Constraining Predation

Claudia R. Williamson
New York University
Development Research Institute
Claudia.williamson@nyu.edu

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Abstract

Property rights institutions are recognized as a fundamental determinant to economic performance. However, understanding how to secure property remains elusive. This paper attempts to provide a theoretical framework and empirical analysis to unpack the black box of property rights. The framework entails distinguishing between private versus public protection *and* subsequent enforcement mechanisms. This study asks two critical questions for understanding how to secure property: 1) How is both private and public predation constrained – through formal or informal mechanisms? and 2) Which is more important to constrain - public or private predation? The empirical results suggest that constraining public predation is at the core of providing overall secure property rights institutions; however, constraints on government stem from private, informal mechanisms that may or may not be reflected in codified formally provided political constraints. Both formal and informal mechanisms protect against private predation. Taken as a whole, the results indicate that government is better at creating formal constraints to protect against private predation than it is at constraining itself. What appears to limit both types of predation and underlie secure property rights institutions and lead to long run development are informal, private cultural mechanisms. These results are robust to a variety of model specifications, multiple instrumental variables and a range of control variables.

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1. Introduction

Property rights are one of the more fundamental and highly robust institutions; however, the institution itself is a 'black box.' Identifying what supports secure property rights is of critical importance.

In order to understand the determinants of secure property rights, we must distinguish between different types of predation and different enforcement and protection mechanisms. In other words, we must identify sources of insecurity. Figure 1 below represent a framework describing the basic elements for property rights institutions.

[Insert Figure 1]

Two different types of predation exist that undermine the security of property. The first type is public predation or expropriation from the government. This implies direct confiscation of property, such as land or capital, by government officials. The second type is private predation where other citizens expropriate, or attempt to seize, another individual's property. This can also take a variety of forms, such as not honoring a contract or seizing someone's land or physical capital. In order to establish secure property rights institutions, both types of predation must be prevented (North 1981). However, several recent articles have suggested that limiting government expropriation is more important than constraining private predation since individuals have fewer options to protect themselves from opportunistic behavior from the government. This naturally leads to the question of what institutional constraints limit predation?

The bottom of the diagram marked row (3), shows two broad categories of

institutional constraints: formal and informal mechanisms. We can further subdivide constraints and rules into those formal constraints that govern private-to-private interactions or formal rules on government action. This sets up formal public constraints and formal private constraints. In theory, government is capable of protecting individuals against both types of predation, expropriation from government and expropriation from other citizens. Protection against the state typically involves rules that establish constraints on government behavior such as constitutional constraints (see, for instance, Hayek 1960 and La Porta et al. 2004). To protect against other citizens, government can establish rules to govern individual behavior that are enforceable in a court system, including contract and debt enforcement (for example, see Djankov et al. 2003; La Porta, Lopez-de-Silanes, and Shleifer 2006; Djankov et al. 2008).

The third category is informal constraints. These informal constraints cannot be as easily identified and separated into norms that serve to constrain only public or private predation. Therefore, informal constraints are included in both protection from public predation and protection from private predation—a link that is not previously explored in the applied institutional literature. Informal constraints range from attitudes, beliefs, customs, norms and traditions that guide everyday individual behavior to privately established and enforced court systems.[1] The key difference between formal and informal institutions is that the informal rules emerge spontaneously and are not part of a government mandated and enforced legal system, whereas the formal institutions capture those rules to constrain both private and public predation that are created and enforced by government. Informal institutions remain in the private sphere. Formal constraints are

[1] The existing literature on self-enforcing cooperation and exchange argues that public production of law and formal legal systems are not necessary to establish and enforce property rights (Benson 1989a,b; Greif 1993; Greif, Milgrom, and Weingast 1994; Leeson 2005, 2007a,b,c,).

centrally designed and enforced. In summary, the analysis separates property rights institutions into two components: protection from public, or government, predation and protection from private predation. Further, the analysis identifies two different types of institutional constraints: a formal component that captures either political constraints on government behavior or legal constraints on private citizens' behavior, and an informal component capturing private mechanisms that may constrain both types of predation.

Moving from the bottom to the top of the diagram, both formal public constraints and informal constraints promote protection from public, or government, predation. This implies that cultural norms or political constraints on government behavior, or both, limit the ability for governments to engage in opportunistic behavior. Likewise, these same cultural norms may also limit opportunistic behavior in private dealings as well. These informal constraints and private formalized legal rules lead to protection from private expropriation. One can also think of the formalized constraints, whether private or public, as externally imposed conditions, whereas informal cultural norms are internalized constraints on individual behavior. Both protections from public and private predation lead to overall security of property rights.

Until recently, most papers empirically analyzing institutions and economic development did not distinguish between different types of predation or enforcement mechanisms. Acemoglu and Johnson (2005) provide a first step towards 'unbundling institutions' by investigating government's role in protecting against both public and private predation. They find that property rights institutions, defined as rules constraining government behavior, have a positive and significant long run effect on investment, financial development, and economic growth. Government's provision of

protection against private predation (contracting institutions) only weakly affects financial development.[2] This finding suggests that government's primary role in establishing secure property rights institutions is to create rules that limit public predation, or government expropriation.

Following this seminal article, Williamson and Kerekes (2010), further explore the mechanisms securing private property by separating constraints into formal political constraints on government predation and informal, private mechanisms that constrain overall predation. The results show that informal constraints trump formal political constraints in determining the overall security of property.

