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How Well Do Institutional Theories Explain Firms' Perceptions of Property Rights?

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Abstract: We examine how well several institutional and firm-level factors explain firms' perceptions of property rights protection. Our sample includes private and public firms which vary in size from very small to large in 80 countries. Together, the institutional theories we investigate account for approximately 50 percent of the country-level variation, indicating that the literature is addressing first-order factors. Firm-level characteristics, such as legal organization and ownership structure, are comparable to institutional factors in explaining variation in property rights protection. A country's legal origin predicts property rights variation better than its religion, its ethnic diversity, or natural endowments. However, these results are driven by the inclusion of former Socialist economies in the sample. When we exclude the former Socialist economies, legal origin explains considerably less than ethnic fractionalization.

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Introduction

In modern corporate finance, it is taken as axiomatic that the firm is a 'nexus of contracts' (Jensen and Meckling (1976)). Many of the predictions of corporate theory depend at some level on how well protected property rights assigned by these contracts really are. People may be less willing to invest and more willing to engage in opportunistic behavior if property rights are insecure. Several serious theories have recently been advanced to explain the underlying determinants of property rights across countries. The seminal Law and Finance theory (La Porta, Lopez-de-Silanes, Shleifer and Vishny (henceforth LLSV) (1998)) stressed the importance of legal traditions. Other influential work has taken a broader view, stressing Culture (Stulz and Williamson (2003)), Ethnic diversity (Alesina et al. (2003) and Easterly and Levine (1997)), and Endowments (Acemoglu, Johnson, and Robinson (2001).

While all seem to contain elements of truth, it is important to distinguish which theories are relatively more important. In this paper we study the perceptions of business people in different countries regarding how well protected their property rights really are in practice. By matching these perceptions with country level and firm level factors we are able to assess the relative importance of each of these theories. Using a variance decomposition approach, we examine differences between countries as well as differences between firms.

We find that, in our full sample, the law and finance theory appears to do well in explaining firms' perceptions of property rights. However, this result is critically dependent on how we treat the former Socialist countries. If we pool them with the rest, then legal origin alone explains about 22% of the variation in firms' perception of property rights protection that is attributable to country-level effects. The theories based on a country's endowments (Acemoglu, Johnson, and Robinson (2001)) and ethnic fractionalization (Alesina et al. (2003), Easterly and Levine (1997)) while not as strong, also do well.

If we argue that the former Socialist countries need to be handled separately, then the explanatory power of legal origin decreases dramatically. Legal Origin explains only 13% of the variation in property rights protection at the country level. Instead, a country's ethnic fractionalization when entered individually, explains 28% of the variation in the

reduced sample indicating support for the ethnic fractionalization view. Thus, we find that the strong performance of the Law and Finance view is not due to differences in the way common law and civil law treat investor rights, but depends on the inclusion of countries with Socialist legal tradition in the sample. However, the institutions in these countries have much more than legal tradition in common. Thus, including these countries in a sample testing the Law and Finance view ascribes too much to shared legal origin. We also note that the original papers detailing the importance of legal origin for financial development, LLSV (1998, 1999b) did not include any countries with Socialist legal tradition.

As robustness tests we also include what we consider to be partially endogenous theories - openness to trade and the political variables, democracy, autocracy and checks and balances. While Legal origin dominates in terms of explanatory power over most of these variables, except democracy, in the full sample, once we remove transition economies, all the partially endogenous variables explain more of the variation in property rights protection than legal origin.

While the total overall variation in property rights explained at the country level by country dummies is low (17.82%), the institutional variables when entered together account for nearly 50% of this country-level variation in the full sample, and 52% of the country level variation in the sample without the former Socialist countries. Thus, the current debate about the country-level institutional factors that affect property rights is addressing important first order effects that significantly influence firms' perceptions of property rights. In fact, in a reduced sub-sample of 40 countries for which data on settler mortality is available, the various institutional theories together explain 62% of the variation at the country level.

We also find that firm-level characteristics have substantial explanatory power in our sample, in some cases even exceeding that of the individual country-level institutional factors. For the full sample, the ownership structure of the firm has the highest explanatory power, nearly 8.5% of that of the country dummies, followed by size

and organizational form.[1] However, once we drop the former Socialist countries, organizational form becomes the most important firm-level explanatory variable.

In comparing the different institutional theories, we exploit the World Business Environment Survey (WBES), a major cross-sectional survey conducted in developed and developing countries in 1999 and led by the World Bank. We use survey responses from 7760 firms in 80 countries to questions about property rights and firm characteristics. The survey contains data on small as well as large firms, and on private corporations and partnerships as well as publicly traded firms.[2]

In order to compare the different theories and to examine the relative influence of firm effects versus country effects, we use variance decomposition analysis. This methodology is well established in the corporate strategy literature in the context of decomposing profitability into corporate and industry effects (Schmalensee, 1985; Rumelt, 1991; McGahan and Porter, 1997, 2002; Khanna and Rivkin, 2001).[3] The methodology allows us to focus directly on the general importance of these effects in explaining property rights without any assumptions on *causality* or structural analysis.

Our analysis also uncovers a methodological issue that has not received adequate attention in the literature. The explanatory power of several institutional theories depends on the proxies used to represent these theories. We identify several potentially significant scaling issues that occur if empirical tests do not pay attention to non-linearities arising due to the way the proxies are scaled. These scaling issues have the potential to overturn conclusions drawn from tests.

This paper is closely related to the recent work of Stulz, Karolyi, and Doidge (2004) who investigate variation in the ratings of governance in large firms in a large sample of countries. They find that most of the variation in governance ratings across firms is explained by country characteristics rather than firm characteristics. They attribute this finding to the increased incentives of firms in better legal environments to adopt better governance structures.

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[1] Firms can be organized as sole proprietorships, partnerships, cooperatives, private corporations or publicly traded corporations.

[2] The WBES has been used by Love and Mylenko (2003), Djankov, La Porta, Lopez-de-Silanes, and Shleifer (2003), Beck, Demirguc-Kunt and Maksimovic (2005), Beck, Demirguc-Kunt and Levine (2005), Beck, Demirguc-Kunt, Laeven and Maksimovic (2005) among others.

[3] The original application of this methodology was in quantitative genetics to decompose variation in traits into a genetic component and an environment component (Jinks and Fulker (1970)).

In their paper on the determinants of financial system and stock market development, Beck, Demirguc-Kunt, and Levine (2003) also discuss property rights protection. Our methodology and findings differ from theirs in several respects. First, while we use firm-level data on property rights protection, they use a country-level index, compiled by the Heritage Foundation from several private and public sources, and cannot address the issue of whether firm characteristics affect property rights protection. Second, while we consider each institutional theory separately and treat all of them equally, Beck et al (2003) focus on legal origin and settler mortality and use the proxies for other theories simply as control variables. Finally, their sample of 70 countries does not include any of the former Socialist countries that are in our sample. These factors are likely to explain why we find a clear difference in the explanatory power of the legal origin and endowment views for property rights protection and for several related variables, and their paper does not.

The rest of the paper is organized as follows: Section 2 discusses the various institutional determinants of property rights that we investigate in this paper. Section 3 presents the empirical methodology. Section 4 presents the data and the results of the variance decomposition analysis. Section 5 presents additional robustness tests and we conclude with suggestions for future research in section 6.

2. Institutional Determinants of Property Rights Protection

In order to understand better the determinants of firm's perceptions of property rights protection, we present a one-to-one comparison of four different institutional theories that have been shown by current literature as being important predictors of property rights - Legal Origin, Endowments, Culture and Ethnic Fractionalization.

LLSV (1998) argue that legal systems differ in how much they protect the rights of private investors vis-à-vis the state and minority shareholders. They argue that legal systems that evolved from common law traditions have tended to be supportive of private property rights. By contrast, civil law systems were established by states as acts of policy. They tend to be designed to state administration, are more predictable, and are less likely to favor individuals over the state or to tailor decisions in ways that safeguard individual

claimants in specific instances. The LLSV theory focuses on the differences between five influential legal traditions: the British common law, the French civil law, the German civil law, the Scandinavian civil law and the Socialist law countries. To identify the legal origin of the country, we use five different dummy variables to capture each type of legal system using data from LLSV (1998, 1999). We refer to the effect of legal origin on property rights as the ***Law and Finance view.***

Acemoglu, Johnson, and Robinson (2001) (henceforth AJR) argue that in many countries, especially former colonies, the legal system was not designed to protect property rights. Instead, its purpose was to facilitate the extraction of resources from the indigenous population. Thus, two systems with the same legal origin may in practice offer very different protections. AJR (2001, 2002) and Engerman and Sokoloff (1997) contend that European colonization offers a natural experiment to test this hypothesis. Europeans set up extractive systems in colonies which were not attractive for colonial settlement because of high settler mortality due to natural causes at the time of colonization or because the indigenous population was relatively large. In colonies where settlement was feasible the judicial systems were set up so as to protect the property rights of the settlers. This theory emphasizes the role of geography (latitude and natural endowments) and disease environment (which affected the settler mortality) in shaping property rights. We refer to this theory as the ***Endowment view***.

To measure geographical endowments, we use Latitude, which is the absolute value of the latitude of the country scaled between 0 and 1, from LLSV (1999). Countries closer to the equator tend to have a more tropical climate that was inhospitable to European settlers and therefore fostered "extractive" institutions. We use data on Settler Mortality from Acemoglu, Johnson, and Robinson (2001) where settler mortality is a measure of the death rates faced by European settlers in former colonies and is calculated by the logarithm of annualized deaths per thousand Europeans. Since we have data on settler mortality for a smaller sample, we use latitude for our main results and present the results on settler mortality as a robustness test[4].

[4] Engerman and Sokoloff (1997) note that a second channel through which geographical endowments shape initial institutions is through openness and competition. They show that agriculture in southern North America and much of South America is conducive to large plantations. Thus, colonialists developed long-lasting institutions to protect the few landowners against the many peasants. In contrast, northern North

Several researchers have argued that the effect of the legal system per se on property rights is limited, and that differences across countries in their enforcement depends on a broader range of cultural and social considerations. Thus, according to the ***Culture view***, differences in culture, defined as a system of beliefs, can help explain the differences in investor protection. Stulz and Williamson (2003) and LLSV (1999) both use religion as a proxy for culture. We use four categories of classification for the religion variable: Catholic, Protestant, Muslim and Other Religions. The data on religious composition is taken from LLSV (1999) to create four corresponding dummy variables, each of which takes the value 1 if the religion it represents is the dominant religious group (highest percentage of practicing population) in the country and 0 otherwise[5].

Easterly and Levine (1997) show that ethnic diversity is also an important determinant of rent seeking and social polarization, affecting property rights and social institutions.[6] We term this the ***Ethnic Diversity view.*** Empirically, to capture these broader ethnic diversity effects we use a measure of ethnic fractionalization of the country compiled by Alesina et al (2003). Unlike measures used in the earlier literature, this measure captures important aspects of ethnicity like racial origin and skin color.[7]

The explanatory power of the different variables may be affected due to non-linearities arising from the way these variables are constructed. Unlike legal origin, the other theories posit determinants of property rights that cannot be directly observed. These determinants are accordingly proxied by variables that have been independently scaled for other purposes. Conventionally, these proxies are then entered linearly in an equation that predicts a variable of interest. However, there is no reason to believe that the scales are designed to detect material effects of the determinant on the variable of

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America's agriculture is conducive to small farms, so that more egalitarian institutions emerged. We focus on the AJR (2001) measure of settler mortality and latitude and not on agricultural endowments because the data on settler mortality and latitude is available for a broader cross-section of countries.

