures the probability that two randomly selected individuals from a country are from different ethnolinguistic groups. LSSV (1999, p. 231) argue, "...political theories predict that, as ethnic heterogeneity increases, governments become more interventionist." Recent studies show that in highly ethnically diverse economies, the group that comes to power tends to implement policies that: (a) expropriate as many resources as possible from the ethnic losers; (b) restrict the rights of other groups; and, (c) prohibit the growth of industries or sectors that threaten the ruling group (see, e.g., Alesina et al., 1999; Easterly and Levine, 1997). When this view is applied to the financial sector, the implication is clear: greater ethnic diversity implies the adoption of policies and institutions that are focused on maintaining power and control, rather than on creating an open and competitive financial system. Table 1, Panel B indicates that there is a significant, negative correlation between ETHNIC FRACTIONALIZATION and PRIVATE CREDIT. Thus we include ETHNIC FRACTIONALIZATION to examine the independent impacts of law and endowments on financial development.

INDEPENDENCE equals the fraction of years since 1776 that a country has been independent. We include this measure because a longer period of independence may provide greater opportunities for countries to develop institutions, policies, and regulations independent of their colonial heritage. In the simple correlations, however, we do not find a significant link between INDEPENDENCE and financial development.

We also examine religious composition. Many scholars argue that religion shapes national views regarding property rights, competition, and the role of the state (LLSV, 1999; Stulz and Williamson, 2003). Putnam (1993, p. 107), for instance, contends that the Catholic Church fosters "vertical bonds of authority" rather than "horizontal bonds of fellowship." Similarly, Landes (1998) argues that Catholic and Muslim countries tend to develop xenophobic cultures and powerful bonds between church and state to maintain control, bonds which limit competition and private property rights protection.

Fig. 3. (a) Settler Mortality and Private Credit: Private Credit is the value of credits by financial intermediaries to the private sector as a share of GDP. Settler Mortality is the log of the annualized deaths per thousand European soldiers in European colonies in the early 19th century. The sample comprises 70 countries of Common law and French Civil law origin. (b) Settler Mortality and Stock Market Development: Stock Market Development measures the value of shares listed on the stock exchange as a share of GDP Settler Mortality is the log of the annualized deaths per thousand European soldiers in European colonies in the early 19th century. The sample comprises 70 countries of Common law and French Civil law origin. (c) Settler Mortality and Property Rights: Property rights reflects the degree to which government enforces laws that protect private property, with higher numbers indicating better enforcement. Settler Mortality is the log of the annualized deaths per thousand European soldiers in European colonies in the early 19th century. The sample comprises 70 countries of Common law and French Civil law origin.

CATHOLIC, MUSLIM, and OTHER RELIGION equal the fraction of the population that is Catholic, Muslim, or of another (non-Protestant) religion. The Protestant share of the population is omitted (and therefore captured in the regression constant). The data are from LLSV (1999).

Table 1, Panel B shows that countries with a higher population proportion that is neither Catholic, nor Muslim, nor Protestant, have higher levels of financial development than countries where a higher fraction of the country is either Catholic or Muslim. Thus, we control for religious composition in examining the independent relations between financial development and both legal origin and endowments.

We note there is a very large, positive, and significant correlation between CATHOLIC and FRENCH LEGAL ORIGIN (0.48). Thus, it may be particularly difficult to distinguish fully between CATHOLIC and the Civil law tradition.

Finally, we include one dummy variable for countries in LATIN AMERICA and another for countries in Sub-Saharan AFRICA. A large number of studies find that countries in Sub-Saharan Africa and Latin America perform more poorly than countries in other regions of the world even after controlling for economic policies, institutional development, and other factors. Easterly and Levine (1997) provide related analyses and citations.

There are important problems with including continent dummies. First, continent dummies do not proxy for a clear explanation of why countries in these regions have worse institutions or perform more poorly. Second, Latin America is primarily a French legal-origin continent; the correlation between Catholic and Latin America is 0.71 and is significant at the one-percent level. Thus, including continent dummies may weaken our ability to identify linkages between financial development and legal origin without offering a clear, alternative explanation. Third, many Sub-Saharan African countries have high settler mortality rates. The correlation between AFRICA and SETTLER MORTALITY is 0.65 and is significant at the one-percent level. Thus, including the AFRICA dummy may decrease the ability to find a link between financial development and endowments without offering an alternative theory. Including these continent dummies, however, may control for region-specific characteristics that are not captured by any of the other explanatory variables. Therefore, while recognizing the problems associated with interpreting continent dummies, we include them in assessing the relations between law, endowments, and finance.[11]

3. Regression results

This section presents regressions on the relationship between financial development and both law and endowments while controlling for other possible

[11] In a previous version, we also included GDP per capita as a control variable. However, institutional development also influences economic development (as shown by AJR, 2001), so including GDP per capita together with initial endowments may bias the coefficient on legal origin and settler mortality/latitude toward zero. Further, unlike the other regressors, GDP per capita is endogenous, which causes estimation problems as shown by AJR (2001).

determinants of financial development. The dependent variable is one of the three measures of financial development, PRIVATE CREDIT, STOCK MARKET DEVELOPMENT, or PROPERTY RIGHTS. We use the dummy variable FRENCH LEGAL ORIGIN to assess the links between law and finance. We use SETTLER MORTALITY to assess the relationship between endowments and finance. As control variables, we use continent dummy variables (for Latin American and Africa), measures of religious composition, the percentage of years the country has been independent since 1776, and ethnic diversity. We also include a regression where we control concurrently for continent dummies, time since independence, and ethnic fractionalization. We do not include religious composition dummies in this regression since they never enter significantly at the five-percent significance level. The reasons for including these particular controls were discussed above.

3.1. Law and finance

Table 2 presents regressions of financial development on French legal origin and various combinations of the control variables. Table 2 does not include measures of endowments.

The results indicate a strong, negative relation between French legal origin and financial development. When controlling for continent, religious composition, ethnic diversity, and independence, French legal origin enters negatively and significantly at the five-percent level in all of the financial development regressions. The results suggest an economically large impact. For instance, the smallest coefficient (in absolute value) on FRENCH LEGAL ORIGIN in the STOCK MARKET DEVELOPMENT regressions is -0.27, and the mean and standard deviation values of STOCK MARKET DEVELOPMENT are 0.19 and 0.40, respectively. For illustrative purposes, the coefficient suggests that if Argentina had a British Common law tradition, its low level of stock market capitalization (0.10) would be substantially larger and closer to that of New Zealand (0.37).

In sum, French Civil law countries tend to have lower levels of financial development than British Common law countries after controlling for many national characteristics. This result is consistent with the LLSV (1998) view that the identity of the colonizer matters because of the legal traditions the colonizers brought.

3.2. Endowments and finance

Table 3 indicates a robust, negative association between SETTLER MORTALITY and financial development. SETTLER MORTALITY enters with a negative coefficient and is significant at the five percent level in all of the PRIVATE CREDIT and STOCK MARKET DEVELOPMENT regressions. The coefficient sizes are economically large. According to the smallest coefficient (in the absolute sense) in the PRIVATE CREDIT regression in Table 3 (-0.14), a one standard deviation reduction in the logarithm of mortality rates (1.24) would increase PRIVATE CREDIT by 0.17, and the mean and standard deviation of PRIVATE CREDIT are 0.32 and 0.30, respectively. Thus, the estimates in Table 3 can account for why

Table 2
Law and finance
The regression estimated is: Financial Sector Development $= \alpha + \beta_1$ French Legal Origin $+ \beta_2 X$, where Financial Sector Development is either Private Credit, Stock Market Development, or Property Rights. Private Credit is the value of credits by financial intermediaries to the private sector as a share of GDP. Stock Market Development measures the value of shares listed on the stock exchange as a share of GDP. Property Rights reflects the degree to which government enforces laws that protect private property, with higher numbers indicating better enforcement. French Legal Origin is a dummy variable that takes on the value one for countries with French Civil law tradition, and zero otherwise. The regressions also include a vector of control variables, X. Latin America and Africa are dummy variables that take the value one if the country is located in Latin America or Sub-Saharan Africa, respectively. Catholic, Muslim, and Other Religion indicate the percentage of the population that follows a particular religion (Catholic, Muslim, or religions other than Catholic, Muslim, or Protestant, respectively). Independence is the percentage of years since 1776 that a country has been independent. Ethnic Fractionalization is the probability that two randomly selected individuals in a country will not speak the same language. Regressions are estimated using Ordinary Least Squares. Robust standard errors are given in parentheses. *, **, *** indicate significance at the 10% 5%, and 1% levels, respectively. Detailed variable definitions and sources are given in the data appendix.