The next logical step is to decipher how both public and private predation is constrained. This paper attempts to fill this void. I do so by focusing on both public and private formal constraints as well as informal mechanisms that can limit public and private predation. Two main questions emerge from this undertaking: 1) How is both private and public predation constrained – through public or private mechanisms, or both? and 2) Which is more important to constrain - public or private predation?

I rely on a variety of sources already established in the literature to measure each type of protection index and mechanisms to protect against predation. This includes measuring overall property rights (for example, International Country Risk Guides' protection from risk of expropriation), protection from state predation (Polity IV's constraints on the executive), and protection from private predation (the ability to enforce contracts). These variables can be viewed as outcome variables measuring security of property rights. In order to determine what is leading to property protection, enforcement

[2] Acemoglu and Johnson (2005) considered using the terminology horizontal and vertical to describe property versus contracting institutions. The first emphasizes that the contracting regulates transactions between ordinary citizens whereas property rights regulate relations between the state (elites) and citizens.

mechanisms are separated into formal and informal components. Formal public constraints include political constraints such as constitutional rules and judicial constraints. Formal private constraints include debt enforcement measurements, legal formalism, and laws against self-dealing. In addition, informal mechanisms such as norms against expropriation may also protect against both private and public expropriation thus promoting secure property rights. This is measured by using three different cultural indices.

The empirical results suggest that constraining public predation is at the core of long run development while constraining both public and private predation leads to more overall secure property rights institutions. The most interesting findings is that the results suggest that constraints on government mainly stem from private, informal mechanisms that may or not be reflected in codified formally provided political constraints. The formal political constraints are never significant. Both formal and informal mechanisms protect against private predation. Taken as a whole, the results indicate that government is better at creating formal constraints to protect against private predation than it is at constraining itself. What appears to limit both types of predation and underlie secure property rights institutions and lead to long run development are informal, private cultural mechanisms. These results are robust to a variety of model specifications, multiple instrumental variables and a range of control variables.

2. Data

2.1 Property Protection Proxies

The first step in the analysis is to find valid proxies for each of the areas defined above.[3]

[3] A detailed data description is provided in Appendix 1.

For overall security of property rights, we need a general outcome measure of property rights institutions. Fortunately, one such measure exists. An often utilized and cited measure of property rights is the International Country Risk Guide's (ICRG) average protection against risk of expropriation. This variable captures the overall security of property that is the outcome of the country's institutional environment, policies, and culture (Williamson and Kerekes 2011). Therefore, the ICRG index is an outcome, de facto measure reflecting protection from both private and public predation. It does not distinguish between types predation nor does it indicate the mechanisms, such as informal or formal constraints, that lead to secure property rights.

Given the nature of the ICRG variable, it is appropriate in the analysis to employ this index as a general snapshot capturing actual protection of property rights. Instead of following conventional analysis, the index is moved from the right hand side to the left hand side in a series of regressions. The proxy is utilized as a dependent variable in order to gain a better understanding of how protection from both private and public predation leads to secure property rights. In addition, I test directly the relative importance for overall property rights between formal rules on government, formal rules on private for individuals, and informal constraints on behavior. This process will be further discussed below. Average protection against risk of expropriation is only available for the years 1982 to 1997. The variable is averaged over this time period for the analysis.[4]

The second proxy needed is for protection from state predation. In order to

[4] Several studies use this proxy as the best measure of formal property rights institutions (Acemoglu, Johnson, and Robinson 2001, 2002; Glaeser et al. 2004; Acemoglu and Johnson 2005; Tabellini 2009). However, Glaeser et al. (2004) show that this measure is actually an outcome measure of institutions and policy choices. This measurement does not reflect permanent political constraints, as it rises with per capita income and is highly volatile. For example, if a dictator of a country happens to not expropriate its citizens' property, this gets reflected in the index with a higher score. However, this does not reflect government constraints that serve to protect property rights. Williamson and Kerekes (2011) argue that ICRG's measure of property rights does not pass a series of rigorous tests to qualify as formal political institutions.

accurately capture this property protection outcome measure, I rely on Polity IV's constraints on the executive. This variable captures the 'extent of institutionalized constraints on the decision-making powers of chief executives, whether individuals or collectivities' (Polity IV Manual 2009, p. 23).[5] In short, it is Political Risk Services' assessment of protection against government expropriation in a country. This is precisely what we want to identity—actual protection from public (or government) predation, not just constitutional, written constraints. Constraints on the executive is widely utilized throughout the literature (for example, Glaeser et al. 2004 and Acemoglu, Johnson, and Robinson 2001, 2002). Most relevant for my purpose, Acemoglu and Johnson (2005) utilize this index as their main measurement of property rights institutions, defined as 'as the rules and regulations protecting citizens against the power of the government and elites' (p. 955). The authors state that this proxy is an outcome variable determined by whether there is actual expropriation in equilibrium. For this reason, my preferred measure for public protection is constraint on executive. It also has the advantage of being able to further 'unbundle' public protection, whereas Acemoglu and Johnson (2005) could only emphasize that protection from government predation is critically important for economic outcomes.

To minimize measurement error, the data is averaged from 1960 to 2000. It is scaled from one to seven with seven representing the highest constraints on public predation.