[5] Since we need a categorical variable to do variance decomposition, we use dominant religion dummies calculated from the percentage of the population of each religion within each country instead of using the percentages directly.

[6] As noted by Alesina et al (2003), ethnic fractionalization has also been found empirically to predict lower levels of trust, less efficient public services and less favorable economic outcomes in US localities,

[7] In an earlier version of the paper we used a measure of ethnic fractionalization from Easterly and Levine (1997) that Alesina et al (2003) show relies largely on linguistic distinctions.

interest or that, if material, the effect is likely to be linear over the range of the scale.[8] We discuss these scaling issues in section 5.2.

To even the playing field, first we construct a five point scale for both latitude and ethnic fractionalization, based on their quintiles, to ensure the same number of categories as legal origin and then perform variance component analysis using this five-point scale. In the regression, we enter dummies for each unique value of the rescaled variables.

Implicit in several of these theories is the prediction that certain classes of firms will have their property rights protected better than other types of firms in certain countries. Thus, for example, one would expect that in oligarchic societies, large incumbent firms would have a greater degree of property rights protection than smaller firms. By contrast, the legal origin view, and the culture and ethnic diversity views do not imply that the amount of property rights protection should depend more on firm size differences in certain countries than in other countries. By considering property rights protection at the firm level, we can provide evidence on the likely size of these interactive effects.

In considering the interactions between country effects and firm effects, we examine several firm-level characteristics which are associated with different perceptions of property rights. Recent studies have shown that the effect of different financial and legal systems on firms varies according to the distribution of ***Firm Size***. Differences in the effect of institutions across different types firms have also been found. Beck, Demirguc-Kunt, and Maksimovic (2005, 2006) find that small firms grow more slowly in countries with weak financial institutions and firms are larger in countries with well developed institutions. Kumar, Rajan, and Zingales (2002) find that more efficient legal systems are associated with larger firm sizes across countries in Western Europe, an effect especially pronounced in industries characterized by low levels of capital intensity. In a study focused on Mexico, Laeven and Woodruff (2004) find that states with more effective legal institutions have larger firms.

[8] There is a direct parallel with issues that arise in the testing of asset pricing models such as the CAPM. In those tests, theoretically derived constructs such as beta are usually entered directly. However, when considering variables such as firm price/earnings ratios, for which there is no direct theoretical justification and no presumption of linearity, it is customary to form portfolios of firms with similar values of price/earnings ratios (often deciles) and use dummies, or to analyze the deciles separately.

Demirguc-Kunt, Love, and Maksimovic (2006) show that incorporated firms grow comparatively faster in countries with strong financial and legal institutions than in countries with weak institutions. Beck, Demirguc-Kunt, and Levine (2005) using the same WBES database, find that incorporated and family-owned firms face the highest financing obstacles. Thus, we also examine whether firms' perceptions of property rights are affected by their ***Organizational form*** and whether there exist interactions between organizational forms and the institutional variables.

There is also an extensive literature documenting a link between ownership structure and the institutional environment. LLSV (1997, 1998, 1999, 2000), Johnson, La Porta, Lopez-de-Silanes, and Shleifer (2000), and Burkart, Panunzi, and Shleifer (2003) show that legal protection of minority shareholders varies across countries, and this variation determines the level of ownership concentration, the existence of family firms worldwide, the patterns of separation between ownership and management, and the degree of expropriation by corporate insiders. The recent spate of privatizations in Latin America and the transition economies has also brought the performance of state-owned enterprises versus other companies into focus. La Porta and Lopez-de-Silanes (1999) using the case of Mexican privatizations provide evidence that privately owned firms outperform state owned enterprises. Hence, we also investigate to what extent ***Ownership Structure*** influences firms' perceptions of how well property rights are protected.

Beck and Levine (2002) show that differences in legal and financial systems affect the availability of external finance and the growth of different industries in the manufacturing sector. We would expect these differences to matter as much or more when we look across different sectors. Hence, we also examine if belonging to a particular ***Industrial Sector*** impacts how firms perceive their property rights to be protected.

3. Methodology and Data

Our analysis relies on the following reduced-form model of property rights protection.[9] Let y_{ijk} denote the perceived response of a firm *k*, belonging to a firm category *j* and located in country *i*:

$$y_{ijk} = \mu + \alpha_i + \beta_j + \gamma_{ij} + \varepsilon_{ijk} \quad (1)$$

where μ is the average response across all firms and countries, α_i are country effects (i=1,…, l_α), β_j are firm category effects (j=1,….l_β), γ_{ij} are country-firm interaction effects (l_γ distinct *ij* combinations) and the ε_{ijk} are random disturbances. We look at four different categories at the firm level: firm size, ownership, legal organization and industry sector. At the country level, apart from the base regression using country dummies, we use four other institutional variables to capture the various theories discussed in Section 2. Hence we are actually looking at 16 different models (four*four) that are different combinations of the firm and country factors. The premise in each estimation is that the model being estimated is the true one.

The model takes the classification of firms into firm-categories and countries as given and is essentially descriptive. In particular, while it posits the existence of differences in responses across firms and countries, it offers no causal or structural explanation for these differences. Thus, for example, if we find that ethnic diversity explains the variation better than legal origin, it leaves open the possibility that ethnic fractionalization itself is partially explained by legal origin.[10]

3.1 Simultaneous ANOVA

We analyze this model using a regression based, simultaneous ANOVA approach that uses the standard assumptions of ordinary least squares. Equation (1) is a linear additive model where the various sets of effects may be highly correlated. To deal with this collinearity, the estimation approach reports the *incremental* explanatory power of each set of effects. We begin by estimating a restricted version of equation (1), where we

[9] In principle, institutional effects can be non-linear in complex ways, some of which we discuss below. However, the comparative finance literature on institutions relies on linear models, and such models are the starting point for our analysis.

[10] However, the ultimate "cause" of ethnic fractionalization may not be of direct relevance for firm-level analysis since it would be taken as exogenous in such studies.

exclude all effects other than the constant and the institutional variable. The R^2 of this regression provides an estimate of the proportion of the variation in perceived property rights protection at the firm level, explained by the institutional variable alone. More precisely, it provides an upper bound for the amount that can be explained by that variable directly and by other variables that the institutional variable predicts. For example, assume that large firms report that their property rights are better protected than small firms and that the institutional variable under investigation is legal origin. Then a regression of property rights protection on legal origin will pick up the direct effects of legal origin on firms' property rights. However, if firms in countries say with French legal origin are disproportionately small, then the regression will also pick up an indirect effect, arising from the association of French legal origin and the size composition of firms.

In each case, we next add the firm level characteristic and compute the R^2 to obtain an estimate of the proportion of the variation in property rights explained by the institutional variable and the firm characteristic together.[11] Finally, we add an interaction term, to provide for the possibility that the firm characteristics may affect property rights for some values of the institutional variable and not for other values.

Our measure of property rights protection has six discrete outcomes, and hence a linear model may not be entirely appropriate. However, as pointed out by Wooldridge (2003: p. 553), discreteness of the dependent variable does not in itself mean that linear models are inappropriate. Menard (1995) suggests that linear regression (ordinary least squares) is reasonable with ordinal dependent variables that have a large number of categories by treating the variables as though they were measured on an interval scale[12]. Since the choice of a non-linear form would be arbitrary we continue to use ordinary least squares for our estimation. We do perform robustness tests using a non-linear model

[11] Note that the difference in R^2 of the new regression and the restricted regression does not provide an estimate of the variation explained by the firm specific variable by itself, but rather the marginal increment of explanatory power that is gained by adding the firm specific variable. Thus, if legal origin predicts firm size well, the marginal increase in R^2 would be small, even if firm size and property protection are highly correlated.

[12] In the sociology and marketing literature, where use of ordinal variables from survey data is ubiquitous, it is common practice to treat ordinal variables as being continuous and to use ordinary least squares (OLS) estimation when the number of outcomes for the categorical dependent variable is greater than four. The assumption behind this is that when the number of cut-off points is greater than four, they may be considered to be approximately the same distance from each other.

specification and find our results to be unchanged. This is further discussed in section 5.2.1 of the paper.

3.2 Data

We combine firm-level data from the World Business Environment Survey (WBES) and country-level variables from a number of different sources. The WBES surveyed firm owners and managers on their perception of the business environment in the country with questions on judiciary, corruption, regulation, taxation, competition and access to financing. The WBES was conducted in 1999-2000 and covers more than 10,000 firms in 80 countries.

The limited availability of firm-level data has prompted the increased use of surveys in corporate finance. Graham and Harvey (2001) argue that survey-based analysis offers a balance between large sample empirical analysis and clinical studies, by asking very specific and qualitative questions across a broad section of firms for a moderately large sample. The WBES, in particular, has a broad scope in examining more than 200 questions in total, covering topics from property rights protection to corruption, political instability, financing constraints, regulation, business environment and government-business relationships. The survey has a reliable sampling methodology by administering the survey on a parallel basis in all the countries using a uniform methodology and parallel parameters for sample composition. To ensure uniform representation, the sample of firms surveyed was stratified on the basis of several variables like sector, size, ownership, exporters and location with the constraint that at least 15% of the firms are in each of the sub categories of these variables.

While there is a great amount of general information available on the firms, the identity of the firms and the interviewees is confidential information to encourage correct responses from the firms. This prevents us from validating the financial information provided by the firms from public records. However, the WBES has been widely used and most recently for its firm-level variation by Beck, Demirguc-Kunt, and Maksimovic (2005). It has also been used by Transparency International in computing its Corruption

Perceptions Index for 2002[13]. After eliminating observations with missing key data[14], our sample includes 7760 firms in 80 developed and developing countries.

We measure property rights protection by survey responses to the question *"I am confident that the judicial system will enforce my contractual and property rights in business disputes"*. Firms are asked to respond on a six point scale, with one denoting the **highest** level of confidence. This property rights question is not meant to capture disputes between the state and the individual.

The four firm-level variables we study, **Size**, **Ownership, Legal Organization,** and **Sector** are also obtained from the survey. The sample includes firms of all sizes: small firms (between 5-50 employees) represent 39% of the sample, medium firms (51 to 500 employees) are 40% of the sample and the remaining 20% are large firms (more than 500 employees)[15]. The firms' ownership structures are classified into 9 different categories - individual, family, conglomerate group, bank, board of directors, managers, employees, government and others. We also have information on the legal organization of the company, whether it was organized as a single proprietorship, partnership, cooperative, privately-held corporation, corporation listed on a stock exchange and a other category. The firms surveyed belong to five different sectors, agriculture, manufacturing, services, construction and other.