	French Legal Origin	Latin America	Africa	Catholic	Muslim	Other Religion	Independence	Ethnic Fractionalization	Adjusted-R^2	Obs.
Private Credit	−0.233***								0.124	70
	(0.088)									
	−0.136**	−0.292***	−0.417***						0.378	70
	(0.067)	(0.092)	(0.100)							
	−0.181**			−0.002	−0.003	−0.001			0.121	70
	(0.086)			(0.003)	(0.003)	(0.005)				
	−0.275***						0.191		0.148	70
	(0.097)						(0.136)			
	−0.247***							−0.289***	0.203	70
	(0.084)							(0.095)		
	−0.168**	−0.352***	−0.348***				0.170	−0.109	0.384	70
	(0.080)	(0.112)	(0.107)				(0.179)	(0.133)		
Stock Market Development	−0.356***								0.173	70
	(0.118)									
	−0.278***	−0.242*	−0.312**						0.240	70
	(0.101)	(0.128)	(0.143)							

	−0.265**			0.002	0.002	0.006			0.199	70
	(0.107)			(0.004)	(0.004)	(0.005)				
	−0.395***						0.176**		0.179	70
	(0.111)						(0.082)			
	−0.362***							−0.121	0.170	70
	(0.117)							(0.122)		
	−0.308***	−0.299***	−0.315*				0.224	0.087	0.237	70
	(0.102)	(0.104)	(0.177)				(0.150)	(0.176)		
Property Rights	−0.947***								0.198	69
	(0.241)									
	−0.836***	−0.250	−0.969***						0.351	69
	(0.206)	(0.265)	(0.243)							
	−1.065***			−0.002	−0.005	−0.007			0.182	69
	(0.291)			(0.009)	(0.009)	(0.011)				
	−1.103***						0.692**		0.232	69
	(0.235)						(0.346)			
	−0.995***							−0.813**	0.253	69
	(0.232)							(0.339)		
	−0.856***	−0.286	−1.014***				0.182	0.178	0.334	69
	(0.203)	(0.297)	(0.293)				(0.393)	(0.477)		

Table 3
Endowments and finance
The regression estimated is: Financial Sector Development $= \alpha + \beta_1$ Settler Mortality $+ \beta_2 X$, where Financial Sector Development is either Private Credit, Stock Market Development, or Property Rights. Private Credit is the value of credits by financial intermediaries to the private sector as a share of GDP. Stock Market Development measures the value of shares listed on the stock exchange as a share of GDP. Property rights reflects the degree to which government enforces laws that protect private property, with higher numbers indicating better enforcement. Settler Mortality is the log of the annualized deaths per thousand European soldiers in European colonies in the early 19th century. The regressions also include a vector of control variables, X. Latin America and Africa are dummy variables that take the value one if the country is located in Latin America or Sub-Saharan Africa, respectively. Catholic, Muslim, and Other Religion indicate the percentage of the population that follows a particular religion (Catholic, Muslim, or religions other than Catholic, Muslim, or Protestant, respectively). Independence is the percentage of years since 1776 that a country has been independent. Ethnic Fractionalization is the probability that two randomly selected individuals in a country will not speak the same language. Regressions are estimated using Ordinary Least Squares. Robust standard errors are given in parentheses. The symbols *, **, *** indicate significance at the 10%, 5%, and 1% levels, respectively. Detailed variable definitions and sources are given in the data appendix.

	Settler Mortality	Latin America	Africa	Catholic	Muslim	Other Religion	Independence	Ethnic Fractionalization	Adjusted-R^2	Obs.
Private Credit	−0.164***								0.440	70
	(0.030)									
	−0.137***	−0.230***	−0.163						0.500	70
	(0.038)	(0.086)	(0.113)							
	−0.161***			−0.004	−0.003	−0.002			0.490	70
	(0.028)			(0.003)	(0.210)	(0.004)				
	−0.178***						−0.168		0.460	70
	(0.031)						(0.138)			
	−0.166***							0.025	0.432	70
	(0.033)							(0.076)		
	−0.140***	−0.224*	−0.131				−0.038	−0.080	0.489	70
	(0.038)	(0.128)	(0.121)				(0.176)	(0.103)		

Stock Market Development	−0.170***								0.267	70
	(0.047)									
	−0.182**	−0.204	−0.008						0.305	70
	(0.071)	(0.132)	(0.199)							
	−0.159***			−0.001	−0.001	0.004			0.372	70
	(0.042)			(0.003)	(0.003)	(0.005)				
	−0.191***						−0.260		0.297	70
	(0.056)						(0.158)			
	−0.198***							0.261	0.292	70
	(0.059)							(0.167)		
	−0.189**	−0.145	−0.057				−0.099	0.141	0.294	70
	(0.073)	(0.127)	(0.198)				(0.180)	(0.183)		
Property Rights	−0.349***								0.177	69
	(0.099)									
	−0.151	−0.489*	−0.903**						0.220	69
	(0.117)	(0.290)	(0.352)							
	−0.339***			−0.015*	−0.012	−0.010			0.194	69
	(0.092)			(0.009)	(0.008)	(0.011)				
	−0.377***						−0.336		0.175	69
	(0.104)						(0.387)			
	−0.338***							−0.102	0.166	69
	(0.113)							(0.415)		
	−0.180	−0.271	−1.010**				−0.418	0.345	0.214	69
	(0.125)	(0.407)	(0.392)				(0.550)	(0.514)		

countries such as Nicaragua and Jamaica with bad endowments (log settler mortality rates of 5.1 and 4.9, respectively) have lower levels of financial intermediary development (0.25 and 0.27, respectively) than Chile (0.54), which had a log settler mortality rate of 4.2. Furthermore, SETTLER MORTALITY enters all of the PROPERTY RIGHTS regressions negatively and significantly, except those including continent dummies. As noted, there is an extremely high correlation between AFRICA and SETTLER MORTALITY. Also, as we report below, when we use an alternative measure of property rights protection, settler mortality continues to enter significantly even when controlling for AFRICA.

These results support the view that high settler mortality rates are negatively associated with the level of financial development today, and are robust to an assortment of control variables. Such findings are fully consistent with the AJR (2001, 2002) assertion that a colony's environmental endowments influenced how it was colonized—whether it was an extractive colony or a settler colony—with long-lasting implications for institutional development.

3.3. *Law, endowments, and finance*

Table 4 presents regression results on the relation between financial development and both law and endowments while controlling for other exogenous determinants of financial development.

Table 4 regressions provide strong support for the endowment view of financial development. SETTLER MORTALITY enters all of the PRIVATE CREDIT and STOCK MARKET DEVELOPMENT regressions significantly at the five-percent level even when controlling for legal origin, continent, religious composition, the length of time the country has been independent, and ethnic diversity. The sizes of the coefficients on SETTLER MORTALITY in the PRIVATE CREDIT and STOCK MARKET DEVELOPMENT regressions are very similar to those in Table 3, in which the regressions do not also control for legal origin. Also similar to Table 3, the Table 4 regressions indicate that SETTLER MORTALITY exerts a statistically significant impact on PROPERTY RIGHTS except when controlling for the AFRICA dummy variable (because of the very high correlation between the rate of settler mortality and countries in Sub-Saharan Africa). As discussed below, however, when we use an alternative measure of property rights protection, settler mortality enters significantly even when controlling for the AFRICA dummy variable.

In sum, poor endowments—as measured by settler mortality—are negatively associated with financial development today. Even when controlling for the legal tradition of the colonizers and other possible determinants of financial development, initial endowments of the colonies help explain cross-country variation in financial development today, which is strongly supportive of the AJR (2001, 2002) endowment view.