The final property outcome variable to be measured is protection from private

[5] Such limitations may be imposed by any "accountability groups." In Western democracies these are usually legislatures. Other kinds of accountability groups are the ruling party in a one-party state; councils of nobles or powerful advisors in monarchies; the military in coup-prone polities; and in many states a strong, independent judiciary. The concern is therefore with the checks and balances between the various parts of the decision-making process.

predation. Just as the public protection index needs to represent actual protection from government expropriation, the private protection index also must capture the extent to protect one's assets from private citizen expropriation. To proxy for this variable, I create an overall index from three different variables originating from Djankov et al. (2003) and the World Bank's Doing Business project. This includes a measure of the number of procedures, number of days, and the cost to enforce a contract. These variables are more commonly being used in the literature. Acemoglu and Johnson use similar variables when measuring contracting institutions and La Porta et al (2008) refer to time to enforce contracts as an outcome from institutional rules.[6]

The private protection index is created by using principle component analysis to extract the common variation among the three World Bank variables designed to measure the enforceability of contracts. Number of procedures compiles the list of steps necessary to settle a commercial dispute such as steps to file a suit and steps to enforce a judgment. Time, measured in days, records how long it takes to enforce a contract. Cost, measured as a percentage of the claim, calculates court costs, enforcement costs, and average attorney fees. It does not include bribes. All three variables represent equilibrium outcomes from the functioning of the legal system. Differences in the effectiveness of courts across countries can result in significant differences in the costs of enforcing contracts and thus the protection against private predation. Data is collected for 2004. The index is rescaled between 0 and 10 with 10 representing greater protection from private expropriation.

In the empirical analysis, the public protection index and the private protection

[6] Acemoglu and Johnson use an index of legal formalism, an index of procedural complexity, and the number of procedures necessary to resolve a court case to capture contracting institutions. They do not create an overall index.

index are used both as explanatory variables and also as dependent variables. They are used as explanatory variables when addressing the relative important of public versus private predation. They are dependent variables when attempting to explain what drives protection from government expropriation and protection from private predation—formal or informal mechanisms? The next section outlines how to measure the formal and informal institutional constraints.

2.2 Formal and Informal Institutional Constraints

To measure all three classifications of constraints on predation, I rely on variables used throughout the literature (Glaesar et al. 2004; La Porta et al. 2008; Williamson and Kerekes 2001; Williamson 2009; Djankov et al. 2003). Glaesar et al. (2004) identify four constitutional rules designed to constrain government: plurality, proportional representation, judicial independence, and constitutional review. These four variables are used to create a formal public constraints index. Electoral rules, as argued by Persson and Tabellini (2003), are important constitutional rules that place constraints on legislative behavior by increasing competition among legislators and creating incentives to pursue either individual or the public interest. This is captured by plurality and proportional representation. Plurality represents the election of a legislator by a winner take all strategy. Proportional representation captures whether a candidate in the upper and lower houses of parliament is elected based on the percentage of votes received by their party (Beck, Clarke, Groff, Keefer, and Walsh 2001). Both measures are dummy variables (0, 1) averaged over the time period 1975-2000 in order to expand the number of countries.

Judicial constraints, measured by judicial independence and constitutional review,

capture the constraint on the executive issued by the judiciary. Judicial independence is computed as the normalized sum of (1) the tenure of supreme court judges, (2) the tenure of administrative court judges, and (3) the existence of case made law. Constitutional review captures whether judges have the power to review the constitutionality of laws and the number of steps to necessary to change the constitution (La Porta, Lopez-de-Silanes, Pop-Eleches, and Shleifer 2004). Both judicial independence and constitutional review are available in 1995 only. All four formal public constraints are defined as objective constitutional measures constraining government. Therefore, higher scores for each measure necessarily implies stronger protection from government expropriation.

In order to construct one comprehensive measure of formal public constraints, the first principal component is extracted from all four constitutional rules to create an overall index. The index is normalized to range between zero and ten, with a score of ten representing a country that exhibits strong formal public constraints. A high score on the formal public index indicates that governments in these countries should be more constrained via formal rules than those countries with low scores.[7]

To capture formal institutional measures of private protection, I use data from a series of papers from Djankov and co-authors (2003, 2007, 2008). These variables include creditor rights, legal formalism, and a measure of self-dealing. Creditor rights is an aggregate index computed as the sum of four measures of credit protection. This includes 1) restrictions for a debtor to file for reorganization, 2) secured creditors are able to seize collateral after a reorganization petition is approved, 3) secured creditors are paid first out of the proceeds of liquidating a bankrupt firm, and 4) management does not

[7] I recognize that these measures do not capture all possible existing constraints on government; however, I believe they serve as appropriate proxies to capture constitutional restrictions on government expropriation.

retain administration of its property pending reorganization. Legal formalism measures the number of formal legal procedures necessary to resolve a simple case of collecting on an unpaid check. It can be thought of more generally as formalism regarding judicial procedures that ultimately determine the effectiveness of contract enforcement with more formalism resulting in less efficient contract enforcement.[8] The measure of self-dealing is an index comprised of both ex-ante and ex-post private rules and enforcement regarding legal protection for minority shareholders against expropriation by corporate insiders. The authors create an anti self-dealing index by assembling data from Lex Mundi law firms including rules regarding disclosure, approval, and litigation surrounding a self-dealing transaction. These three variables are classified as institutional measures determining subsequent equilibrium outcome variables such as time and cost to enforce a contract (La Porta et al. 2008).

In order to construct one comprehensive measure of formal private constraints, the first principal component is extracted from all three variables to create an overall index. The index is normalized to range between zero and ten, with a score of ten representing a country that exhibits strong formal private constraints. A high score on the formal public index indicates that individuals in these countries should be better protected from private predation than those countries with low scores. Although these measures do not capture all possible existing constraints on private predation, they are the most comprehensive proxies currently available to serve as formal institutional constraints on private expropriation.