Insert Figure 1

Figure 1 shows that there are differences in perceptions of property rights across firms with different characteristics. Overall, small-sized firms perceive their property rights as being less secure when compared to large and medium firms as shown in Figure 1a. On probing deeper, we find that there is significant variation across sizes even within the same country, i.e., holding all legal and political institutions constant. For instance,

[13] According to TI, "International surveys on perceptions serve as the most credible means of compiling a ranking of nations". See Batra, Kaufmann and Stone (2003) for a detailed analysis of the sampling methodology and findings of the survey

[14] The original database consists of 10032 observations in 81 countries. We lose 2243 observations because of missing data on the dependent variable and the four firm level variables, size, ownership structure, organizational form and industry sector. On removing variables with missing institutional variables, we lose 1country (West Bank and Gaza) which has 29 firms. This leaves us with 7760 observations in 80 countries.

[15] Employment is typically the most reliable figure in developing countries. Hence number of full time workers is used as a measure of firm size by the World Bank Group and other international survey teams including RPED and the Oxford Centre for the Study of African Economies

medium-sized firms in both Namibia and Nigeria respond most poorly to the property rights question when compared to the small and large firms. This is consistent with recent work that shows that middle-sized firms in African countries are more severely affected than small and large firms (Sleuwaegen and Goedhuys (2002)).

Figure 1b shows the distribution of perceived property rights across firms with different types of owners. Firms owned by workers, followed by individual owned firms, have the lowest confidence that their property rights are going to be protected while government owned firms respond most positively. At the industry level, firms in agriculture and construction sectors have the weakest perception of property rights as shown in Figure 1c. When we look at the effect of legal status of the firm on mean property rights perception across the 80 countries (Figure 1d), we find that in general, incorporated firms perceive property rights protection to be better than firms organized as sole proprietorships and cooperatives and more so if they are listed on a stock exchange.

Insert Table 1 and 2 here

Table 1 lists the institutional indicators for the 80 countries in our sample. Panel A of Table 2 provides descriptive statistics and panels B and C examine correlations between the variables. The correlations between property rights and legal origin, religion, ethnic fractionalization and latitude are all significant at the 1% level as shown in panel B of Table 2. The correlations between all the firm level variables and property rights are also highly significant at the 1% level indicating that firms of different sizes, industries, ownership structures and organizational forms perceive their property rights protection differently. The correlations suggest that larger firms and listed corporations perceive their property rights to be protected where as firms in agriculture and construction industries perceive poor property rights protection. Since the firm level variables are categorical variables, the figures 1a to 1d are more informative of the variation in property rights across different firm categories.

4. Empirical Results

The results of our analysis of variance on Equation (1) are shown in Table 3. We begin with a benchmark specification in which we model institutional variation at the country level with a country dummy. This specification provides us with the upper bound

for the variation in firm-level responses that can be explained at the country level. In alternate specifications, we replace the country dummy with an institutional variable. In each case, we calculate the increment to adjusted R-square with effects introduced in the following order: country, firm and country-firm interactions.

Insert Table 3 here

Panel A of Table 3 presents the contribution to adjusted R-square when each of the institutional variables are entered one at a time. In our sample of 80 countries, country dummies explain 17.82% of the variation in firms' perceptions of how well property rights are protected. Table 3 shows that the Law and Finance view[16] holds the dominant position in terms of explaining the variation in property rights (3.89%). Latitude explains 2.24% followed by ethnic fractionalization (1.95%) and religion (1.15%). Legal Origin, latitude and ethnic fractionalization both explain more than any firm-level characteristic. When entered together, the institutional variables explain about 50% of the total explainable variation at the country level (=8.88/17.82).

At the firm level, firm size by itself explains 1.07%, ownership structure explains 1.50%, legal organization explains 0.7% and industry sector explains 0.23%, indicating that ownership structure of the company explains the most variation. These numbers indicate that in many cases, firm level characteristics are comparable to the country-level factors in their explanatory power and sometimes explain more than the institutional factors themselves. For instance, ownership structure of the company explains more than religion, and explains nearly 39% as much as legal origin and 77% as much as the ethnic fractionalization variable.

Panel B of Table 3 presents the main results of the variance component analysis of Equation (1) using ANOVA. The four sub-panels of panel B of Table 3 correspond to four different firm effects being investigated –firm size, industry sector in which the firm operates, legal organization of the company and ownership structure of the company. The country effects introduced depend on the model being tested. Comparing the firm-level effects in each column across panels, we find that ownership structure has the highest

[16] Alternative characterizations of legal origin all yield similar results. We experimented with using only four dummies-Common law, French civil law, German and Scandinavian civil law and Socialist law, and also with using only 3 dummies-Common Law, Civil Law and Socialist Law. In the former case, the legal origin dummies explain 3.77% and in the latter case, they explain 3.70% confirming our result that the Law and Finance view explains the most variation in property rights.

marginal contribution to adjusted R-squares confirming that ownership structure has the greatest explanatory power compared to other firm-level variables[17].

For a detailed comparison of the country-firm interactions, we focus on the most significant institutional factor – legal origin. Panel A of Table 3 shows that firm size by itself explains 1.07% of the variation in property rights. However, when we include firm size in a model after legal origin as in panel B, the marginal contribution of firm size to adjusted R-squares is only 0.45%. Hence, we conclude that 58% ((1.07-0.45)/1.07) of firm size effect is subsumed by legal origin because the size distribution of firms differs across countries with different legal origins. Thus, an important indirect channel through which legal origin might work is to change the size distribution of firms. Similarly, 17% of the industry effect, 83% of legal organization and 70% of the effect due to different ownership structures are subsumed within legal origin. So legal origin not only directly impacts firms' perceptions of property rights but also has an indirect impact through its effect on the distribution of different types of firms in different countries.

When we look at the joint effect of country and firm characteristics, surprisingly, the country-firm interactions are largely insignificant and most come in below 1%. Therefore for instance, while legal origin subsumes a large part of the size effect, there is little evidence that different legal systems affect the property rights perceptions of different firms differently. We interpret these results as suggesting that while legal origin affects the sizes of firms as they adapt to the institutions, in equilibrium, of the firms that exist once they have adapted, we don't have evidence that different legal origins treat firms of different sizes differently. On the other hand, several other institutional factors have a moderating effect on the firms. For instance, with respect to ethnic fractionalization, ethnic fractionalization subsumes only 2% of the ownership effect and 6% of the firm organization effect but the interactive effects of ethnic fractionalization and ownership (0.77%) and ethnic fractionalization and legal organization (1.19%) are not entirely negligible. In fact, the largest interactive effect across all the models is that of

[17] For instance, when we look at column IV (Ethnic Fractionalization) of panel B of Table 3, ownership structure has the highest marginal contribution to explanatory power (1.47%) compared to any of the other firm characteristics.

1.19% implying that the extent of ethnic fractionalization of a country affects perceptions of firms with different types of legal organization structures differently.[18]

5. Robustness Tests

5.1. Varying the sample size

In this section, we investigate the robustness of the Law and Finance view to the exclusion of different samples of countries. For one, our sample contains a large number of former Socialist economies.[19] These economies are readily classified as having a Socialist Legal Tradition by the Legal Origin view in LLSV (1999). However, these countries differ from the rest of the countries in the sample by the very fact that they are still undergoing shocks of transition and the wholesale restructuring of property rights. To the extent that the Socialist Legal Tradition also proxies for common transition shocks, the explanatory power of the legal origin view might be overstated in our tests. We also investigate the robustness of the results to the exclusion of several outlier countries including the African and Low Income countries. Finally we also do several random sorts and analyze the results to arrive at a meta conclusion that allows us to identify the institutional theory that is most important in explaining property rights protection.

5.1.1. Without Former Socialist Economies

To investigate if the dominance of the Law and Finance view holds when the former Socialist economies are excluded, Table 4 repeats the analysis in Table 3 for a smaller sample of 56 non-Socialist economies (and 4588 observations). Country dummies now explain only 16.15% of the variation in property rights as compared to 17.82% previously. The institutional factor that explains the most variation is ethnic fractionalization (4.57%) which explains about 28% of the cross-country variation. Both

[18] Further investigation reveals that firms organized as cooperatives, in countries with high ethnic fractionalization scores, complain most about property rights protection where as incorporated firms in these countries respond most favorably.

[19] The transitional economies in our sample are Albania, Armenia, Azerbaijan, Belarus, Bulgaria, Bosnia and Herzegovina, Croatia, Czech Republic, Estonia, Georgia, Hungary, Kazakhstan, Kyrgyz Republic, Lithuania, Moldova, Poland, Romania, Russian Federation, Slovak Republic, Slovenia, Uzbekistan and Ukraine. China and Cambodia are also classified as socialist legal tradition and hence are dropped from the smaller sample.

Legal Origin and Latitude explain 2.16% of the total variation in firms' responses that amounts to about 13% of the cross-country variation although Legal Origin has a more significant drop in explanatory power when compared to the full sample of 80 countries (-44%) than Latitude (-3.6%).

Insert Table 4

Taken together, all the institutional factors explain approximately 52% of the cross-country variation in this reduced sub-sample, while they explained 50% of the cross-country variation in the full sample that included the former Socialist countries.

At the firm level (not shown in the table), legal organization of the firm explains 0.94%[20] which is more than ownership structure (0.44%). Size explains 0.28% and there is very little variation explained by the industry sector in which the firm operates (-0.03%). When we look at the marginal contribution of the firm effects in Table 4 (second row in each panel), the variables with the maximum explanatory power across models is legal organization. The strongest country-firm interactive effect is that of Latitude-Legal Organization (0.93%).[21]

5.1.2. Using Settler Mortality

Given the strong performance of the latitude variable, we use another measure of geographical endowments, **Settler Mortality**, as stressed by Acemoglu, Johnson and Robinson (2001). Table 5 shows the results for a sub-set of countries for which data on settler mortality is available. The sample is now restricted to 40 countries with 3222 observations. This sample of countries is similar to the sample of non-socialist economies in Table 4.

Insert Table 5 here

We construct the table using the five point categorization applied to settler mortality. The results of Table 5 once again dramatically change the order of explanatory

[20] Legal organization is still the dominant firm level variable in smaller sub-samples if we collapse the legal organization variable into four categories: sole proprietorships, partnerships, corporations and others instead of the usual six categories: sole proprietorships, partnerships, cooperatives, unlisted corporations, listed corporations, and others.

[21] The regression coefficients reveal that firms organized as sole proprietorships in countries close to the equator are more likely to perceive property rights protection to be poor whereas incorporated firms in countries in the fourth quantile of countries (when countries are ranked on their distance from the equator) respond most favorably to the question on the extent of property rights protection.

power of the various theories established in Table 3. The first row in each panel shows that the Law and Finance View is replaced by the Endowments View and Ethnic Fractionalization View as the theories with the most explanatory power. Settler Mortality now explains the most variation (5.78%) followed by ethnic fractionalization (3.25%). Together, the institutional theories explain nearly 62% of all explainable variation at the country level. At the firm level, firm size explains 0.54%, firm ownership explains 0.46%, legal status of the company explains 1.22% and industry sector explains 0.02%[22]. So once again, in the smaller sub-set of countries, the firm's legal status explains more than ownership structure. The interaction of latitude and legal status of the company has the largest explanatory power at 2.04%.[23]

Tables 3-5 reveal that there is substantial heterogeneity in the explanatory power of different institutional factors depending on the sample of countries considered. The Law and Finance view figures as the dominant theory when we consider the whole sample of 80 countries, but this effect is driven largely by the inclusion of former Socialist economies. When we exclude these countries, ethnic fractionalization does well in explaining the variation in property rights giving support to the Ethnic Diversity view of property rights. The Endowments view also comes out stronger than the Law and Finance when we consider a smaller sample of countries for which settler mortality is available.