Table 4 regressions also provide support for the law and finance view, though some qualifications are necessary. When controlling for SETTLER MORTALITY, the relationship between financial intermediary development (PRIVATE CREDIT)

and legal origin is not robust to the inclusion of various control variables. However, FRENCH LEGAL ORIGIN is negatively and significantly associated with PROPERTY RIGHTS in all of the regressions when controlling for SETTLER MORTALITY. Putting aside regressions that include CATHOLIC (which is extremely positively correlated with French Civil law), FRENCH LEGAL ORIGIN is also negatively and significantly linked with STOCK MARKET DEVELOPMENT. To the extent that equity markets rely more than banking institutions on well-functioning legal systems to defend the rights of individual investors, these findings are consistent with the thrust of the law and finance view.

Subject to the qualifications discussed above, we interpret the results as generally consistent with the LLSV (1998) theory that the French Civil law tends to place greater emphasis on the rights of the state versus the rights of individuals, with negative repercussions on financial contracting. In contrast, the British Common law tends to place greater emphasis on the contractual rights of individual investors, with positive implications for financial development. While LLSV (1998) document the link between financial development and legal origin, this paper goes much further in controlling for alternative explanations. Our results demonstrate a strong connection between legal origin and both stock market development and private property rights protection, but we also show that the link between legal origin and financial intermediary development is not robust to the inclusion of numerous control variables.

In comparing the independent explanatory power between law and endowments, Tables 2–4 indicate that endowments explain a greater amount of the cross-country variation in financial intermediary and stock market development than legal origin. Consider, for instance, the regressions in Tables 2–4 that do not include any regressors beyond FRENCH LEGAL ORIGIN and SETTLER MORTALITY. The adjusted *R*-square in the PRIVATE CREDIT–FRENCH LEGAL ORIGIN regression is 0.12 (Table 2), while it is 0.44 in the PRIVATE CREDIT–SETTLER MORTALITY regression (Table 3). Furthermore, when adding FRENCH LEGAL ORIGIN to the SETTLER MORTALITY regression, the adjusted *R*-square only rises from 0.44 to 0.48 (Table 4). As also indicated above, legal origin does not enter the PRIVATE CREDIT regression robustly when including various control variables, but endowments remain negatively and significantly linked with financial intermediary development across various control variables. Turning to private property rights protection, the explanatory power of law and endowments in the PROPERTY RIGHTS regressions is very similar. However, the STOCK MARKET DEVELOPMENT regressions again illustrate the greater explanatory power of endowments. The adjusted *R*-square in the STOCK MARKET DEVELOPMENT-FRENCH LEGAL ORIGIN regression is 0.17 (Table 2), and is 0.27 in the SETTLER MORTALITY regression (Table 3). Furthermore, when adding FRENCH LEGAL ORIGIN to the SETTLER MORTALITY regression, the adjusted *R*-square only rises from 0.27 to 0.36 (Table 4). Thus, while legal origin significantly enters all of the stock market development regressions that do not control for religious composition (Table 4), endowments explain a greater

Table 4
Law, endowments, and finance.
The regression estimated is: Financial Sector Development $= \alpha + \beta_1$ French Legal Origin $+ \beta_2$ Settler Mortality $+ \beta_3 X$, where Financial Sector Development is either Private Credit, Stock Market Development, or Property Rights. Private Credit is the value of credits by financial intermediaries to the private sector as a share of GDP. Stock Market Development measures the value of shares listed on the stock exchange as a share of GDP. Property rights reflects the degree to which government enforces laws that protect private property, with higher numbers indicating better enforcement. French Legal Origin is a dummy variable that takes on the value one for countries with French Civil law tradition, and zero otherwise. Settler Mortality is the log of the annualized deaths per thousand European soldiers in European colonies in the early 19th century. The regressions also include a vector of control variables, X. Latin America and Africa are dummy variables that take the value one if the country is located in Latin America or Sub-Saharan Africa, respectively. Catholic, Muslim, and Other Religion indicate the percentage of the population that follows a particular religion (Catholic, Muslim, or religions other than Catholic, Muslim, or Protestant, respectively). Independence is the percentage of years since 1776 that a country has been independent. Ethnic Fractionalization is the probability that two randomly selected individuals in a country will not speak the same language. Regressions are estimated using Ordinary Least Squares. Robust standard errors are given in parentheses. The symbols *, **, *** indicate significance at the 10%, 5%, and 1% levels, respectively. Detailed variable definitions and sources are given in the data appendix.

	Settler Mortality	French Legal Origin	Latin America	Africa	Catholic	Muslim	Other Religion	Independence	Ethnic Fractionalization	Adjusted-R^2	Obs.
Private Credit	−0.151***	−0.141**								0.480	70
	(0.026)	(0.059)									
	−0.130***	−0.097*	−0.194*	−0.148						0.514	70
	(0.034)	(0.055)	(0.082)	(0.108)							
	−0.157***	−0.054			−0.004	−0.003	−0.002			0.486	70
	(0.028)	(0.074)			(0.003)	(0.002)	(0.003)				
	−0.160***	−0.115						−0.090		0.478	70
	(0.028)	(0.077)						(0.134)			
	−0.148***	−0.144**							−0.024	0.472	70
	(0.028)	(0.059)							(0.073)		
	−0.127***	−0.108	−0.0214*	−0.110				0.029	−0.100	0.505	70
	(0.035)	(0.069)	(0.117)	(0.121)				(0.185)	(0.110)		
Stock Market Development	−0.145***	−0.268***								0.358	70
	(0.038)	(0.085)									
	−0.164***	−0.229***	−0.118	0.028						0.363	70
	(0.061)	(0.079)	(0.123)	(0.181)							

	−0.147***	−0.146			0.000	0.001	0.005			0.380	70
	(0.040)	(0.090)			(0.003)	(0.003)	(0.005)				
	−0.156***	−0.240***						−0.095		0.353	70
	(0.049)	(0.072)						(0.135)			
	−0.167***	−0.246***							0.178	0.364	70
	(0.049)	(0.080)							(0.150)		
	−0.161**	−0.232***	−0.123	−0.012				0.044	0.098	0.346	70
	(0.063)	(0.071)	(0.115)	(0.190)				(0.163)	(0.171)		
Property	−0.279***	−0.781***								0.304	69
Rights	(0.080)	(0.223)									
	−0.088	−0.810***	−0.183	−0.786**						0.348	69
	(0.101)	(0.216)	(0.274)	(0.334)							
	−0.277***	−0.853***			−0.004	−0.003	−0.008			0.281	69
	(0.082)	(0.310)			(0.008)	(0.008)	(0.010)				
	−0.251***	−0.856***						0.256		0.299	69
	(0.087)	(0.227)						(0.371)			
	−0.232**	−0.833***							−0.398	0.307	69
	(0.095)	(0.231)							(0.401)		
	−0.082	−0.816***	−0.197	−0.860**				0.091	0.184	0.328	69
	(0.110)	(0.216)	(0.328)	(0371)				(0.434)	(0.480)		

proportion of the cross-country variation in stock market development than legal origin. It is difficult to compare the sizes of the coefficients on SETTLER MORTALITY and FRENCH LEGAL ORIGIN because a change in legal origin is obviously large and discrete. Nevertheless, we compare a change in legal origin with a change in SETTLER MORTALITY from the second quintile to the fourth quintile (i.e., a change of 2.1), which is less than a two standard deviation change in SETTLER MORTALITY (2.5). Using, for instance, the coefficients in the last row of the stock market development indicators in Table 4, this implies a change in STOCK MARKET DEVELOPMENT of 0.23 from a legal origin change and 0.34 from the endowment change. The effect of the endowment change is approximately 50% larger.

Turning to the control variables, the regression analyses do not indicate a robust, consistent relationship between the continent dummy variables, the religious composition measures, the length of national independence, nor the level of ethnic diversity, on the one hand, and financial development, on the other hand, when controlling for legal origin and national endowments. The Table 4 regressions—as well those in Tables 2 and 3 —do not demonstrate a significant, robust relation between any of these control variables and any of the measures of financial development when controlling for legal origin and endowments. As emphasized above, French Civil law countries also tend to be predominantly Catholic, much of Latin America adopted the French Civil law tradition, and Sub-Saharan Africa had very high rates of settler mortality. Nevertheless, while a consistent pattern of results emerges for law and endowments, we do not observe a robust set of results on the continent dummies, religious composition variables, independence indicator, or ethnic diversity measure.