To measure informal institutions, I use three different cultural indices. The first,

[8] This measure is different from the World Bank's number of procedures to enforce a contract. Legal formalism represents the institutional constraints facing contract enforcement while the World Bank variable measures the outcome from these constraints.

and my preferred measure, was first identified by Tabellini (2008, 2010) and later expanded on by Williamson and Kerekes (2011). This variable is constructed by identifying four distinct categories of culture that should constrain behavior in a variety of ways. These four components are trust, respect, individual self-determination, and obedience. These traits serve as rules governing interaction between individuals, including market production and entrepreneurship.

Trust reduces transactions and monitoring costs, leads more quickly to efficient outcomes, and to further market exchange (Fukuyama 1996; La Porta, Lopez-de-Silanes, Shleifer, and Vishny 1997; Woolcock 1998; Zak and Knack 2001; Dixit 2004; Francois and Zabojnik 2005). Therefore, higher trust societies are more likely to experience higher levels of economic development and growth (Knack and Keefer 1995). This same logic holds between trust and property rights institutions. Higher trust individuals are less likely to engage in opportunistic behavior either in a public or private setting. A similar argument can also be made for respect. Respect captures differing mentalities regarding opportunistic behavior (Banfield 1958). Some societies condone engaging in highly opportunistic behavior outside the group or network, while other societies promote social interactions beyond groups or networks (Platteau 2000). The differing attitudes about respect have economic consequences or benefits that range from the provision of public goods in a local community and the monitoring of political representatives, as well as property rights (Putnam 1993; Banfied 1958).

Individual self-determination captures whether individuals reap the benefits or consequences of their actions. The more likely it is that economic success will be determined by one's own will, the more likely individuals will work harder, invest in the

future, and engage in entrepreneurial activities (Banfield 1958). An extension of this argument is that individual choice depends on how much control you feel you have over your life. When individuals think that they have control over their life, they will be more likely to find ways that improve their economic welfare, including finding solutions to problems surrounding property rights. Obedience captures the degree to which individualism is suppressed. Some societies teach that individualism can be destructive. It is the role of the state to suppress these instincts through coercion to achieve good outcomes. This type of attitude stifles economic development by discouraging innovation, entrepreneurship, and cooperation among other members of society. As a result, individuals may not invest resources to invent ways to define and enforce property rights, resulting in more property expropriation. In addition, more obedience may also lead to less widespread cooperation across groups as individuals do only what they are told versus cooperating with one another in productive endeavors and to solve problems. This also potentially leads to higher rates of property expropriation.

Data from all five waves of the World Values Surveys (1981-2008) is utilized to quantify each component. These surveys capture individual beliefs and values, reflecting local norms and customs. In order to correctly capture each component, one question from the survey is identified that is most closely correlated with each trait. For example, trust is measured by the question, “Generally speaking, would you say that most people can be trusted or that you can’t be too careful in dealing with people?” Individual responses from each of the four questions are aggregated for each country. A comprehensive culture measure is achieved by first averaging the data across all five waves and then extracting the first principal components of all four traits. The index is

normalized between zero and ten, with ten representing strong informal institutions. A country with a higher score on the informal index has stronger informal constraints relative to countries with lower scores.

The second cultural measure, used most notably in Licht et al. (2007), is taken from Schwartz (1994, 1999) where three main cultural dimensions are defined. The first dimension is embeddedness/autonomy designed to capture respect for tradition, social order, and obedience. Embeddedness places emphasis on the individual's place within a group and centers on maintaining the status quo and resists breaking group solidarity. Autonomy refers to the opposite of embeddedness where a culture places emphasis on individual uniqueness and encourages individuals to pursue their own ideas, directions, and plans. Greater embeddedness, instead of autonomy, is similar to our measure of obedience and may exert a negative effect on the security of property rights for similar arguments presented above. The second dimension captures the relationship between mankind and the natural and social world. This is called mastery/harmony where mastery refers to cultural emphasis on altering and changing the natural world as a means to improving an individual's well being. Harmony emphasizes accepting the world as is instead of trying to change it. Greater cultural emphasis on harmony instead of mastery could hamper the ability for individuals to secure property rights due to the lack of acceptance of altering the physical world as needed. For example, a more harmonious culture could resist adopting an advance in technology (such as barbed wire) that could make it easier to define property. The last cultural dimension is hierarchy/egalitarianism and captures how societies generate group cooperation and productive activities. Hierarchy refers to a cultural acceptance of an unequal power structure whereas

egalitarianism emphasizes social justice and equality among all group members. Individuals within a hierarchical society may find it more difficult to secure property rights due to the unequal power distribution among group members.

To measure each dimension, a survey with a series of questions related to the above distinct values were administered where respondents were asked to rate each of the value items as "a guiding principle in MY life." The surveys were administered in 1998 to over 15,000 urban teachers. Mean ratings of each of the items were computed to create country level indices. To create an overall index, the first principle component from embeddedness, harmony, and hierarchy is extract and normalized between zero and ten.

The third measure of informal cultural norms is taken from Hofstede (1980, 2001) where a dimensional framework is constructed from surveys administered to various IBM employees across a number of countries. The surveys were conducted twice, in 1968 and 1972, and produced more than 116,000 responses. Hofstede's main cultural dimensions include individualism, power distance, masculinity and uncertainty avoidance. Individualism measures the degree to which individuals are integrated into groups. It assumes weak ties among group members and places responsibility for one's life on the individual. This culture dimension is similar to our WVS measure of individual self-control and Schwatz's embeddedness/autonomy measure. Following these arguments, greater individualism should lead to greater protection of property rights. Power distance measures the degree to which less powerful group members accept or expect power to be distributed unevenly. This measure is similar to Schwartz's hierarchy/egalitarianism dimension. Masculinity refers to the distribution of roles between the genders. This

dimension ranges from assertive and competitive (masculine) to modest and caring (feminine). The last cultural component, uncertainty avoidance, measures the degree to which a society tolerates uncertainty, capturing how much a society tries to control the uncontrollable. Again, an overall index, normalized between 0 and 10, is created by extracting the first principle component from all four dimensions. In addition, to these three separate informal indices, I also average across all three to create an overall informal index as way to include additional observations.