Thus, the results suggest that the dominance of the Law and Finance view is driven by the inclusion of former socialist economies in the overall sample. While previously the focus has been on the role of Common Law versus Civil Law traditions, these results show that Legal origin matters mainly because of the extent to which transition economies are different from other countries. The poor enforcement of property rights in these countries, where institutions in general are in a flux, makes them sufficiently different from other countries contributing to the explanatory power of legal origin. Once we remove transition economies, the difference between Common and Civil

[22] These are individual contributions of the firm level variables not shown in Table 5. If we were to rescale legal organization into four broad categories : Sole Proprietorships, Partnerships, Corporations and Others, the rescaled variable explains 0.77% which is still more than size and ownership.

[23] Further investigation of this interactive effect reveals that corporations listed on stock exchanges in countries located far away from the equator (countries in the fourth quantile when they are ranked on latitude) respond most favorably on the property rights question where as firms organized as cooperatives in tropical countries (located close to the equator) perceive property rights protection to be the poorest.

Law countries is not significant enough to influence firms' perceptions of property rights. On the other hand, a country's ethnic fractionalization and natural endowments are a strong predictor of property rights in all samples.

The implications of the results are less clear cut for the theories themselves. A researcher with a strong prior about the importance of legal origins would wish to include those countries in the analysis and ascribe their differences from the other countries in the sample to differences in legal origin. Such a researcher might conclude that Table 3 supports his view. A researcher with strong prior beliefs about the importance of ethnic and natural endowments differences between transition economies, former colonies and West European countries may focus on the samples in Tables 4 and 5, and reach the opposite conclusion.

At the firm level again, there is significant variation in the contribution of different firm characteristics to explaining the variation of property rights. While ownership structure of firms is the most significant explanatory variable in the full sample, the legal status of the firm explains more variation in property rights than other firm-level variables in the smaller sub-samples. The finding that a firm's organizational choice affects the perception of property rights protection it receives is consistent with recent evidence in Demirguc-Kunt, Love, and Maksimovic (2006) that organizational form of the firm impacts its access to finance and growth.

5.1.3 Random and Non-Random Sorts

In this section, we further test the robustness of our finding that the Ethnic Fractionalization view is a consistent predictor of Property Rights protection and that the Law and Finance view is largely driven by the inclusion of transition economies in the sample. In panel A of Table 6, we perform other non-random sorts where we drop African economies in column I and all Low Income countries in column II to see if the important predictors of property rights differ between developing and developed countries. Interestingly, panel A shows that in both cases, Legal Origin has the highest explanatory power followed by Latitude[24].

[24] Note that the sample without low income countries contains transition economies. Of the 24 transition economies in our sample, only Azerbaijan, Georgia, Kyrgyz Republic, Moldova and Uzbekistan are

In columns III and IV of panel B of Table 6, we randomly sample *n* number of countries, where n could be either 56 or 40[25]. For each *n* (say *n*=56), we perform 500 trials so that in each trial, the set of 56 countries sampled is different. We then report the frequency with which each institutional theory is found to be the most dominant predictor of Property Rights. Panel B shows that when we randomly sample 56 countries 500 times, the variable with the highest probability of explaining the variation in firms' perception of Property Rights is Legal Origin. Legal origin explains the most variation in 71.4% of the cases compared to Ethnic Fractionalization or Latitude in 12.2% and 17.6% of the cases. However, when we randomly sample 40 countries, while Legal origin is still the dominant theory it explains the most variation in only 45.6% of the cases.

While these results suggest that compared to Religion, Law and Finance and Ethnic Fractionalization or Endowment views have the greatest explanatory power, it is hard to compare them and isolate the former Socialist economy effect since the sample of countries chosen in each trial is random. Hence in columns V and VI, we perform random sampling on the sample of non-transition economies. So out of the 56 non-transition countries, we randomly sample 40 or 35 countries 500 times each, and calculate the frequency with which an institutional theory has the highest explanatory power. Ethnic Fractionalization has the highest explanatory power in 72% of the cases when we randomly sample 40 countries and in 65% of the cases when we randomly sample 35 countries. The results suggest that the Ethnic Fractionalization View has the largest predictive power when it comes to explaining the variation in firms' perceptions of property rights in samples of non-transition economies.

5.2 Testing for linearity

Previously we argued that there were significant non-linearities in the construction of the latitude and ethnic fractionalization variables used to represent the endowment and ethnic diversity theories, which questions their use in linear models. To even the playing field and ensure that these variables are not at a statistical disadvantage

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classified as low income countries. The others are categorized as high income, upper middle income and lower middle income countries.

[25] We sample 56 or 40 countries to be consistent with the smaller sample sizes when we drop transition economies or countries with missing settler mortality data.

in a linear model when compared to legal origin and religion, we constructed a five point scale for the variables, based on their quantiles, to ensure the same number of categories as legal origin. In this section we provide further evidence of the non-linearities by adding the square and cube of each of the institutional variables to see if it makes a difference to the adjusted R-squares of the model. In Table 7 we present results using the raw data as well as higher order terms and compare it to the contributions from the rescaled variables. The results are shown for the full sample of 80 countries as well as smaller sub-samples of non-transition economies and former colonies. The first column of Table 7 presents results using raw data (when ethnic fractionalization and latitude are not rescaled) for the full sample of countries. We see that Legal Origin explains the most variation (3.89%) in firms' perceptions of property rights protection. In the second column we include higher order terms of the institutional variables in the regression model. Note that the higher order terms are included only for the continuous variables and not for country dummies, legal origin dummies or religion dummies. The ethnic diversity and endowment theories increase in explanatory power by as much as 411% and 94% respectively when we use higher order terms of these variables but Legal Origin still dominates. The third column repeats the results from Table 3 where we used rescaled values for latitude and ethnic fractionalization. The third column also shows that there is a substantial increase in explanatory power of the ethnic fractionalization (by a factor of 7) and latitude variable (by a factor of 2.2) on rescaling. The table suggests that the results in current literature may be biased by ignoring non-linearities present in several of the institutional theories.

Insert Table 7

We repeat the above analysis for a sample of 56 non-transition countries and a sample of 40 former colonies. In both cases we observe substantial increase in explanatory power when we use higher order terms of some institutional variables or rescale them. Our results from Tables 4 and 5 that the dominance of Law and Finance view is not robust to sample specification are confirmed again.

5.2.1. Non-Linear Model Estimation

In this section we examine whether estimating a non-linear model makes a difference to the explanatory power of the different theories. The traditional linear model estimated in the tables 3-7 takes the form $\mu=X\beta$, where $\mu=E(y)$ with y being the vector of observations, X the matrix of covariates and β the vector of regression coefficients. It is assumed that the random effects and the error terms have a distribution which has a constant variance independent of the value of the mean of the response variable, y. To estimate a non-linear model that recognizes that y is bounded, we have to allow for the random effects to enter into the conditional mean in a non-linear fashion, which is accomplished by the model in equation (2) below.

The dependent variable in this study (property rights variable) is an ordered response variable with six categories (K=6) representing firms' perceptions of property rights. The model most suited for an ordinal dependent variable such as this is the proportional odds model which is a natural extension of the logistic regression model from binary response to ordinal response with more than two categories.

$$\log\left(\frac{\sum_{j=1}^{K}\pi_j}{1-\sum_{j=1}^{K}\pi_j}\right)=\alpha+\beta X \qquad (2)$$

where π_k is the probability that category j of the response variable is being picked by a firm.

For the simultaneous ANOVA approach, one point of concern with the logistic regression is that the pseudo R-square statistic produced by a logistic regression is no longer a good estimate of the explanatory power of the model. However, recent research has shown that the McKelvey and Zavoina (1975) R-square analogue is most conducive to comparability across different types of empirical models. DeMaris (2002) finds the McKelvey and Zavoina R-square to be the best at estimating explained variance in a study comparing eight R-square analogues[26].

[26] De Maris (2002) distinguishes between the ordered response variable, y being a proxy for an underlying, unobserved continuous variable, or latent scale, y* and the response variable y actually representing a qualitative change in state with no continuous underlying referent. For the former case (which applies to the property rights variable in this study), De Maris recommends that the MZ R-square become the standard estimator of explained variance. In fact, he states "The analyst employing MZ-R^2 can therefore be confident

When the analysis in Tables 3-6 is repeated using the logistic regression model described above, we find that none of the material results are changed. Table 8 presents the variance analysis on the re-scaled variables using the MZ R-square statistic. In the full sample with rescaled variables on the basis of the MZ R-square statistic, legal origin explains the most variation with 4.3% followed by latitude with 2.3%[27]. Religion and Ethnic Fractionalization are similar in their explanatory power at 1.2% and 1.8% respectively. At the firm level (results not shown), firm size by itself explains 1.1%, ownership structure explains 1.7%, legal organization explains 0.8% and industry sector explains 0.3%, indicating that ownership structure of the company explains the most variation.

Insert Table 8

Thus, consistent with the results in the linear estimation in Table 3, we find that in the full sample, Law and Finance view holds the dominant position in terms of explaining the variation in property rights. The slight difference between the linear estimation and the non-linear analysis in Table 8 arises from the absence of convergence in some models when the interactive effects are also included. In the smaller sample of countries too (results not shown), we find results consistent with the linear estimation. Ethnic Fractionalization (4.8%) and settler mortality (5.9%) replace legal origin (2.4%) as the variables with the most explanatory power.

5.3 Other Determinants of Property Rights

In addition to the exogenous determinants of property rights discussed above, researchers have also shown the importance of other variables for property rights protection such as openness to trade and the political system in a country. While these variables are comparatively endogenous in that they reflect endogenous factors and hence are classified separately, we include them in the robustness section to see which channels are most important in influencing property rights protection.

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that, at least in large samples, it will, on average be closer to ρ^2 (explained variance) than any of the other measures."

[27] Note that Legal Origin is still the dominant theory when we rescale legal origin into 3 categories: Common Law, Civil Law and Socialist Law Countries instead of the usual 5 categories: Common Law, French Civil Law, German Civil Law, Scandinavian Civil Law and Socialist Law.