4. Robustness test

4.1. Political structure

As a robustness check, we control for political structure. North (1990) argues that once groups gain power, they shape policies and institutions to their own advantages. The work of Finer (1997) and Damaska (1986) further suggests that centralized or otherwise powerful states will be more responsive to and efficient at implementing the interests of the elite than a decentralized or more competitive political system endowed with checks and balances. LLSV (1998) do not control for political structure in their examination of the law and finance view. In a different approach, Rajan and Zingales (2003) argue that financial systems do not develop monotonically over time. This observation is not fully consistent with the law and endowment theories, which are based on time invariant factors. Rajan and Zingales (2003) instead propose a theory of financial development based on controlling interest groups. In our sensitivity analyses, we focus on the political structure view because we encounter data limitations concerning interest groups for our broad cross-section of countries.

To assess whether law and endowments continue to explain cross-country differences in financial development after controlling for the structure of the political environment, we use two measures of political openness. LEGISLATIVE COMPETITION is an index of the degree of competitiveness of the last legislative election, ranging from 1 (non-competitive) to 7 (most competitive). CHECKS measures the number of influential veto players in legislative and executive initiatives. These data are from Beck et al. (2001a). The politics and finance view predicts that greater competition and more checks and balances will limit the ability of the elite to dictate policy and institutional development.

To control for the endogenous determination of political structures, we use instrumental variables.[12] As instruments, we include the religious composition variables, independence, and ethnic diversity. We include the religious variables since Landes (1998) and others argue that the Catholic and Muslim religions tend to produce hierarchical political systems. We include independence since more years of independence may permit greater latitude to shape domestic political institutions. We include ethnic diversity since some theories suggest that ethnic diversity will tend to create political systems that stymie competition and permit greater discretion on the part of the controlling party (see, e.g., Alesina et al., 1999). The instrumental variables significantly explain cross-country variation in the political structure indexes at the one-percent significance level. Nevertheless, given the valid skepticism associated with obtaining fully acceptable instrumental variables for political structure, we note that: (i) we present these exploratory results as a robustness check on the endowment and law theories and not as a strong test of the political channel; and, (ii) we are particularly circumspect in interpreting these instrumental variable regressions.

Table 5 instrumental variable results are consistent with the law and endowment theories while controlling for the structure of the political system, and suggest that the politics mechanism is not the only channel through which legal origin and endowments influence financial development. As shown, legal origin and endowments continue to enter the financial development regressions significantly even when controlling for the exogenous component of political structure except for SETTLER MORTALITY in the PROPERTY RIGHTS regressions. The political structure variables do not enter any of the financial development regressions significantly. Thus, there is no evidence in Table 5 that political structure explains cross-country variation in financial development beyond the explanatory power of legal origin and environmental endowments. Furthermore, the results do not suggest that political structure is the only channel through which legal origin and initial endowments influence financial development. If political structure were the only channel through which law and initial endowments influence financial development, we would have found significant coefficients on the political structure indicators and insignificant coefficients on the legal origin and endowment indicators. We find the opposite. Moreover, we run two-stage least squares regressions with financial

[12] We find the same results hold when using ordinary least squares and not instrumenting for political structure.

Table 5
Law, endowments, politics, and finance
The regression estimated in is: Financial Sector Development $= \alpha + \beta_1$ French Legal Origin $+ \beta_2$ Settler Mortality $+ \beta_3$. Political Structure, where Financial Sector Development is either Private Credit, Stock Market Development, or Property Rights and Political Structure is either Legislative Competition or Checks. Private Credit is the value of credits by financial intermediaries to the private sector as a share of GDP. Stock Market Development measures the value of shares listed on the stock exchange as a share of GDP. Property Rights reflects the degree to which government enforces laws that protect private property, with higher numbers indicating better enforcement. French Legal Origin is a dummy variable that takes on the value one for countries with French Civil law tradition, and zero otherwise. Settler Mortality is the log of the annualized deaths per thousand European soldiers in European colonies in the early 19th century. Legislative Competition is an indicator of competition in the last legislative election. Checks measures the number of veto-players in the political decision process. These last two measures are averaged over 1990–1995. Detailed variable definitions and sources are given in the data appendix. All regressions are estimated using Instrumental Variables, two-stage least squares. In the first-stage regressions the Political Structure indicators are regressed on Legal Origin, Settler Mortality, Catholic, Muslim, Other Religion, Independence and Ethnic Fractionalization. Robust standard errors are given in parentheses. The symbols *, **, *** indicate significance at the 10%, 5%, and 1% levels, respectively. *P*-Values are given in parentheses for the test of the over-identifying restrictions (OIR).

	OIR χ^2-test (*p*-value)	Settler Mortality	French Legal Origin	Legislative Competition	Checks	Adjusted-R^2	Obs.
Private	3.693	−0.169***	−0.123**	−0.037		0.429	68
Credit	(0.449)	(0.051)	(0.059)	(0.048)			
	2.405	−0.184***	−0.160**		−0.083	0.317	68
	(0.662)	(0.044)	(0.064)		(0.060)		
Stock	1.232	−0.199**	−0.215**	−0.090		0.224	68
Market	(0.873)	(0.090)	(0.083)	(0.079)			
Development	2.445	−0.177**	−0.274**		−0.095	0.192	68
	(0.655)	(0.074)	(0.105)		(0.086)		
Property	3.214	−0.186	−0.858***	0.093		0.348	67
Rights	(0.523)	(0.154)	(0.223)	(0.154)			
	3.055	−0.177	−0.780***		0.160	0.323	67
	(0.549)	(0.159)	(0.225)		(0.243)		

development as the dependent variable and political structure as the only explanatory variable in the second stage. The instruments are legal origin and settler mortality. While political structure enters the financial development regression significantly and with the predicted sign, the instruments do not pass the test of over-identifying restrictions. These results do not reject the importance of political factors in shaping finance. Rather, the evidence in this paper suggests that legal origin and endowments influence financial development beyond the structure of the political system.[13]

[13] Beck et al. (2003) examine the different channels through which legal origin affects financial development.

4.2. Alternative samples

To assess the robustness of the results, we examine different subsamples of countries. In these robustness checks, we only include two regressions to keep the table to a manageable length. We include one regression with only the legal origin and endowment variables as regressors and a second regression that also includes continent dummy variables, years of independence, and ethnic diversity. We do not include the religious indicators because they do not enter any of the Tables 2–4 regressions significantly at the five percent level.

Table 6 presents regression results on five different sub-samples of countries. Panel A excludes Australia, Canada, New Zealand, and the United States from the regression. After omitting these countries, the data continue to support both the law and endowment views of financial development. The results are fully consistent with the full-sample results in Table 4. FRENCH LEGAL ORIGIN enters all of the STOCK MARKET DEVELOPMENT and PROPERTY RIGHTS regressions significantly, but does not enter the PRIVATE CREDIT regression significantly when controlling for other determinants. SETTLER MORTALITY enters all of the PRIVATE CREDIT and STOCK MARKET DEVELOPMENT regressions significantly, but does not enter significantly in the PROPERTY RIGHTS regression when controlling for AFRICA. In Panels B and C, we examine French legal origin and British legal origin countries separately to test whether settler mortality accounts for cross-country variation in financial development within each group. Again, the results support the view that the disease environment encountered by European settlers shaped the formation of long-lasting financial institutions. The results do suggest, however, that the SETTLER MORTALITY-finance relationship is stronger for the British legal origin sample of countries than for the French legal origin sample. SETTLER MORTALITY enters negatively and significantly in all the regressions in Panel C (British-only legal origin countries), except for the PROPERTY RIGHTS regression in which we include the African dummy variable (which we discuss above). SETTLER MORTALITY is not as robustly related to equity market development and property rights in the French legal origin subsample—it does not enter significantly once we control for AFRICA. Further, SETTLER MORTALITY explains less than half of the cross-country variation in financial development among French Civil law countries than among British Common law countries, as can be seen from comparing the adjusted R^2 statistics in Panels B and C. Finally, we also examine high and low settler mortality countries. Here, we assess whether legal origin explains financial development within the high (above the median) settler mortality countries and within the low (below the median) settler mortality countries. Note there are more countries in Panel E than Panel D because Algeria and Morocco have exactly the median level of SETTLER MORTALITY and are allocated to the below-median group. When we allocate them to the above-median group, or split them between the two groups, we obtain the same results. The results are broadly consistent with earlier findings. FRENCH LEGAL ORIGIN is not strongly associated with financial intermediary development (PRIVATE CREDIT) in the high-mortality countries. Nevertheless, legal