2.3 Analyzing the Data

Table 1 below presents the summary statistics for all data used in the empirical analysis. There are approximately 100 countries included in the analysis, although the sample size changes depending on the specification. The countries included in the analysis range from all levels of development including Ethiopia and Zambia (both under $1,000 GDP per capita in 2004) to United States and Luxembourg. The average income is $14,000 with a standard deviation of $12,000.

[Insert Table 1]

For overall property protection, the mean is 7.62 with a standard deviation of 1.82. Iraq receives the lowest score of 1.81; however, the second worst is Mali but with a much higher score of 4. Countries receiving the highest scores are Luxembourg, Netherlands, Switzerland, and the United States. For public protection, the index ranges from 1 to 7 with both Iraq and Saudi Arabia receiving the lowest scores and 28 countries

receiving the highest. The mean is 4.74. In terms of private protection, the index ranges from 0 to 10, with a mean of 6.2 and a standard deviation of 2.77. Those countries with the worst contract enforcement include Suriname, India, and Bangladesh. Italy is also in the bottom ten on this index with a score of 1.21. Largely driving this result is that is takes over 1,200 days to enforce a contract, more than double the sample average. Compare this with Singapore, the country receiving the highest score regarding private protection. It takes only 150 days and 21 procedures, on average, to enforce a contract in Singapore.

Formal-Public constraints has a mean of 4.91 with large variation (standard deviation of 3.84). Countries with the strongest formal constraints on government expropriation range from Jordan, Canada, Zimbabwe, to the United Kingdom. What this index implies is that in these countries formal constraints exist 'on the books.' Whether or not they work is what we explore in the next section. Countries with less formal political constraints include Columbia, Venezula, Belgium and Iceland. Informal constraints from WVS include the largest number of countries (90) compared to 67 for the Hofstede index and 51 countries for the Schwartz index. The mean for all three indices range from between 4 to 5 and the standard deviation is between 2 and 3. The countries with the fewest informal constraints (average of all three indices) range from Rwanda, Guatemala, and Ghana. This implies that there is lower trust, lower individualism, more obedience, and more uncertainty avoidance, for example, in these countries. The countries with, for example, higher trust and more individualism include Austria, Finland, Norway, Denmark, and Sweden.

Before turning to the main empirical exercises, an interesting exercise is to

analyze how these institutional variables relate to one another in order to understand exactly what these variables are measuring. Figure 2 below plots both the private and public protection indices creating four quadrants by separating each index at its mean. The top right quadrant is those countries that have relatively stronger protection from both public and private predation. These countries have the highest level of development among the sample at approximately $24,000. The other extreme, found in the lower left quadrant, is the countries with weak protection from both types of predation. Not surprising, these countries are among the poorest in the sample with an average income of approximately $5,850. The off diagonals illustrate that there are asymmetries among the trade-offs regarding public and private predation. The countries in the top left quadrant with stronger public protection but weaker private protection have an average income of approximately $16,300, the second highest in the sample. Compare this with the countries in the lower right quadrant where public protection is weaker but private protection is stronger. In this sample, the average income is only $8,100— less than half of the other off diagonal quadrant. This result suggests that possibly constraining the state is more important than providing formal private constraints to secure property.

The top row in the top portion of Table 1 below reiterates this point. The countries that are capable of stronger protection from public predation are statistically and economically wealthier than those that do not, regardless of the protection from private predation. This finding supports conclusions from Acemoglu and Johnson (2005) where effectively constraining the state was more important than providing contract enforcement. Countries that are able to provide protection against private predation, or contracting institutions, are only able to achieve a modest level of income –an amount

that is well below of the mean for the entire sample. Another way of emphasizing the importance of public protection is to consider the countries that have relatively weak protection on both accounts. If a magical property rights fairy were to grant these countries the option of increasing the protection from *either* public predation or private predation, which should they choose?[9] If they could increase private protection, on average, their incomes would increase by only $2,250; however, if it were possible to increase protection from public predation, income, on average, would increase by over $10,000. This naturally leads us down the path of attempting to understand what provides constraints on predation, especially state or public predation.

[Insert Figure 2]

[Insert Table 2]

Table 2 also separates countries into strong and weak culture by dividing the sample at the mean (average) culture score. The most glaring result that emerges from this exercise is the dramatic difference in income from these two subsamples—a difference of almost $17,000. Another interesting result is the difference between the formal public constraints. The strong culture countries score, on average, over 2 units *less* on the formal public constraints than the low culture countries. In all other areas, strong culture countries score higher than the low culture countries. For example, overall property protection and the public protection index have a difference of over one standard

[9] I want to emphasize that no such fairy exists. Neither does any other 'magic bullet' to secure property rights.

deviation between the two groups. Appendices 2 and 3 provide a detailed list of countries and their respective institutional scores organized by either cultural scores or property protection indices.

3. Empirical Methodology and Results

3.1 Benchmark

Before turning to a detailed explanation of the data or rigorous empirical analysis, a cursory look at the data provides interesting insight. Appendix 4 provides a pairwise correlation table.