To capture the political view of property rights, we use variables from the Polity IV dataset, averaged over the period 1995-99 and Beck et al. (1999)'s Database of Political Institutions (DPI). The variables, **Democracy** and **Autocracy**, scored from 0-10 (0 = low; 10 = high) reflect the general openness (closed-ness) of the political institutions in the country respectively and are from the Polity IV Dataset[28]. **Checks** from DPI, measures the number of influential veto players in legislative and executive initiatives. The political view predicts that greater competition and more checks and balances will limit the ability of the elite to dictate policy and institutional development. [29]

Rajan and Zingales (2003) argue that trade openness proxies for the extent to which certain established interests can restrict entry into their country's markets. According to this view, one would expect property rights to be better protected in countries that are more open to international trade. As a measure of openness of the country, we use **Trade** which is the extent of trade as a percentage of GDP of the country. The variable is taken from the World Development Indicators and averaged over the period 1995-99. Trade as a percentage of GDP is a potentially endogenous variable since a country's actual openness depends on investor rights. An alternative to this variable is the **Frankel and Romer** (1999) measure of natural openness that is based only on geographic characteristics. We present results with both Trade/GDP and the Frankel and Romer (1999) measure though the latter is available for only 63 of the 80

[28] According to the Polity IV Dataset, the structure of the state is determined by broadly three interdependent elements - presence of institutions and procedures through which citizens can express effective preferences about alternative policies and leaders, the existence of institutionalized constraints on the exercise of power by the executive and the guarantee of civil liberties to all citizens in their daily lives and in acts of political participation. Other aspects of democracy such as rule of law, freedom of the press and so on are regarded as specific manifestations of these general principles. The Democracy indicator is derived from coding of the competitiveness of political participation, the openness and competitiveness of executive recruitment and constraints on the chief executive. Polity IV also has a composite 11 point scale for Autocracy since many polities exhibit mixed qualities of both of these distinct authority patterns. The Autocracy score is derived from coding of the competitiveness of political participation, the regulation of participation, the openness and competitiveness of executive recruitment, and constraints on the chief executive.

[29] In unreported tables we also used the Legislative and Executive Indices of Electoral Competiveness (LIEC/EIEC) from DPI as alternative indices in place of Democracy and Autocracy. LIEC/EIEC are narrower measures that focus specifically on the competitiveness of elections, whereas Democracy and Autocracy are more general measures of the openness (closedness) of the political system that include electoral competitiveness as one aspect. LIEC/EIEC explain a smaller proportion of property rights variation than Democracy and Autocracy.

countries in the sample. Restricting the sample to non-missing values of the three political variables and the Trade/GDP variable leaves us with 75 countries.

Insert Table 9

Column 1 of Table 9 presents results for the sample of 75 countries. As expected, the openness to trade and political theories do quite well in explaining the variation in property rights protection, with the Democracy variable predicting more variation in property rights protection (3.63%) than even the legal origin variable (the second most dominant variable at 3.49%). Columns 2 and 3 present results for smaller samples excluding former Socialist countries and countries for which data on settler mortality is available. In the smaller sub-samples, both the openness to trade and political theories do better than the law and finance view. However, the relatively less endogenous Frankel and Romer measure of openness to trade, explains less than both ethnic fractionalization and legal origin. Overall the results suggest that the ethnic fractionalization theory and the endowment view have significant explanatory power when compared to other endogenous determinants of property rights protection.

6. Conclusion

This paper assesses the contribution of firm and country level factors to firms' perceptions of property rights protection. Using variance decomposition methodology, we examine how much of the variation in firms' perceptions of property rights can be attributed to firm characteristics, such as size, ownership structure, industrial sector and organizational form, and how much to country level institutional variables. Specifically at the country level, we compare the explanatory power of four different theories- Law and Finance, Culture, Ethnic Diversity and Endowment view of property rights protection.

At the country level, we find that for the full sample of 80 countries, the total explainable variation in firms' perceptions of property rights is capped at 17.82% by the use of country dummies. Of this, legal origin accounts for nearly 22% of the total explainable variation followed by the endowment view, as proxied by latitude, which explains 12% of the total explainable variation. Together, all the institutional theories explain about 50% of the explainable cross-country variation.

However, the dominance of the Law and Finance view in explaining property rights variation depends critically on sample selection. Removing the former Socialist economies and China or using a smaller sample of countries for which data on settler mortality is available, reduces the explanatory power of the Law and Finance view significantly. In a sample of 56 non-Socialist economies, Legal Origin explains around 13% of the total explainable variation in firms' perceptions. However in this reduced sample, the Ethnic Fractionalization view explains nearly 28% of the total variation in firms' perceptions of property rights. This is significant because the critical distinction in LLSV (1998, 1999) is between Common law and Civil law, not between former Socialist and other countries. It is likely that the Socialist legal origin in our sample proxies for country characteristics and problems associated with transition economies that are not caused by differences in legal systems that motivate LLSV's work.

Proponents of the ethnic diversity and endowments view argue that ethnic fractionalization of the country and its initial endowments shape a country's institutions. The finding that measures of initial endowments and ethnic fractionalization, explain the variation of property rights better than specific proxies for institutions, such as legal origin, in colonies and samples without former Socialist economies, suggests either that there are other unidentified channels by which ethnic fractionalization and endowments influence property rights or that the proxies in current use do not measure the underlying institutions well.

When we compare the firm level factors versus the above discussed institutional theories, we find that firm level variables, specifically size, ownership structure and organizational form are comparable in their explanatory power to the different theories. For instance, in the full sample of 80 countries, comparing the firm variables to country dummies, ownership structure explains 8% as much as country dummies, size explains 6% as much as country dummies and organizational form explains 4% as much as country dummies.

We also find that the firm level characteristics are in turn endogenously determined by the country level factors which decreases their explanatory power when put together in a single equation along with country level variables, masking their true importance.

The paper shows that scaling of variables matters for the explanatory power of different theories. While the matter has been mostly ignored in the finance literature, this paper shows that there are significant non-linearities arising from the way some variables are scaled, which in turn affects their explanatory power. For instance, on rescaling variables like ethnic fractionalization, that represents the Ethnic Diversity View, the variable's contribution to the total variation in firms' perceptions about property rights increases by a factor of seven.

Finally this paper provides a new methodology for estimating the importance of different country-level and firm-level factors in explaining the variation in property rights. The intuitive appeal of this approach lends itself to use in examining other questions in finance and economics.

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Figure1a: Distribution of Property Rights Across Firm Sizes

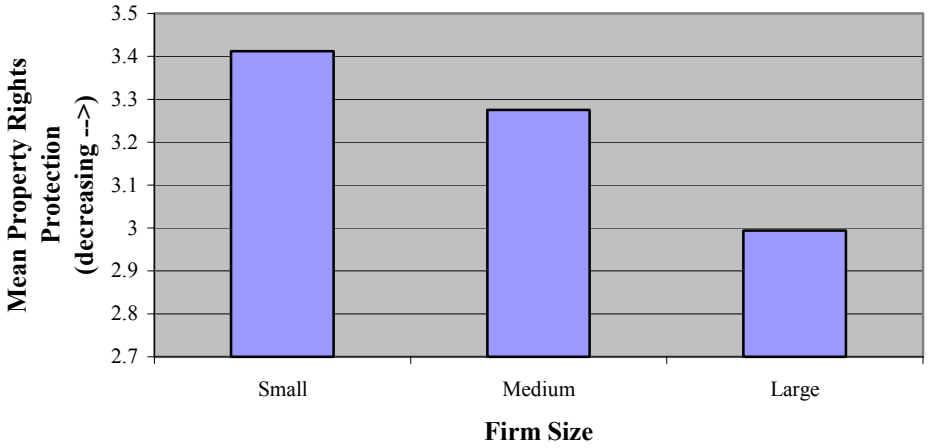

Figure 1b: Distribution of Property Rights Across Ownership Types

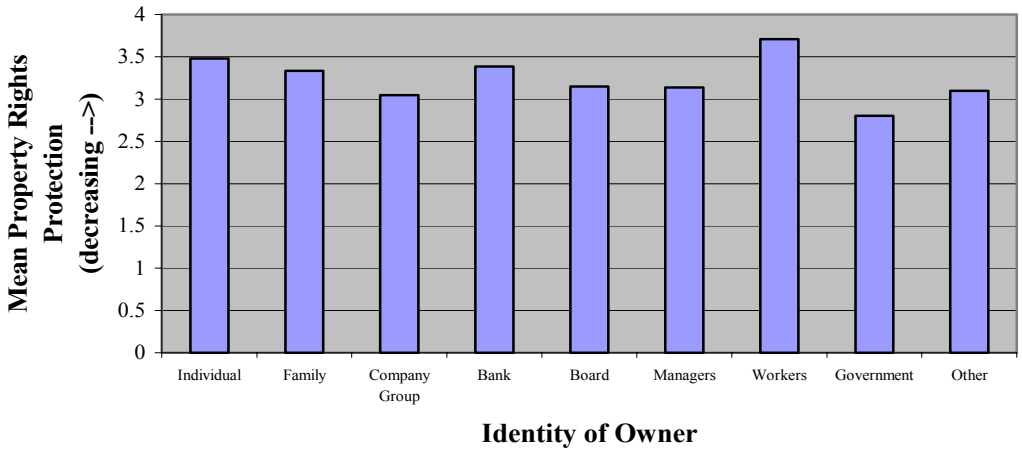

Figure 1c: Distribution of Property Rights Across Different Industries

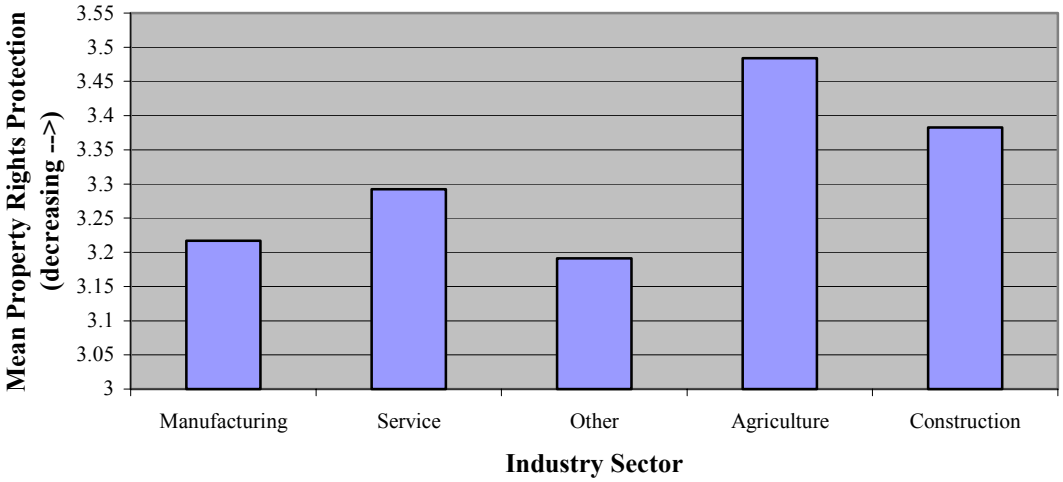

Figure 1d: Distribution of Property Rights Across Organization Structures

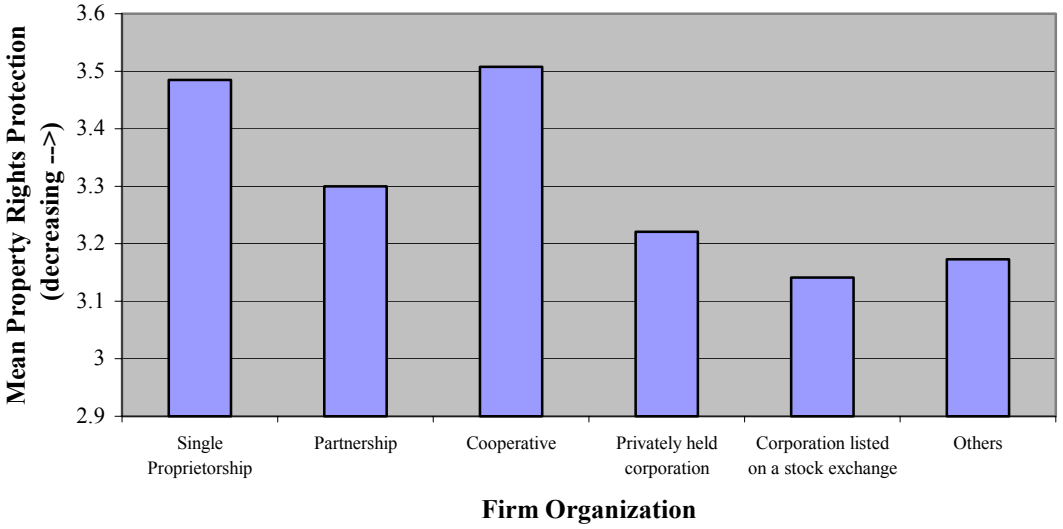

Table 1: Summary Statistics

The variables are described as follows: Legal Origin takes the value 1 if it is a Common-Law country, 2 if it French civil-law, 3 if it is German civil law, 4 if it is Scandinavian law and 5 it is Socialist Law. Religion takes the value 1 if the dominant religious group in the country is Catholics, 2 if it is Protestants, 3 if it is Muslims and 4 if the dominant religious group is not Catholics, Protestants or Muslim. Ethnic Fractionalization is the probability that two randomly selected individuals in a country are not from the same ethnic group. Latitude is the absolute value of the latitude of the country scaled between zero and one. Detailed variable definitions and sources are given in the appendix.