Table 6
Law, endowments, and finance: alternative samples.
The regressions estimated in Panel A are: Financial Sector Development $= \alpha + \beta_1$ French Legal Origin $+ \beta_2$ Settler Mortality $+ \beta_3 X$, where Financial Sector Development is either Private Credit, Stock Market Development, or Property Rights. Private Credit is the value of credits by financial intermediaries to the private sector as a share of GDP. Stock Market Development measures the value of shares listed on the stock exchange as a share of GDP. Property rights reflects the degree to which government enforces laws that protect private property, with higher numbers indicating better enforcement. French Legal Origin is a dummy variable that takes on the value one for countries with French Civil law tradition, and zero otherwise. Settler Mortality is the log of the annualized deaths per thousand European soldiers in European colonies in the early 19th century. The regressions also include a vector of control variables, X. Latin America and Africa are dummy variables that take the value one if the country is located in Latin America or Sub-Saharan Africa, respectively. Independence is the percentage of years since 1776 that a country has been independent. Ethnic Fractionalization is the probability that two randomly selected individuals in a country will not speak the same language. The regressions in Panel A exclude Australia, Canada, New Zealand and the U.S., the regressions in Panels B–C are: Financial Sector Development $= \alpha + \beta_1$ Settler Mortality $+ \beta_2 X$. The regressions in Panel B include only French Legal Origin and in Panel C only British Legal Origin countries. The regressions estimated in Panels D–E are: Financial Sector Development $= \alpha + \beta_1$ French Legal Origin $+ \beta_2 X$. The regressions in Panel D include countries with Settler Mortality above the median and the regressions in Panel E countries with Settler Mortality below the median. There are more countries in Panel E than in Panel D because Algeria and Morocco have exactly the median level of Settler Mortality and are allocated to the below-median group. Regressions are estimated using Ordinary Least Squares. Robust standard errors are given in parentheses. The symbols *, **, *** indicate significance at the 10%, 5%, and 1% levels, respectively. Detailed variable definitions and sources are given in the data appendix.

Panel A: *Excluding Australia, Canada, New Zealand, and the United States*

	Settler Mortality	French Legal Origin	Latin America	Africa	Independence	Ethnic Fractionalization	Adjusted-R^2	Obs.
Private Credit	−0.129***	−0.102*					0.379	66
	(0.030)	(0.061)						
	−0.127***	−0.031	−0.072	−0.088	−0.216**	−0.063	0.419	66
	(0.041)	(0.064)	(0.095)	(0.114)	(0.100)	(0.100)		
Stock Market Development	−0.161***	−0.291***					0.342	66
	(0.051)	(0.106)						
	−0.180**	−0.281***	−0.212	−0.009	0.147	0.046	0.342	66
	(0.069)	(0.100)	(0.158)	(0.192)	(0.212)	(0.166)		
Property Rights	−0.200**	−0.654***					0.173	65
	(0.084)	(0.233)						
	−0.025	−0.571**	0.243	−0.832**	−0.517	0.380	0.238	65
	(0.101)	(0.230)	(0.369)	(0.323)	(0.484)	(0.478)		

Panel B: *French Legal Origin countries*

	Settler Mortality	Latin America	Africa	Independence	Ethnic Fractionalization	Adjusted-R^2	Obs.
Private Credit	−0.080***					0.217	45
	(0.029)						
	−0.066**	−0.044	−0.161*	−0.243**	−0.082	0.390	45
	(0.029)	(0.088)	(0.086)	(0.095)	(0.086)		
Stock Market Development	−0.037**					0.057	45
	(0.016)						
	−0.018	0.023	0.001	0.034	−0.054	0.018	45
	(0.024)	(0.059)	(0.065)	(0.077)	(0.065)		
Property Rights	−0.204*					0.047	44
	(0.112)						
	0.015	−0.073	−0.937**	−0.141	0.352	0.087	44
	(0.120)	(0.269)	(0.392)	(0.389)	(0.509)		

Panel C: *British legal origin countries*

	Settler Mortality	Latin America	Africa	Independence	Ethnic Fractionalization	Adjusted-R^2	Obs.
Private Credit	−0.204***					0.532	25
	(0.042)						
	−0.158**	−0.074	0.017	0.561	−0.136	0.526	25
	(0.066)	(0.217)	(0.261)	(0.444)	(0.387)		
Stock Market Development	−0.227***					0.330	25
	(0.064)						
	−0.313**	−0.176	0.007	−0.547	0.477	0.329	25
	(0.113)	(0.313)	(0.478)	(0.573)	(0.687)		
Property Rights	−0.335***					0.205	25
	(0.108)						
	−0.086	0.226	−0.816	1.339	0.131	0.184	25
	(0.193)	(0.909)	(0.750)	(0.870)	(1.471)		

Table 6 (*continued*)

Panel D: *Countries above median for settler mortality*

	French Legal Origin	Latin America	Africa	Independence	Ethnic Fractionalization	Adjusted-R^2	Obs.
Private Credit	−0.039					−0.014	34
	(0.060)						
	0.025	−0.055	0.331***	−0.356***	−0.040	0.538	34
	(0.040)	(0.046)	(0.024)	(0.082)	(0.083)		
Stock Market Development	−0.082**					0.178	34
	(0.037)						
	−0.062**	−0.078	−0.152***	−0.136	−0.050	0.342	34
	(0.027)	(0.047)	(0.013)	(0.097)	(0.057)		
Property Rights	−1.036***					0.249	33
	(0.327)						
	−0.654**	0.374	−0.783***	−2.458***	0.346	0.400	33
	(0.309)	(0.535)	(0.181)	(0.740)	(0.723)		

Panel E: *Countries below median for settler mortality*

	French Legal Origin	Latin America	Africa	Independence	Ethnic Fractionalization	Adjusted-R^2	Obs.
Private Credit	−0.414***					0.297	36
	(0.128)						
	−0.303**	−0.305*	−0.012	0.197	−0.150	0.314	36
	(0.142)	(0.170)	(0.235)	(0.285)	(0.294)		
Stock Market Development	−0.611***					0.313	36
	(0.190)						
	−0.613***	−0.001	0.290	0.011	0.037	0.255	36
	(0.217)	(0.255)	(0.399)	(0.290)	(0.429)		
Property Rights	−0.870**					0.194	36
	(0.324)						
	−0.824**	−0.569*	−1.424***	0.968**	−0.120	0.358	36
	(0.318)	(0.284)	(0.473)	(0.420)	(0.775)		

origin is strongly and negatively associated with STOCK MARKET DEVELOPMENT and PROPERTY RIGHTS in both subsamples and PRIVATE CREDIT in the low-mortality sample. While one notes some differences when looking across different subsamples, the same basic pattern emerges as in the full sample: law and endowments explain financial development, though the endowment-intermediary (PRIVATE CREDIT) relationship is more robust than the law-intermediary (PRIVATE CREDIT) relationship.

4.3. Alternative indicators of financial development

Next, we examine alternative measures of financial development. Specifically, instead of examining financial intermediary credit to the private sector (PRIVATE CREDIT), we use the demand and interest-bearing liabilities of financial intermediaries (LIQUID LIABILITIES). Also, instead of using market capitalization to measure stock market development, we examine the total value of stock transactions in the economy as a share of GDP (TOTAL VALUE TRADED). Finally, instead of utilizing the private property rights protection index as used by LLSV (1999), we examine: (a) the International Country Risk Guide (ICRG) measure of the degree to which a country adheres to the rule of law (RULE OF LAW); and, (b) the Kaufmann et al. (1999) AGGREGATE RULE OF LAW index. However, the RULE OF LAW and AGGREGATE RULE OF LAW indicators are available for fewer countries, 63 and 68, respectively, than the PROPERTY RIGHTS measure used throughout the paper thus far.

Table 7 indicates that these alternative indicators produce results that are consistent with those discussed above. Settler mortality is significantly, negatively associated with the new measures of financial intermediary development, stock market development, and property rights protection. Although the RULE OF LAW–SETTLER MORTALITY relationship weakens when including continent dummy variables, years of independence, and ethnic diversity, the AGGREGATE RULE OF LAW–SETTLER MORTALITY relationship remains significant when controlling for these country traits. Since SETTLER MORTALITY loses its significant relationship with two of our three measures of private property rights protection, only when including a dummy variable for AFRICA (where settler mortality rates were very high), we interpret these findings as broadly consistent with the view that the initial endowments in the various colonies helped shape institutional approaches to the protection of private property rights.