[Insert Figures 3]

Figure 3a and 3b graphically depict how protection against public predation and private predation support overall security of property rights. Protecting against both types of predation is important as each index is positively and significantly (at 1% level) correlated with overall property rights (0.67 for the public index and 0.54 for the private index). This result is not surprising as past research as has shown the importance of constraining the state as well as providing effective contracting institutions (protection from private predation). Figures 4 and 5 below start to get at the heart of the matter – what protects against public and private predation?

[Insert Figures 4]

Figure 4a and 4b plots the public protection index with formal and informal constraints. An interesting result emerges in Figure 4a –the formal mechanisms designed to constrain public expropriation does not have a clear relationship with public protection. In fact, the correlation is actually negative (-0.45) and significant at 1% level. This could be due to the fact that countries that have highly opportunistic governments may try and constrain the state by adopting formal measures. Thus, the causation actually might run in the other direction—low public protection from state predation leads to more formal constrains. This result is similar to the foreign aid/economic growth debate where it is important to separate out cause and effect. However, as shown in Figure 4b, the informal constraints have a strong positive relationship with public protection and a significant (at 1% level) correlation of 0.68. This figure suggests that the informal constraints may be more important at constraining the state than the formal, government made constraints placed on itself—an idea fleshed out in more detail in a later section.

[Insert Figures 5]

Figures 5 start to decipher what is providing protection from private predation. Figures 5a and 5b plots the private protection index with the formal private constraints and the informal constraints, respectively. Both the formal and informal constraints appear to be important in providing private protection as both figures have an upward sloping trend and significant correlations (0.35 and 0.41, respectively).

From the scatter plots we can gather that protecting against both private and public predation is of critical importance for secure property rights. Providing effective

constraints for both public and private protection appear to stem from informal cultural norms. Formal private constraints are also important for private protection but formal public constraints actually has a negative relationship with public protection.

3.2 Main Results

The empirical strategy involves using both OLS and IV regressions (when possible), a variety of dependent variables and control variables. The initial setup is to explore how both the formal and informal constraints relate to their respective protection indices.

[Insert Table 3]

Table 3 above presents the benchmark regressions. In panel A, the private protection index is the dependent variable. Both the formal and informal measures are positive and significantly related to private protection (except in regression 3). Moving from the lowest scoring country to the highest on the private formal index (Ecuador to Hong Kong) increases the private protection index by approximately 2.9 units—the difference between Saudi Arabia and Canada. This suggest that as countries become less formalized in legal procedures, limit self-dealing, and protect creditors it takes less time to collect on commercial debt and enforce a contract, thus protecting individuals from opportunistic behavior from other individuals.

From regression (2), moving from the lowest scoring to the highest in terms of WVS culture results in a 6-unit increase in private property protection—more than double the impact from the formal private index. The six-point difference represents the

separation between Bangladesh and Canada or Mali and Hong Kong. This result suggests that as individuals become more trusting, respectful, individualistic, and less obedient, private expropriation decreases. Regression (4) also supports this conclusion.

Regressions (5)-(7) control for both the formal and informal constraints. The only notable difference is between regression (3) and (6). Now the Informal-Schwartz variable is significant and increases in size, as does the private formal measure. A move from the lowest to highest score on either index would increase the private protection index by approximately 4 units. Comparing R-squareds, the explanatory power increases when controlling for both measures except from regression (4) to (7). Also, just controlling for Informal-WVS Culture explains almost 19% of the variation. This increases to 26% with the addition of Formal-Private Constraints.[10]

Panel B the dependent variable is the public protection index. The negative relationship between formal constraints and public protection remains in the regression. A one standard deviation increase in this index decreases public protection by 0.8 units. Moving from the bottom to the top of the index decreases protection from public predation by approximately 2 units. Recall that this index is measured by Polity IV's constraints on the executive on a scale of 1-7. A 2 unit decrease is quite a dramatic fall—the difference between Singapore and Iraq.

All three regressions controlling for the informal constraints show a positive and significant effect. Also, the R-squareds range from 0.30 to 0.46 when controlling for only informal constraints. The effect is also quite large. Moving from the bottom to the top of the WVS index or the Hofstede index would increase protection from public predation by

[10] These results are robust to the inclusion of an interaction term between formal-private constraints and informal constraints. Both formal-private constraints and informal constraints remain positive and significant. The interaction term is always insignificant.

approximately 5 units. This implies that a country receiving a 1 on the public protection index would now be a 6. A 7 is the highest score a country can achieve. The size of the effect from the Schwartz index is smaller but still positive and significant. Similar results persist in regressions (5)-(7) when controlling for both formal and informal constraints. The negative effect from formal constraints remains and the strong positive effect from the informal constraints persists. The negative effect seems to partially be minimized with the presence of informal constraints (regression 6). This idea will be briefly explored later.[11]

Panels C and D in Table 3 introduce the 'other' formal constraints into the regressions. Even though Figure 1 did not consider the possibility that formal private constraints could possibly constraint public predation, or vice versa, I control for this effect in the regression. Regressions (8)-(11) report these results. In Panel C with the private protection index as the dependent, results do not vary significantly from the results without controlling for formal public constraints. Formal public constraints are negative but not significant in all four regressions. Informal constraints are always positive, significant, and retain the size effect. Formal private constraints are also positive and significant with approximately the same effect with one exception. In regression (11), formal private constraints loses its significance. Also, there is no additional explanatory power gained by including formal public constraints in the private protection index.