Nation	Legal Origin	Religion	Ethnic Fractionalization	Latitude
Albania	5	4	0.22	0.46
Argentina	2	1	0.26	0.38
Armenia	5	4	0.13	0.44
Azerbaijan	5	3	0.20	0.45
Bangladesh	1	3	0.05	0.27
Belarus	5	4	0.32	0.59
Belize	1	1	0.70	0.19
Bolivia	2	1	0.74	0.19
Bosnia and Herzegovina	5	4	0.63	0.49
Botswana	1	4	0.41	0.24
Brazil	2	1	0.54	0.11
Bulgaria	5	4	0.40	0.48
Cambodia	5	4	0.21	0.14
Cameroon	2	1	0.86	0.07
Canada	1	1	0.71	0.67
Chile	2	1	0.19	0.33
China	5	4	0.15	0.39
Colombia	2	1	0.60	0.04
Costa Rica	2	1	0.24	0.11
Cote d'Ivoire	2	4	0.82	0.09
Croatia	5	1	0.37	0.50
Czech Republic	5	4	0.32	0.55
Dominican Republic	2	1	0.43	0.21
Ecuador	2	1	0.66	0.02
Egypt, Arab Rep.	2	3	0.18	0.30
El Salvador	2	1	0.20	0.15
Estonia	5	2	0.51	0.66
Ethiopia	1	4	0.72	0.09
France	2	1	0.10	0.51
Georgia	5	4	0.49	0.47
Germany	3	2	0.17	0.57
Ghana	1	4	0.67	0.09
Guatemala	2	1	0.51	0.17
Haiti	2	1	0.10	0.21
Honduras	2	1	0.19	0.17
Hungary	5	1	0.15	0.52
India	1	4	0.42	0.22
Indonesia	2	4	0.74	0.06
Italy	2	1	0.11	0.47
Kazakhstan	5	4	0.62	0.53
Kenya	1	4	0.86	0.01
Kyrgyz Republic	5	3	0.68	0.46
Lithuania	5	1	0.32	0.62
Madagascar	2	4	0.88	0.22
Malawi	1	2	0.67	0.15
Malaysia	1	3	0.59	0.03
Mexico	2	1	0.54	0.26

Nation	Legal Origin	Religion	Ethnic Fractionalization	Latitude
Moldova	5	4	0.55	0.52
Namibia	1	2	0.63	0.24
Nicaragua	2	1	0.48	0.14
Nigeria	1	4	0.85	0.11
Pakistan	1	3	0.71	0.33
Panama	2	1	0.55	0.10
Peru	2	1	0.66	0.11
Philippines	2	1	0.24	0.14
Poland	5	1	0.12	0.58
Portugal	2	1	0.05	0.44
Romania	5	4	0.31	0.51
Russian Federation	5	4	0.25	0.67
Senegal	2	3	0.69	0.16
Singapore	1	4	0.39	0.01
Slovak Republic	5	1	0.25	0.54
Slovenia	5	1	0.22	0.51
South Africa	1	4	0.75	0.32
Spain	2	1	0.42	0.44
Sweden	4	2	0.06	0.69
Tanzania	1	3	0.74	0.07
Thailand	1	4	0.63	0.17
Trinidad and Tobago	1	4	0.65	0.12
Tunisia	2	3	0.04	0.38
Turkey	2	3	0.32	0.43
Uganda	1	1	0.93	0.01
Ukraine	5	4	0.47	0.54
United Kingdom	1	4	0.12	0.60
United States	1	2	0.49	0.42
Uruguay	2	1	0.25	0.37
Uzbekistan	5	3	0.41	0.46
Venezuela	2	1	0.50	0.09
Zambia	1	4	0.78	0.17
Zimbabwe	1	4	0.39	0.22

Table 2: Summary Statistics and Correlations

Panel A presents the summary statistics and Panel B presents the correlations. The variables are described as follows: Property Rights is the response of firms to the question *"I am confident that the judicial system will enforce my contractual and property rights in business disputes",* scored on a scale of 1-6 (low-high). Firm Size takes on one of three values for small, medium and large firms, Industrial Sector could be agriculture, manufacturing, services, construction or other, Legal Organization is one of six values to reflect whether the firm is organized as a single proprietorship, partnership, cooperative, privately-held corporation, corporation listed on a stock exchange or another alternative form, and Ownership reflects whether the owner of the firm is an individual, a family, conglomerate group, bank, board of directors, managers, employees, government or other. Legal Origin takes the value 1 if it is a Common-Law country, 2 if it French civil-law, 3 if it is German civil law, 4 if it is Scandinavian law and 5 it is Socialist Law. Religion takes one of four different values depending on whether the dominant religious group in the country are Catholics, Protestants, Muslims or Other, Ethnic Fractionalization is the probability that two randomly selected individuals in a country are not from the same ethnic group. Latitude is the absolute value of the latitude of the country scaled between zero and one. Detailed variable definitions and sources are given in the appendix.

Panel A:

Variable	N	Mean	Standard Deviation	Minimum	Maximum
Dependent Variables					
Property Rights	7760	3.28	1.42	1.00	6.00
Firm Variables					
Size	7760	1.75	0.74	1.00	3.00
Ownership	7760	3.37	2.18	1.00	9.00
Legal Organization	7760	3.39	1.72	1.00	6.00
Industry	7760	2.11	1.24	1.00	5.00
Institutional Variables					
Legal Origin	7760	3.01	1.72	1.00	5.00
Religion	7760	2.68	1.37	1.00	4.00
Ethnic Fractionalization	7760	0.42	0.23	0.04	0.93
Latitude	7760	0.34	0.21	0.01	0.69

Panel B:

	Property Rights	Legal Origin	Religion	Ethnic Fractionalization
Legal Origin	0.18***			
Religion	0.06***	0.18***		
Ethnic Fractionalization	0.05***	-0.44***	0.14***	
Latitude	0.10***	0.66***	0.06***	-0.49***

*, ** and *** represent significance at the 10, 5 and 1% levels respectively

Panel C:

	Property Rights	Firm Size	Industry Sector	Legal Organization
Firm Size	-0.10***			
Industry Sector	0.04***	-0.09***		
Legal Organization	-0.08***	0.38***	-0.04***	
Ownership Structure	-0.09***	0.36***	-0.02**	0.39***

*, ** and *** represent significance at the 10, 5 and 1% levels respectively

Table 3: Determinants of Firms' Perception of Property Rights Protection

Panel A documents the contribution of the firm level variables and the re-scaled country level variables to the adjusted R-square of the regression model when they are entered one at a time. Panel B presents the variance component analysis by including country, firm and interaction effects. The regression model in Panel B is Property Rights_{ij} = Country Effect_i + Firm Size_j (or Industry Sector_j) (or Legal Organization_j) (or Ownership_j) + Country Effect_i * Firm Size_j (or Industry Sector_j) (or Legal Organization_j) (or Ownership_j). Firm Size takes on one of three values for small, medium and large firms, Industrial Sector could be agriculture, manufacturing, services, construction or other, Legal Organization is one of six values to reflect whether the firm is organized as a single proprietorship, partnership, cooperative, privately-held corporation, corporation listed on a stock exchange or another alternative form, and Ownership reflects whether the owner of the firm is an individual, a family, conglomerate group, bank, board of directors, managers, employees, government or other. In each regression, the country effect is captured by one of the following variables at the country level: Country Dummies, Legal Origin, Religion, Ethnic Fractionalization, and Latitude. The variables are defined as follows: Legal Origin takes one of five possible values for the five different legal traditions: English Common Law, French Civil Law, German Civil Law, Scandinavian Civil Law and Socialist law, Religion takes one of four different values depending on whether the dominant religious group in the country are Catholics, Protestants, Muslims or Other, Ethnic Fractionalization is the probability that two randomly selected individuals in a country are not from the same ethnic group. Latitude is the absolute value of the latitude of the country scaled between zero and one. Ethnic Fractionalization and Latitude are rescaled on a five point scale. Dummy variables are used for all the country and firm variables. Detailed variable definitions and sources are given in the appendix.