FRENCH LEGAL ORIGIN is negatively associated with all the alternative financial development indicators except financial intermediary development. As noted above, the relationship between law and financial intermediary development is more fragile than the endowment–intermediary relationship. Unlike in the PROPERTY RIGHTS regressions of Tables 2–4, SETTLER MORTALITY explains a larger share of the variation in the RULE OF LAW and AGGREGATE RULE OF LAW regressions than FRENCH LEGAL ORIGIN. As discussed in Section 3.3, we draw this conclusion by comparing adjusted-R^2 statistics across regressions with only legal origin, with only SETTLER MORTALITY, and then

Table 7
Law, endowments, and finance alternative finance indicators.
The regression estimated is: Financial Sector Development $= \alpha + \beta_1$ French Legal Origin $+ \beta_2$ Settler Mortality $+ \beta_3 X$, where Financial Sector Development is either Liquid Liabilities, Total Value Traded, Rule of Law, or Aggregate Rule of Law. Liquid Liabilities is currency plus demand and interest-bearing liabilities of banks and nonbank financial intermediaries, divided by GDP. Total value traded is the total value of shares traded as a share of GDP. Rule of law (ICRG) accounts for the degree to which a country adheres to the rule of law. Aggregate Rule of Law is an aggregate indicator estimated with an unobserved-components model using a large number of individual indicators from different sources (Kaufmann et al., 1999). French Legal Origin is a dummy variable that takes on the value one for countries with French Civil law tradition, and zero otherwise. Settler Mortality is the log of the annualized deaths per thousand European soldiers in European colonies in the early 19th century. The regressions also include a vector of control variables, X. Latin America and Africa are dummy variables that take the value one if the country is located in Latin America or Sub-Saharan Africa, respectively. Independence is the percentage of years since 1776 that a country has been independent. Ethnic Fractionalization is the probability that two randomly selected individuals in a country will not speak the same language. Regressions are estimated using Ordinary Least Squares. Robust standard errors are given in parentheses. The symbols *, **, *** indicate significance at the 10%, 5%, and 1% levels, respectively. Detailed variable definitions and sources are given in the data appendix.

	Settler Mortality	French Legal Origin	Latin America	Africa	Independence	Ethnic Fractionalization	Adjusted-R^2	Obs.
Liquid Liabilities	−0.150***	−0.073					0.433	70
	(0.02958)	(0.05731)						
	−0.148***	0.054	−0.085	−0.210**	−0.439***	−0.015	0.604	70
	(0.034)	(0.058)	(0.079)	(0.083)	(0.117)	(0.107)		
Total Value Traded	−0.058***	−0.105**					0.274	70
	(0.018)	(0.041)						
	−0.043**	−0.081***	−0.129**	−0.109	0.035	0.049	0.292	70
	(0.020)	(0.030)	(0.050)	(0.074)	(0.070)	(0.087)		
Rule of Law	−0.285**	−0.553*					0.141	63
	(0.133)	(0.314)						
	0.041	−0.668**	−1.246***	−0.764	0.881	−1.109*	0.238	63
	(0.180)	(0.334)	(0.448)	(0.592)	(0.555)	(0.625)		
Aggregate Rule of Law	−0.362***	−0.395*					0.349	68
	(0.076)	(0.190)						
	−0.292**	−0.373*	−0.494*	−0.169	0.187	−0.441	0.348	68
	(0.129)	(0.216)	(0.262)	(0.407)	(0.303)	(0.355)		

with SETTLER MORTALITY and legal origin dummies included simultaneously. The regressions with only SETTLER MORTALITY and only the legal origin dummy variable for this sample of countries are not reported.

4.4. Alternative endowment indicator

Next, we use an alternative measure of endowments, LATITUDE, which equals the absolute value of the latitude of each country normalized to lie between zero and one. We take the data from LLSV (1999). Countries that are closer to the equator will tend to have a more tropical climate that is inhospitable to European settlers and therefore will more likely foster extractive institutions.[14] However, LATITUDE is not as precise an indicator of the conditions facing European settlers as SETTLER MORTALITY and thus LATITUDE is not as precise an empirical proxy for the AJR (2001) endowment theory as SETTLER MORTALITY. LATITUDE directly measures geographic location, not climatic conditions. Accordingly, we have focused our analyses on SETTLER MORTALITY, and only include LATITUDE in our robustness checks.

Table 8 regressions with LATITUDE indicate, albeit less robustly than those with SETTLER MORTALITY, that countries closer to the equator have lower levels of financial development than countries in more temperate climates. LATITUDE is positively associated with PROPERTY RIGHTS after using the array of control variables discussed above. LATITUDE is also significantly and positively linked with PRIVATE CREDIT in all of the regressions that do not include AFRICA, which is very highly correlated with LATITUDE. There is not a strong link between LATITUDE and stock market development. Using LATITUDE, we do find a strong link between legal origin and financial development. FRENCH LEGAL ORIGIN enters significantly in all regressions and its inclusion substantially increases the adjusted R^2 over those regressions that only include LATITUDE. Especially given the imprecise nature of LATITUDE as proxy for the AJR (2001) endowment theory, we view Table 8 as confirmation of our earlier findings.

4.5. Tobit estimation

Finally, we estimate the stock market development equations using a Tobit estimator. Both STOCK MARKET DEVELOPMENT (market capitalization divided by GDP) and TOTAL VALUE TRADED (stock market trading divided by GDP) have many countries with zero values. Thus, we re-estimate the equation using a Tobit estimator. As shown in Table 9, we find that both legal origin and endowments enter significantly in all of the regressions when using the Tobit estimator, confirming earlier results.

[14] While some authors stress the direct impact of tropical environments on production (Kamarck, 1976; Crosby, 1989; and Gallup et al., 1998), AJR (2002) and Easterly and Levine (2003) show that the environment tends to influence economic development primarily through its impact on institutions.

Table 8
Law, endowments, and finance: alternative endowment indicator
The regression estimated in Panel A is: Financial Sector Development $= \alpha + \beta_1$ Latitude $+ \beta_3 X$, where Financial Sector Development is either Private Credit, Stock Market Development, or Property Rights. Private Credit is the value of credits by financial intermediaries to the private sector as a share of GDP. Stock Market Development measures the value of shares listed on the stock exchange as a share of GDP. Property Rights reflects the degree to which government enforces laws that protect private property, with higher numbers indicating better enforcement. Latitude is the absolute value of the latitude of a country, scaled between zero and one. The regressions also include a vector of control variables, X. Latin America and Africa are dummy variables that take the value one if the country is located in Latin America or Sub-Saharan Africa, respectively. Independence is the percentage of years since 1776 that a country has been independent. Ethnic Fractionalization is the probability that two randomly selected individuals in a country will not speak the same language. The regression estimated in Panel B is: Financial Sector Development $= \alpha + \beta_1$ French Legal Origin $+ \beta_2$ Latitude $+ \beta_3 X$. French Legal Origin is a dummy variable that takes on the value one for countries with French Civil law tradition, and zero otherwise. Regressions are estimated using Ordinary Least Squares. Robust standard errors are given in parentheses. The symbols *, **, *** indicate significance at the 10%, 5%, and 1% levels, respectively. Detailed variable definitions and sources are given in the data appendix.