Panel D reports the results when controlling for formal private constraints in the regressions with public protection index as the dependent variable. As before, formal public constraints are negative and significant and informal constraints are positive and

[11] I also include repeat these regressions with an interaction term. While the formal public constraints remain negative and significant, and the informal constraints are always positive and significant, the interaction between formal-public and informal-culture WVS is positive and significant. This suggest that if formal public constraints are embedded in strong informal constraints, they may have a positive effect.

significant with the same approximate coefficient size. Unlike formal public constraints in Panel C, formal private constraints do have a positive and significant effect on public protection, as suggested in 3 out of the 4 regressions. This suggests that moving from the lowest to highest on this index would, on average, increase public protection by approximately 1.8 units (difference between Egypt and France). This effect is less than half of the effect from the informal constraints but raises an important point—it appears that constraints designed to constrain the state (formal public constraints) do not actually do so; however, institutions designed to protect from private expropriation (i.e. contract enforcement) may also protect against public predation. This may not be a surprising finding due to the fact that the formal private constraints variable is, at least partially, measuring rule of law and the effectiveness of the legal system.

3.3 Robustness

Table 4 tests for robustness by including a variety of control variables. Many variables we would want to control for are highly correlated with one of our main variables. For example, culture and GDP per capita has a correlation, on average, of over 0.71, depending on which measure of culture. This is a common issue with empirical papers exploring the effects of institutions, especially property rights. Therefore, I follow the existing development literature on institutions in selecting the variables (for example, Levine and Renelt 1992; Dawson 1998; La Porta et al. 1999, 2004; Sachs 2001; Acemoglu et al. 2001, 2002; Jaggers and Marshall. 2000; Gwartney et al. 2004; Acemoglu and Johnson 2005; Tabellini 2010). The explanatory variables include the average growth rate, country size captured by population (log form), percent urban

population, religion measured as the percent of the population that is catholic, macroeconomic stability measured by the inflation rate and government consumption, and the initial political institutional environment. Appendix 1 provides a summary description of all data used in the analysis along with their sources.

[Insert Table 4]

Three different regression specifications are utilized to minimize endogeneity due to several of the variables being correlated with each other. Panel A reports the results for private protection index as the dependent variable. When controlling for only the growth rate (regressions 1, 4, and 7), the informal constraints are always positive and significant with roughly similar coefficient sizes and R-squareds. Formal private constraints are positive and significant in two out of the three regressions. The second regression specification includes the other control variables. In two out of three regression, informal constraints are positive and significant, while the formal private constraints are postive and significant in all three regressions. Lastly, I control for all variables in the final specification. The culture variable from WVS remains positive and significant; however, the other two culture variables lose significance. The formal private constraints are significant in two out of the three regressions. The size of the coefficients and R-squareds are similar throughout.

Panel B repeats this set up but with public protection index as the dependant variable. The formal public constraints index is negative and significant in six out of the nine specifications, losing significance when Informal-Schwartz Culture is used as the

proxy for informal constraints. Informal constraints is positive and significant in seven out of the nine regressions. The size of the coefficients and R-squareds are similar to previous results. Overall, the results from including additional control variables do not alter previous findings.

As another robustness test, I test the relationship between the three property rights indices and between the institutional measures and overall security of property rights. Even though the main contribution is to sparse out what constrains different types of predation, replacing the dependent variable with the overall property rights index can lend validity to our other property rights measures if the results are similar.

[Insert Table 5]

Panel A regress overall property rights against private and public protection indices (the relationship between lines 1 and 2 in Figure 1 above). Also, since the direct mechanism of the informal constraints is unclear, I also control for them. The growth rate in included in some of the specifications. The results support our priors. Minimizing both private and public predation leads to higher overall security rights. With the exception of regression (3), public protection, private protection, and all cultural measures positively and significant effect overall property rights.

Panel B test directly the effects from the institutional constraint measures and overall secure property rights (the connection between lines 1 and 3 in Figure 1 above). The most consistent result in these regressions is the performance of the cultural variables. In all specifications, the informal constraints positively and significantly lead

to more secure property rights, even when controlling for the average growth rate. This suggest that moving from the lowest to highest on the WVS culture index increases property rights by over 5 units—an increase of almost three standard deviations. Secondly, the formal public constraints is still negative, however it is no longer consistently significant. This may be picking up on the asymmetric effects from the formal political constraints as discussed previously. Lastly, the formal private constraints are positive and significant in half of the regressions. Together these results may suggest that the informal constraints underlie secure property rights while the effect from formal constraints, both public and private, operate through indirect channels such as the legal system.

3.4 Correlation or Causation?

Given the empirical setup, I recognize possible reverse causality concerns. I want to emphasize the difficulty in claiming causal mechanisms and focus on identifying possible underlying associations between formal and informal constraints and property rights. This is a first attempt to understanding how these variables may affect property rights and I caution the reader from drawing extreme casual conclusions from our results. However, as part of the sensitivity analysis, instrumental variable (IV) regression results are included in an attempt to overcome reverse causality and endogeneity issues. I believe these results, along with several other robustness checks, provide additional support to the main results.

The major challenge is to find appropriate instruments for both formal and informal institutions. Fortunately, the development literature provides valid proxies for

each. Political constraints and contract enforcement measures are most commonly instrumented with a dummy variable measuring legal origins (La Porta et al. 1997; La Porta, Lopez-de-Silanes, and Shleifer 1998; Williamson and Kerekes 2011). Legal origin is shown to shape financial, legal, and economic institutions and outcomes (Djankov et al. 2003). Different legal traditions, imposed during colonization, affect current legal systems. Given the theoretical and empirical set up of the analysis it does not pose a problem that both formal measures are instrumented with common law. Since both formal measures are used in different regressions, common law can work as a valid instrument for each measure. Common law appears to be a valid instrument for our indices as it is highly correlated with formal private constraints (0.72) and formal public constraints (0.48). In the formal-public and formal-private univariate regressions (not reported), the F-statistic is 15 and 103, respectively, and the R-squareds is 0.23 and 0.52 respectively. The first stage results, presented in Appendix 5, support the claim that common law is a valid instrument for both formal constraints. Also of critical importance is that common law is not correlated with culture. This is indeed the case as illustrated with the first stage results and a F-statistic of 0.5 and a R-squared of 0.007 in a univariate regression.