Panel A: Contribution to Adjusted R-Squares

Institutional Variables	**Property Rights**
Country Dummies	17.82
Legal Origin Dummies	**3.89**
Religion Dummies	1.15
Ethnic Fractionalization	1.95
Latitude	2.24
All Institutional Theories Together	*8.88*
Firm Variables	
Size Dummies	1.07
Industry Dummies	0.23
Legal Organization Dummies	0.7
Ownership Dummies	**1.5**
All Firm Variables Together	*2*

Panel B: Country, Firm and Interaction Effects

	I. Benchmark	*II: Law and Finance*	*III: Culture*	*IV: Ethnic Diversity*	*V: Endowments*	*VI: All Institutional Theories Together*
	Country Dummy	Legal Origin Dummies	Religion	Ethnic Fractionalization	Latitude	
Firm Size						
Country	17.82	3.89	1.15	1.95	2.24	8.88
Size	0.33	0.45	0.98	1.04	0.72	0.49
Interactions	1.06	0.08	0.52	0.74	0.48	1.06
Total	*19.21*	*4.42*	*2.65*	*3.73*	*3.44*	*10.43*
Industry						
Country	17.82	3.89	1.15	1.95	2.24	8.88
Industrial Sector	0.1	0.19	0.22	0.24	0.13	0.04
Interactions	0.9	-0.04	0.22	0.23	0.08	0.33
Total	*18.82*	*4.04*	*1.59*	*2.42*	*2.45*	*9.25*
Organizational Form						
Country	17.82	3.89	1.15	1.95	2.24	8.88
Legal Organization	0.33	0.12	0.75	0.66	0.55	0.1
Interactions	1.33	0.21	0.19	1.19	0.73	1.72
Total	*19.48*	*4.22*	*2.09*	*3.8*	*3.52*	*10.7*
Ownership						
Country	17.82	3.89	1.15	1.95	2.24	8.88
Ownership	0.32	0.45	1.38	1.47	1.1	0.5
Interactions	0.67	0.43	0.93	0.77	0.44	1.33
Total	*18.81*	*4.77*	*3.46*	*4.19*	*3.78*	*10.71*

Table 4: Determinants of Firms' Perception of Property Rights Protection –Without Former Socialist Economies

This table documents the contribution of each effect to the adjusted R-square of the regression model. The regression model in Panel A(B)(C)(D) is Property Rights$_{ij}$ = Country Effect$_i$ + Firm Size$_j$ (or Industry Sector$_j$) (or Legal Organization$_j$) (or Ownership$_j$) + Country Effect$_i$ * Firm Size$_j$ (or Industry Sector$_j$) (or Legal Organization$_j$) (or Ownership$_j$). Firm Size takes on one of three values for small, medium and large firms, Industrial Sector could be agriculture, manufacturing, services, construction or other, Legal Organization is one of six values to reflect whether the firm is organized as a single proprietorship, partnership, cooperative, privately-held corporation, corporation listed on a stock exchange or another alternative form, and Ownership reflects whether the owner of the firm is an individual, a family, conglomerate group, bank, board of directors, managers, employees, government or other. In each regression, the country effect is captured by one of the following variables at the country level: Country Dummies, Legal Origin, Religion, Ethnic Fractionalization, and Latitude. The variables are defined as follows: Legal Origin takes one of five possible values for the five different legal traditions: English Common Law, French Civil Law, German Civil Law, Scandinavian Civil Law and Socialist law, Religion takes one of four different values depending on whether the dominant religious group in the country are Catholics, Protestants, Muslims or Other, Ethnic Fractionalization is the probability that two randomly selected individuals in a country are not from the same ethnic group. Latitude is the absolute value of the latitude of the country scaled between zero and one. Ethnic Fractionalization and Latitude are rescaled on a five point scale. Dummy variables are used for the all the country and firm variables. Detailed variable definitions and sources are given in the appendix.

	I. Benchmark	***II: Law and Finance***	***III: Culture***	***IV: Ethnic Diversity***	***V: Endowments***	***VI: All Institutional Theories Together***
	Country Dummy	Legal Origin Dummies	Religion	Ethnic Fractionalization	Latitude	
Panel A: Firm Size						
Country	16.15	2.16	0.92	4.57	2.16	8.41
Size	0.14	0.41	0.35	0.38	0.21	0.34
Interactions	1.11	0.04	0.18	0.58	0.55	1.4
Total	*17.4*	*2.61*	*1.45*	*5.53*	*2.92*	*10.15*
Panel B: Industry						
Country	16.15	2.16	0.92	4.57	2.16	8.41
Industrial Sector	0.08	0.1	0.1	0.05	-0.04	-0.01
Interactions	0.45	-0.07	0.13	0.03	0.06	0.2
Total	*16.68*	*2.19*	*1.15*	*4.65*	*2.18*	*8.6*
Panel C: Organizational Form						
Country	16.15	2.16	0.92	4.57	2.16	8.41
Legal Organization	0.09	0.5	0.71	0.83	0.79	0.25
Interactions	1.32	-0.14	0.5	0.59	0.93	1.27
Total	*17.56*	*2.52*	*2.13*	*5.99*	*3.88*	*9.93*
Panel D: Ownership						
Country	16.15	2.16	0.92	4.57	2.16	8.41
Ownership	0.2	0.24	0.32	0.63	0.4	0.25
Interactions	0.64	0.27	0.32	0.26	0.45	0.88
Total	*16.99*	*2.67*	*1.56*	*5.46*	*3.01*	*9.54*

Table 5: Determinants of Firms' Perception of Property Rights Protection -40 Countries

This table documents the contribution of each effect to the adjusted R-square of the regression model in a sample of 40 countries for which data on settler mortality is available. The regression model in Panel A(B)(C)(D) is Property $Rights_{ij}$ = Country $Effect_i$ + Firm $Size_j$ (or Industry $Sector_j$) (or Legal $Organization_j$) (or $Ownership_j$) + Country $Effect_i$ * Firm $Size_j$ (or Industry $Sector_j$) (or Legal $Organization_j$) (or $Ownership_j$). Firm Size takes on one of three values for small, medium and large firms, Industrial Sector could be agriculture, manufacturing, services, construction or other, Legal Organization is one of six values to reflect whether the firm is organized as a single proprietorship, partnership, cooperative, privately-held corporation, corporation listed on a stock exchange or another alternative form, and Ownership reflects whether the owner of the firm is an individual, a family, conglomerate group, bank, board of directors, managers, employees, government or other. In each regression, the country effect is captured by one of the following variables at the country level: Country Dummies, Legal Origin, Religion, Ethnic Fractionalization, Settler Mortality, Latitude. The variables are defined as follows: Legal Origin takes one of five possible values for the five different legal traditions: English Common Law, French Civil Law, German Civil Law, Scandinavian Civil Law and Socialist law. Religion takes one of four different values depending on whether the dominant religious group in the country are Catholics, Protestants, Muslims or Other. Ethnic Fractionalization is the probability that two randomly selected individuals in a country are not from the same ethnic group. Settler Mortality is the log of the annualized deaths per thousand European soldiers in European colonies in the early 19th century. Latitude is the absolute value of the latitude of the country scaled between zero and one. Ethnic Fractionalization, Settler Mortality and Latitude are rescaled on a five point scale**.** Dummy variables are used for the all the country and firm variables. Detailed variable definitions and sources are given in the appendix.

	I: Benchmark case	***II: Law and Finance View***	***III: Culture***	***IV Ethnic Diversity***	***V: Endowments***		***VI: All Institutional Theories Together***
	Country Dummy	Legal Origin Dummies	Religion	Ethnic Fractionalization	Settler Mortality	Latitude	
Panel A: Firm Size							
Country	18.27	2.18	1.34	3.25	5.78	2.08	11.35
Size	0.09	0.64	0.62	0.46	0.35	0.38	0.36
Interactions	1.15	0.09	0.13	0.64	0.21	1.11	0.95
Total	*19.51*	*2.91*	*2.09*	*4.35*	*6.34*	*3.57*	*12.66*
Panel B: Industry							
Country	18.27	2.18	1.34	3.25	5.78	2.08	11.35
Industrial Sector	-0.05	0.14	0.22	-0.04	-0.05	0	-0.09
Interactions	-0.14	0.04	-0.09	0.09	-0.04	0.32	0.59
Total	*18.08*	*2.36*	*1.47*	*3.3*	*5.69*	*2.4*	*11.85*
Panel C: Organizational Form							
Country	18.27	2.18	1.34	3.25	5.78	2.08	11.35
Legal Organization	0.03	0.68	0.93	1.44	0.66	0.74	0.35
Interactions	1.2	0.22	1.06	1.59	0.5	2.04	2.76
Total	*19.5*	*3.08*	*3.33*	*6.28*	*6.94*	*4.86*	*14.46*
Panel D: Ownership							
Country	18.27	2.18	1.34	3.25	5.78	2.08	11.35
Ownership	-0.02	0.23	0.28	0.59	0.82	0.39	0.2
Interactions	0.27	0.72	0.56	0.72	0.3	0.73	0.93
Total	*18.52*	*3.13*	*2.18*	*4.56*	*6.9*	*3.2*	*12.48*

Table 6: Determinants of Firms' Perception of Property Rights Protection –Random and Non-Random Sorts

The regression model estinmated is Property $Rights_{ij}$ = Country $Effect_i$ + Firm $Size_j$ (or Industry $Sector_j$) (or Legal $Organization_j$) (or $Ownership_j$). Panel A documents the contribution of country level and firm level variables to the adjusted R-square of the regression model when entered individually. Panel B presents the frequency with which a particular institutional theory was found to explain the most variation in property rights. In Panel B, 500 trials were performed at each of the corresponding sample sizes to determine the frequencies. Firm Size takes on one of three values for small, medium and large firms, Industrial Sector could be agriculture, manufacturing, services, construction or other, Legal Organization is one of six values to reflect whether the firm is organized as a single proprietorship, partnership, cooperative, privately-held corporation, corporation listed on a stock exchange or another alternative form, and Ownership reflects whether the owner of the firm is an individual, a family, conglomerate group, bank, board of directors, managers, employees, government or other. In each regression, the country effect is captured by one of the following variables at the country level: Country Dummies, Legal Origin, Religion, Ethnic Fractionalization, and Latitude. The variables are defined as follows: Legal Origin takes one of five possible values for the five different legal traditions: English Common Law, French Civil Law, German Civil Law, Scandinavian Civil Law and Socialist law, Religion takes one of four different values depending on whether the dominant religious group in the country are Catholics, Protestants, Muslims or Other. Ethnic Fractionalization is the probability that two randomly selected individuals in a country are not from the same ethnic group. Latitude is the absolute value of the latitude of the country scaled between zero and one. Ethnic Fractionalization and Latitude are rescaled on a five point scale**.** Dummy variables are used for the all the country and firm variables. Detailed variable definitions and sources are given in the appendix.

	Panel A: Contribution to Adjusted R-Squares		***Panel B: Frequency with which the institutional theory explains the most variation***			
	Non-Random Sorts		**Random Sorting on the Full Sample**		**Random Sorting on a Sample excluding Former Socialist Countries**	
	I	**II**	**III**	**IV**	**V**	**VI**
Rescaled Institutional Variables	**No African**	**No Low Income**	**Sample Size=56**	**Sample Size=40**	**Sample Size=40**	**Sample Size=35**
Country Dummies	17.47	20.05				
Legal Origin Dummies	**6.07**	**8.89**	**71.4**	**45.6**	13.4	16.6
Religion Dummies	1.25	2.64	1.4	4.8	1.2	3.2
(Rescaled) Ethnic Fractionalization	1.64	2.77	12.2	22	**71.6**	**64.8**
(Rescaled) Latitude	2.47	5.5	17.6	31	17.2	18.8
All Institutional Theories Together	*10.38*	*14.15*				
Number of countries	62	55	56	40	40	35
Number of observations	6463	5472	Ranges from 4785 to 5922	Ranges from 3320 to 4525	Ranges from 4174 to 4986	Ranges from 2940 to 3567

Table 7: Testing for Linearity

The table documents the contribution of the institutional variables to the adjusted R-square of the regression model when they are entered one at a time and when entered along with the square and cube of the variable. Columns I, IV and VII present results using the institutional variable alone in raw data form. Columns II, V and VIII present results using the institutional variable (raw data) as well as higher order terms. Columns III, VI and IX present results using rescaled variable dummies. The regression model is Property Rights= Country Effect + Country Effect ^2 + Country Effect ^ 3. The variables are defined as follows: Legal Origin takes one of five possible values for the five different legal traditions: English Common Law, French Civil Law, German Civil Law, Scandinavian Civil Law and Socialist law. Religion takes one of four different values depending on whether the dominant religious group in the country is Catholics, Protestants, Muslims or Other. Ethnic Fractionalization is the probability that two randomly selected individuals in a country do not belong to the same ethnic group. Latitude is the absolute value of the latitude of the country scaled between zero and one. Settler Mortality is the log of the annualized deaths per thousand European soldiers in European colonies in the early 19th century. Columns I-III present results for the full sample of 80 countries, IV-VI presents results for 56 countries that do not include former Socialist economies and VII-IX present results for a sample of 40 countries for which data on settler mortality is available.