Panel A: *Latitude and finance*

	Latitude	Latin America	Africa	Independence	Ethnic Fractionalization	Adjusted-R^2	Obs.
Private Credit	1.048***					0.189	70
	(0.300)						
	0.423	−0.319**	−0.380***	0.034	−0.018	0.346	70
	(0.327)	(0.147)	(0.125)	(0.168)	(0.135)		
Stock Market Development	0.491					0.012	70
	(0.386)						
	−0.171	−0.402**	−0.470*	0.085	0.121	0.120	70
	(0.680)	(0.198)	(0.244)	(0.126)	(0.198)		
Property Rights	3.232***					0.165	69
	(0.784)						
	2.600***	−0.040	−1.122***	−0.569	0.708	0.267	69
	(0.952)	(0.429)	(0.339)	(0.474)	(0.462)		

Panel B: *Latitude, law and finance*

	Latitude	French Legal Origin	Latin America	Africa	Independence	Ethnic Fractionalization	Adjusted-R^2	Obs.
Private Credit	0.970***	−0.206***					0.286	70
	(0.276)	(0.079)						
	0.381	−0.162**	−0.288**	−0.312**	0.122	−0.055	0.392	70
	(0.301)	(0.078)	(0.127)	(0.122)	(0.171)	(0.141)		
Stock Market Development	0.360	−0.346***					0.175	70
	(0.355)	(0.122)						
	−0.251	−0.312***	−0.341*	−0.339	0.256**	0.051	0.229	70
	(0.613)	(0.104)	(0.179)	(0.134)	(0.127)	(0.173)		
Property Rights	2.924***	−0.873***					0.335	69
	(0.659)	(0.224)						
	2.398***	−0.821***	0.120	−0.783**	−0.120	0.517	0.392	69
	(0.843)	(0.201)	(0.341)	(0.308)	(0.353)	(0.453)		

Table 9
Law, endowments, and stock market development: Tobit regressions
The regression estimated is: Financial Sector Development $= \alpha + \beta_1$ French Legal Origin $+ \beta_2$ Settler Mortality $+ \beta_3 X$, where Financial Sector Development is either Stock Market Development or Total Value Traded. Stock Market Development measures the value of shares listed on the stock exchange as a share of GDP. Total value traded is the total value of shares traded as a share of GDP. French Legal Origin is a dummy variable mat takes on the value one for countries with French Civil law tradition, and zero otherwise. Settler Mortality is the log of the annualized deaths per thousand European soldiers in European colonies in the early 19th century. The regressions also include a vector of control variables, X. Latin America and Africa are dummy variables that take the value one if the country is located in Latin America or Sub-Saharan Africa, respectively. Independence is the percentage of years since 1776 that a country has been independent. Ethnic Fractionalization is the probability that two randomly selected individuals in a country will not speak the same language. Regressions are estimated using Tobit, censored-normal. Standard errors are given in parentheses. The symbols *, **, *** indicate significance at the 10%, 5%, and 1% levels, respectively. Detailed variable definitions and sources are given in the data appendix.

	Settler Mortality	French Legal Origin	Latin America	Africa	Independence	Ethnic Fractionalization	Adjusted-R^2	Obs.
Stock	−0.269***	−0.353***					0.337	70
Market	(0.051)	(0.116)						
Development	−0.207***	−0.413***	−0.087	−0.347	0.246	0.342	0.329	70
	(0.069)	(0.140)	(0.177)	(0.234)	(0.244)	(0.291)		
Total Value	−0.117***	−0.144***					0.792	70
Traded	(0.024)	(0.055)						
	−0.059*	−0.170***	−0.121	−0.301***	0.142	0.176	1.014	70
	(0.031)	(0.064)	(0.080)	(0.108)	(0.111)	(0.134)		

5. Conclusions

This paper assesses two theories regarding the historical determinants of financial development. The *law and finance theory* predicts that historically determined differences in legal origin can explain cross-country differences in financial development observed today. Specifically, the law and finance theory predicts that countries that inherited the British Common law tradition obtained a legal tradition that tends to both emphasize private property rights and support financial development to a much greater degree than countries that obtained the French Civil law tradition. The *endowment theory*, on the other hand, predicts that the initial environmental endowments encountered by European colonizers shaped the types of long-lasting institutions created by those colonizers. Specifically, hospitable endowments favored the construction of settler colonies, where Europeans established secure property rights. In contrast, colonies with high settler mortality rates fostered the construction of extractive colonies, where Europeans established institutions that facilitated state control and resource extraction. According to the endowment theory, the long-lasting institutions created by colonizers continue to influence financial development today.

Although both the law and endowment theories stress the importance of how initial conditions influence institutions today, there are crucial differences. The law and finance theory focuses on the legal tradition spread by the colonizer. Thus, the identity of the colonizer is key. The endowment theory focuses on how the colony's endowments shaped the construction of long-lasting institutions. Thus, the endowment theory focuses on the conditions of the colony, not the identity of the colonizer.

The paper provides qualified support for the law and finance theory (Hayek, 1960; LLSV, 1998). One important qualification is that the connection between legal origin and financial intermediary development is not robust to controlling for endowments and other country characteristics. Legal origin, however, explains cross-country differences in private property rights protection even after controlling for initial endowment indicators, religious composition, ethnic diversity, and the fraction of years the country has been independent since 1776. Furthermore, except when controlling for religious composition (there is a strong correlation between French legal heritage and the Catholic religion), there is a robust link between legal origin and stock market development—French Civil law countries have significantly lower levels of stock market development than British Common law countries after controlling for other country characteristics.

The data provide strong support for the endowment view. Countries with poor geographical endowments, as measured by the log of settler mortality, tend to have less developed financial intermediaries, less developed stock markets, and weaker property rights protection. These results hold after controlling for legal origin, the percentage of years since 1776 the country has been independent, the religious composition of the country, and the degree of ethnic diversity. In terms of comparing the law and endowment theories, the empirical results indicate that both the legal systems brought by colonizers and the initial endowments in the colonies are

important determinants of stock market development and private property rights protection. However, initial endowments are more robustly associated with financial intermediary development than legal origin. Moreover, initial endowments explain more of the cross-country variation in financial intermediary and stock market development than legal origin. In sum, and consistent with AJR's (2001) endowment theory, we find a robust link between initial endowments and current levels of financial development.

Appendix A

Table 10
The financial development and institutions across countries are presented in Table 10. In Table 11 a description of the variables is presented. Financial development and institutions across countries

Country name	Country code	Private credit	Stock market development	Property rights	Legal origin	Settler mortality	Legislative competition	Checks
Algeria	DZA	0.19	0.00	3	F	78.2	3.50	1.00
Angola	AGO	0.03	0.00	2	F	280	4.83	2.00
Argentina	ARG	0.15	0.10	4	F	68.9	7.00	4.00
Australia	AUS	0.81	0.54	5	B	8.55	7.00	4.33
Bahamas	BHS	0.55	0.00	5	B	85	7.00	4.00
Bangladesh	BGD	0.21	0.02	2	B	71.41	6.67	3.17
Barbados	BRB	0.39	0.21	3	B	85	6.67	3.67
Bolivia	BOL	0.34	0.01	3	F	71	7.00	5.33
Brazil	BRA	0.27	0.16	3	F	71	7.00	4.17
Burkina Faso	BFA	0.12	0.00	3	F	280	4.00	1.00
Cameroon	CMR	0.18	0.00	2	F	280	5.75	2.00
Canada	CAN	0.80	0.51	5	B	16.1	7.00	4.00
Central African Republic	CAF	0.06	0.00		F	280	5.17	1.67
Chad	TCD	0.08	0.00	2	F	280	2.50	1.00
Chile	CHL	0.54	0.79	5	F	68.9	7.00	4.00
Colombia	COL	0.30	0.12	3	F	71	7.00	2.00
Congo	COG	0.13	0.00	2	F	240	5.00	2.00
Costa Rica	CRI	0.15	0.06	3	F	78.1	7.00	2.33
Cote d'Ivoire	CIV	0.31	0.05	2	F	668	5.67	1.83
Dominican Republic	DOM	0.22	0.00	2	F	130	7.00	5.00
Ecuador	ECU	0.18	0.10	3	F	71	7.00	3.67
Egypt	EGY	0.28	0.07	3	F	67.8	6.00	2.00
El Salvador	SLV	0.23	0.06	3	F	78.1	7.00	3.33
Ethiopia	ETH	0.19	0.00	2	F	26	2.67	1.00
Gabon	GAB	0.11	0.00	3	F	280	6.50	1.67
Gambia	GMB	0.11	0.00	4	B	1470	5.50	2.67
Ghana	GHA	0.05	0.12	3	B	668	3.00	2.00
Guatemala	GTM	0.13	0.01	3	F	71	7.00	3.17
Guinea	GIN	0.09	0.00	2	F	483	1.00	1.00
Guyana	GUY	0.20	0.00	3	B	32.18	6.50	1.50

Table 10 (*continued*)