	Full Sample			**Without Former Socialist Economies**			**40 Countries**		
	I	**II**	**III**	**IV**	**V**	**VI**	**VII**	**VIII**	**IX**
	Only Institutional Variable (raw data)	**Institutional Variable, Variable^2 and Variable^3 (raw data)**	**Only Institutional Variable (rescaled data)**	**Only Institutional Variable (raw data)**	**Institutional Variable, Variable^2 and Variable^3 (raw data)**	**Only Institutional Variable (rescaled data)**	**Only Institutional Variable (raw data)**	**Institutional Variable, Variable^2 and Variable^3 (raw data)**	**Only Institutional Variable (rescaled data)**
Country Dummies	17.82	17.82	17.82	16.51	16.51	16.51	18.27	18.27	18.27
Legal Origin Dummies	**3.89**	**3.89**	**3.89**	**2.16**	2.16	2.16	2.17	2.17	2.17
Religion Dummies	1.15	1.15	1.15	0.92	0.92	0.92	1.34	1.34	1.34
Ethnic Fractionalization	0.27	1.38		1.46	**3.42**		3.05	4.11	
(Rescaled) Ethnic Dummies			1.95			**4.57**			3.25
Latitude	1.01	1.96		0.6	0.61		1.58	2.57	
(Rescaled) Latitude Dummies			2.24			2.16			2.08
Settler Mortality							**5.8**	**6.97**	
(Rescaled) Setter Mortality Dummies									**5.78**
All Institutional Theories Together	*7.66*	*9.09*	*8.88*	*5.64*	*7.63*	*8.41*	*10.09*	*12.32*	*9.07*

Table 8: Determinants of Firms' Perception of Property Rights Protection –Non Linear Estimation

This table documents the contribution of each effect to the McKelvey and Zavoina(1975) R-square of the logistic regression model. The regression model in Panel A(B)(C)(D) is Property $Rights_{ij}$ = Country $Effect_i$ + Firm $Size_j$ (or Industry $Sector_j$) (or Legal $Organization_j$) (or $Ownership_j$) + Country $Effect_i$ * Firm $Size_j$ (or Industry $Sector_j$) (or Legal $Organization_j$) (or $Ownership_j$). Firm Size takes on one of three values for small, medium and large firms, Industrial Sector could be agriculture, manufacturing, services, construction or other, Legal Organization is one of six values to reflect whether the firm is organized as a single proprietorship, partnership, cooperative, privately-held corporation, corporation listed on a stock exchange or another alternative form, and Ownership reflects whether the owner of the firm is an individual, a family, conglomerate group, bank, board of directors, managers, employees, government or other. In each regression, the country effect is captured by one of the following variables at the country level: Country Dummies, Legal Origin, Religion, Ethnic Fractionalization, and Latitude. The variables are defined as follows: Legal Origin takes one of five possible values for the five different legal traditions: English Common Law, French Civil Law, German Civil Law, Scandinavian Civil Law and Socialist law, Religion takes one of four different values depending on whether the dominant religious group in the country are Catholics, Protestants, Muslims or Other, Ethnic Fractionalization is the probability that two randomly selected individuals in a country are not from the same ethnic group, Latitude is the absolute value of the latitude of the country scaled between zero and one. Ethnic Fractionalization and Latitude are rescaled on a five point scale. Dummy variables are used for the all the country and firm variables. Detailed variable definitions and sources are given in the appendix.

	I: Benchmark	***II: Law and Finance View***	***III: Culture***	***IV: Ethnic Diversity***	***V: Endowments***	***VI: All Institutional Theories Together***
	Country Dummy	Legal Origin Dummies	Religion	Ethnic Fractionalization	Latitude	
Panel A: Firm Size						
Country	19.4	4.3	1.2	1.8	2.3	9.2
Size	0.3	0.5	1	1.1	0.8	0.5
Interactions	2.8	0.2	0.8	0.9	0.5	1.4
Total	*22.5*	*5*	*3*	*3.8*	*3.6*	*11.1*
Panel B: Industry						
Country	19.4	4.3	1.2	1.8	2.3	9.2
Industrial Sector	0.1	0.2	0.3	0.4	0.2	0.1
Interactions	25.1	0.1	0.4	0.4	0.3	1
Total	*44.6*	*4.6*	*1.9*	*2.6*	*2.8*	*10.3*
Panel C: Organizational Form						
Country	19.4	4.3	1.2	1.8	2.3	9.2
Legal Organization	0.4	0.2	0.8	0.8	0.7	0.2
Interactions	.	0.5	0.4	1.4	0.9	2.4
Total	*19.8*	*5*	*2.4*	*4*	*3.9*	*11.8*
Panel D: Ownership						
Country	19.4	4.3	1.2	1.8	2.3	9.2
Ownership	0.3	0.6	1.5	1.6	1.3	0.6
Interactions	.	0.8	1.3	1.5	0.9	.
Total	*19.7*	*5.7*	*4*	*4.9*	*4.5*	*9.8*

Table 9: Other Determinants of Property Rights Protection

Panel A documents the contribution of the firm level variables and the re-scaled country level variables to the adjusted R-square of the regression model when they are entered one at a time. The regression model is Property Rights = Country Effect + e. In each regression, the country effect is captured by one of the following variables at the country level: Country Dummies, Legal Origin, Latitude, Trade, Checks and Balances, Autocracy and Democracy. The variables are defined as follows: Legal Origin takes one of five possible values for the five different legal traditions: English Common Law, French Civil Law, German Civil Law, Scandinavian Civil Law and Socialist law, Religion takes one of four different values depending on whether the dominant religious group in the country are Catholics, Protestants, Muslims or Other, Ethnic Fractionalization is the probability that two randomly selected individuals in a country are not from the same ethnic group. Latitude is the absolute value of the latitude of the country scaled between zero and one. Trade is the sum of exports and imports as a fraction of GDP. Frankel-Romer Measure is the trade openness measure based only on geographic characteristics from Frankel and Romer (1999). Checks and Balances measures the number of veto-players in the political decision process. Democracy is a measure of the openness of the political system while autocracy is a measure of closedness of the political system. Ethnic Fractionalization, Latitude, Trade, Frankel and Romer measure, Checks and Balances, Autocracy and Democracy are rescaled on a five point scale. Dummy variables are used for the all the country variables. Detailed variable definitions and sources are given in the appendix.

	Full Sample	**Excluding Former Socialist Countries**	**Excluding Countries with Missing Settler Mortality Data**
Institutional Variables		**Property Rights**	
Country Dummies	16.8	13.91	15.5
Legal Origin Dummies	3.49	1.4	1.18
Religion Dummies	1.71	0.87	1.29
Ethnic	1.88	**3.41**	2.31
Latitude	2.18	2.83	4.04
Settler Mortality			**4.74**
Openness to Trade Theory			
Trade	1.53	2.01	0.92
Frankel-Romer Measure	1.49	0.55	0.63
Political Theory			
Checks and Balances	2.02	2.06	1.83
Democracy	**3.63**	2.73	3.38
Autocracy	1.05	0.47	0.34
Number of Countries	*75*	*53*	*38*

Appendix A1: Variable Definitions

Variable	Variable Definitions	Source
Dependent Variables		
Property Rights	Scored 1-6, it is an indicator of firm responses to the survey question "I am confident that the judicial system will enforce my contractual and property rights in business disputes". 1 denotes the highest level of confidence and 6 denotes the poorest	World Business Environment Survey
Firm Variables		
Firm Size Dummies	A firm is defined as small if it has between 5 and 50 employees, medium size if it has between 51 and 500 employees and large if it has more than 500 employees.	World Business Environment Survey
Ownership Dummies	Indicates identity of the owner. Nine different categories are identified: Individual, Family, Conglomerate group, Bank, Board of directors, Managers, Employees, Government, and Others	World Business Environment Survey
Industry Dummies	Indicates industrial sector in which the firm operates. Five different categories: Manufacturing, Agriculture, Services, Construction, and Other	World Business Environment Survey
Legal Organization Dummies	Indicates legal status of the company, whether it is organized as a single proprietorship, partnership, cooperative, privately-held corporation, corporation listed on a stock exchange and a other category	World Business Environment Survey
Institutional Variables		
Legal Origin	An indicator of the type of legal system in the country. It takes the value 1 for English Common law, 2 for French Civil Law, 3 for German Civil Law, 4 for Scandinavian Civil Law and 5 for Socialist Law countries	La Porta, Lopez-de-Silanes, Shleifer and Vishny (1999)
Religion	An indicator of the dominant religious group in the country. It takes the value 1 for Catholics, 2 for Protestants, 3 for Muslims, and 4 for Others	La Porta, Lopez-de-Silanes, Shleifer and Vishny (1999)
Ethnic Fractionalization	Probability that two randomly selected individuals in a country are not from the same ethnic group	Alesina et al. (2003)
Settler Mortality	Log of the annualized deaths per thousand European soldiers in European colonies in the early 19th century	Acemoglu, Johnson, and Robinson (2001)
Latitude	Absolute value of the latitude of a country, scaled between zero and one	La Porta, Lopez-de-Silanes, Shleifer and Vishny (1999)
Trade	Share of Imports plus Exports in GDP	World Development Indicators
Frankel and Romer Measure	Exogenous measure of openness to trade based on geographic characteristics.	Frankel and Romer (1999)
Checks and Balances	Measure of the number of veto-players in the political decision process, both in the executive and the legislature. Average for 1990-95	Beck, Clark, Groff, Keefer, and Walsh (2001)

Variable	Variable Definitions	Source
Democracy	An indicator of the general openness of political institutions, scored from 0 (low) to 10 (high). The 11-point scale is an additive weighted indicator of the following political variables(weights used are indicated in brackets): Competitiveness of Executive Recruitment (Election (+2), Transitional (+1)), Openness of Executive Recruitment (Dual/Election (+1), Election (+1)), Constraint on Chief Executive (Executive party or subordination (+4), Intermediate category (+3), Substantial limitations (+2), Intermediate category (+2)) and the Competitiveness of Political Participation (Competitive (+3), Transitional (+2), Factional (+1)). Detailed descriptions of the sub-components of the democracy indicator is available from the Polity IV manual.	Polity IV Dataset
Autocracy	An indicator of the general closedness of political institutions, scored from 0 (low) to 10 (high). The 11-point scale is an additive weighted indicator of the following political variables (weights used are indicated in brackets): Competitiveness of Executive Recruitment (Selection (+2)) , Openness of Executive Recruitment (Closed (+1), Dual/designation (+1)), Constraint on Chief Executive (Unlimited authority (+3), Intermediate category (+2), Slight to moderate limitations (+1), Regulation of Political Participation (Restricted (+2), Sectarian (+1) and the Competitiveness of Political Participation (Repressed (+2), Suppressed (+1)). Detailed descriptions of the sub-components of the autocracy indicator is available from the Polity IV manual.	Polity IV Dataset