Country name	Country code	Private credit	Stock market development	Property rights	Legal origin	Settler mortality	Legislative competition	Checks
Haiti	HTI	0.12	0.00	1	F	130	6.00	1.83
Honduras	HND	0.26	0.05	3	F	78.1	7.00	2.00
Hong Kong	HKG	1.36	1.79	5	B	14.9	N/A	N/A
India	IND	0.24	0.27	3	B	48.63	7.00	5.83
Indonesia	IDN	0.44	0.14	3	F	170	6.00	1.00
Jamaica	JAM	0.21	0.42	4	B	130	6.67	3.67
Kenya	KEN	0.31	0.15	3	B	145	5.50	2.00
Madagascar	MDG	0.14	0.00	3	F	536.04	6.33	2.83
Malaysia	MYS	0.93	1.89	4	B	17.7	7.00	6.00
Mali	MLI	0.12	0.00	3	F	2940	5.00	2.00
Malta	MLT	0.84	0.12	3	F	16.3	7.00	3.00
Mauritania	MRT	0.37	0.00	2	F	280	3.50	2.50
Mauritius	MUS	0.37	0.22	2	F	30.5	7.00	5.00
Mexico	MEX	0.27	0.32	3	F	71	6.83	2.00
Morocco	MAR	0.34	0.08	4	F	78.2	7.00	1.00
New Zealand	NZL	0.81	0.40	5	B	8.55	7.00	2.83
Nicaragua	NIC	0.25	0.00	2	F	163.3	7.00	2.25
Niger	NER	0.11	0.00	3	F	400	3.67	1.67
Nigeria	NGA	0.22	0.05	3	B	2004	1.00	1.00
Pakistan	PAK	0.23	0.16	4	B	36.99	7.00	5.50
Panama	PAN	0.50	0.07	3	F	163.3	7.00	3.17
Paraguay	PRY	0.20	0.01	3	F	78.1	7.00	3.00
Peru	PER	0.08	0.08	3	F	71	7.00	3.67
Rwanda	RWA	0.07	0.00	1	F	280	4.17	1.00
Senegal	SEN	0.24	0.00	4	F	164.66	6.50	2.00
Sierra Leone	SLE	0.03	0.00	2	B	483	2.67	1.00
Singapore	SGP	0.96	1.33	5	B	17.7	6.00	2.00
South Africa	ZAF	0.94	1.56	3	B	15.5	7.00	2.00
Sri Lanka	LKA	0.20	0.17	3	B	69.8	7.00	3.17
Sudan	SDN	0.05	0.00	2	B	88.2	N/A	N/A
Surinam	SUR	0.41	0.00	3	F	32.18	7.00	4.33
Tanzania	TZA	0.05	0.00	3	B	145	4.50	1.00
Togo	TGO	0.24	0.00	3	F	668	4.33	1.50
Trinidad and Tobago	TTO	0.48	0.12	5	B	85	6.67	3.67
Tunisia	TUN	0.58	0.08	3	F	63	5.17	1.00
Uganda	UGA	0.03	0.00	4	B	280	4.00	1.00
Uruguay	URY	0.23	0.01	4	F	71	7.00	4.00
USA	USA	1.48	0.69	5	B	15	7.00	4.67
Venezuela	VEN	0.19	0.12	3	F	78.1	7.00	4.67
Zaire	ZAR	0.00	0.00	2	F	240	2.83	1.00

Table 11
Variable descriptions and sources

Variable	Description	Sources
Private Credit	$\{(0.5)^*[F(t)/P\ e(t) + F(t-1)/P\ e(t-1)]\}/[\mathrm{GDP}(t)/P\ a(t)]$, where F is credit by deposit money banks and other financial institutions to the private sector (lines 22d and 42d in International Financial Statistics, IFS), GDP is line 99b, $P\ e$ is end-of-period CPI (line 64), and $P\ a$ is the average CPI for the year. Average for 1990–1995. Data for Angola, Guinea, and Tanzania are calculated using data from IFS and World Development Indicators (WDI); for Angola, IFS data for 1996–1998 are used and GDP data are from WDI; for Guinea, GDP data from WDI are used and given the lack of CPI indicators, the ratio of line 22d plus 42d divided by GDP is calculated.	Beck et al. (2001b), IFS, IFC, and own calculations
Stock Market Development	$\{(0.5)^*[F(t)/P\ e(t) + F(t-1)/P\ e(t-1)]\}/[\mathrm{GDP}(t)/P\ a(t)]$, where F is the total value of outstanding shares, GDP is line 99b (IFS), $P\ e$ is end-of, period CPI (line 64, IFS) and $P\ a$ is the average CPI for the year. Average for 1990–1995. For Guatemala and El Salvador, IFC data from 1996 and 1997 are used to calculate the variables. For Malta, data for 1994 and 1995 are taken from the stock exchange's web-page. For all countries that do not have stock markets or that introduced stock markets after 1995, a zero was entered. Also, for Nicaragua, a zero was entered since no data is found, the exchange was founded in 1993, and it is reported to be very small.	Beck et al. (2001b), IFC, IFS, WDI and own calculations
Property Rights	An index of the degree to which government protects and enforces laws that protect private property. Measured in 1997 and ranges from 1 to 5.	La Porta et al. (1999), Heritage Foundation
Liquid Liabilities	$\{(0.5)^*[F(t)/P\ e(t) + F(t-1)/P\ e(t-1)]\}/[\mathrm{GDP}(t)/P\ a(t)]$, where F is currency plus demand and interest-bearing liabilities of banks and nonbank financial intermediaries (line 55l in IFS), GDP is line 99b, $P\ e$ is end-of period CPI (line 64) and $P\ a$ is the average CPI for the year. Average for 1990–1995. Data for Angola, Guinea, and Tanzania are calculated using data from IFS and World Development Indicators (WDI); for Angola, IFS data for 1996–1998 are used and GDP data are from WDI; for Guinea, GDP data from WDI are used and given the lack of CPI indicators, the ratio of line 551 divided by GDP is calculated	
Total Value Traded	The total value of shares traded as a ratio of GDP. Average for 1990–1995. For Guatemala and El Salvador IFC data from 1996 and 1997 are used to calculate the variable. For Malta, data for 1994 and 1995 are taken from the stock exchange's web-page. For all countries that do not have stock markets or that introduced stock markets after 1995, a	Beck et al. (2001b), IFC, IFS and own calculations

Table 11 (*continued*)

Variable	Description	Sources
	zero was entered. Also, for Nicaragua, a zero is entered, since no data is found, the exchange was founded in 1993, and it is reported to be very small.	
Rule of Law	An indicator of the degree to which the country adheres to the rule of law (ranging from 0 to 6). Average for 1990–1995.	International Country Risk Guide (ICRG)
Aggregate Rule of Law	An indicator of the strength and impartiality of the legal system. An aggregate indicator that is estimated with an unobserved-component model from individual indicators of the efficiency of the legal system from 11 sources. Measured in 1998.	Kaufmann et al. (1999)
French Legal Origin	Dummy variable that takes on value one if a country legal system is of French Civil law origin.	La Porta et al. (1999)
Settler Mortality	Log of the annualized deaths per thousand European soldiers in European colonies in the early 19th century.	Acemoglu et al. (2001)
Latitude	Absolute value of the latitude of a country, scaled between zero and one.	La Porta et al. (1999)
Africa	Dummy variable that takes on value one if country is in Sub-Saharan Africa.	Easterly and Levine (1997)
Latin America	Dummy variable that takes on value one if country is in Latin America.	Easterly and Levine (1997)
Catholic	Percentage of population that follows Catholic religion, in 1980. Ranges from 0 to 100.	La Porta et al. (1999)
Muslim	Percentage of population that follows Muslim religion, in 1980. Ranges from 0 to 100.	La Porta et al. (1999)
Other Religion	Percentage of population that follows religion other than Catholic, Muslim, or Protestant, in 1980. Ranges from 0 to 100.	La Porta et al. (1999)
Independence	Percentage of years since 1776 that a country has been independent.	Easterly and Levine (1997)
Ethnic Fractionalization	Probability that two randomly selected individuals in a country will not speak the same language.	Easterly and Levine (1997)
Legislative Competition	Index of the number of parties competing in the last legislative election, ranging from 1 (non-competitive) to 7 (competitive). Average for 1990–1995.	Beck et al. (2001b)
Checks	Measure of the number of veto-players in the political decision-making process, both in the executive and the legislature. Average for 1990–1995.	Beck et al. (2001b)

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