Informal constraints are instrumented with a geography variable and a language variable— two instruments previously used for culture (Licht et al. 2007; Williamson and Kerekes 2011; Hall and Jones 1999). Latitude, measured as distance from the equator, is implemented to identify one potential channel through which culture affects property rights. Several papers argue that geography only exhibits an indirect effect on development by impacting the quality of current institutions. The argument is that certain

factor endowments permit extreme inequalities and the dominance of a small group of elites. These differences in endowments have stunted institutional development (Sala-i-Martin and Subramanian 2003; Easterly and Levine 2003; and Rodrik, Subramanian, and Trebbi 2004). The second culture instrument is a language variable from Licht et al. (2007).[12] The basic intuition is that language affects social inferences and value judgments transmitting cultural norms and values across generations. Kashima and Kashima (1998) present evidence that pronoun usage in language represents psychological differences between the speaker and the social context. Specifically, the use of 'I' or 'you' signals that the individual is the center of the context. On the contrary, a grammatical rule licensing pronoun drop suggests a reduction between the individual and the group. The pronoun drop dummy variable (1= grammatical rule for pronoun drop, 0 otherwise) constitutes a link between language and culture. Pronoun usage should be prevalent within societies emphasizing the individual over group solidarity. Pronoun drop will exists in cultures where social embeddedness is emphasized. This implies that our dummy for pronoun drop will have a negative relationship with our measure of culture.

Informal-Culture WVS is the only informal measure that is consistently valid with both instruments; therefore, it is the only informal measure used in the IV regressions. Both latitude (0.57) and pronoun drop (-0.56) are significantly correlated with WVS culture. The bivariate regression (not reported) suggests that these are valid instruments (F-statistic is 16 and R-squared is 0.40). The first stage results also support this conclusion. Also, latitude and pronoun drop are not correlated with either formal

[12] I also experimented with a variety of potential cultural instruments, such as religion, ethnic fractionalization, and settler mortality. However, religion and settler mortality are not strongly correlated with culture, and ethic fractionalization is correlated with both culture and formal institutions, thus not satisfying the exclusion restrictions.

measure.

[Insert Table 6]

The IV results show several interesting findings. Panel A has private protection as the dependent variable. After controlling for reverse causality, the formal constraints are never significant while the informal constraints are always positive and significant. Also, the coefficient on culture increases by almost one third. These results imply that, on average, moving from the lowest to highest on the WVS culture index increases private protection by approximately 8.9 units—almost the scale of the entire index. Alternatively, a one standard deviation increase in the culture index raises private protection by approximately 1.78 units. This represents a change from Argentina to Sweden. Panel C shows that this same trend continues if we replace the dependent variable with the overall property rights index—informal constraints are significant and the formal are not.

Panel B explores the effect from formal and informal constraints on protection from public predation. After controlling for reverse causality, the same result holds as in Panels A and C. The informal constraints are always positive and significant while the formal constraints are not significant. This result may not be as surprising since the formal-public constraints index has never had a positive and significant effect. It should be noted that the index is insignificant but always positive. This lends support to the idea that the negative results from before were driven by reverse causality, where countries tried to rein in highly opportunistic government by instituting formal political constraints. The same results hold in Panel D when overall property rights in the dependent variable.

All results are robust to the inclusion of the average growth rate and the 'other' formal constraints variable. Also, all regressions were reran in reduced form with similar findings.

3.5 What About Overall Development?

Lastly, I check the empirical results by replacing the dependent with GDP per capita in 2000 (PPP, log) instead of using a property rights measure. I do so to compare my results with those of Acemoglu and Johnson (2005) who argue that constraining public predation is more important for long run development than constraining private predation. Also, I do so to check my results against some recent findings that argue that culture supports long run development (Licht et al. 2007; Tabellini). For simplicity, I only show the results using Informal-Culture WVS. I include the main control variables as robustness as well as initial GDP per capita in 1960 (even though it is correlated with culture).

[Insert Table 7]

The first finding supports Acemoglu and Johnson's results that public protection is relatively more important than private protection for development. Secondly, the informal constraints are always positive and significantly related to income supporting the previous results as well as previous studies. Regressions (6)-(8) control for culture and the formal institutional indices that I created. Once again, informal constraints trump both measures of formal constraints. Also, the high R-squareds suggests that these specifications explain a large portion of the variation in income across countries.

4. Conclusion

The results suggest that formal constraints do not constrain the state, but that informal constraints do. Formal and informal constraints lead to higher protection from private predation. This suggest that the state is better at preventing private citizens from engaging in opportunistic behavior than it is at preventing state sanctioned predation. Overall, the informal constraints trump the formal for overall property protection and long run development. Also, constraining the state is relatively more important than constraining private predation for long run development.

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Appendix 1: Data Description and Sources

Variable	Description	Source
Property Indices:		
Overall Property Protection Index	Avg. Protection Against Risk of Expropriation: Measures protection from "outright confiscation and forced nationalization" of property. The index ranges from 0 to 10 where higher values are equal to a lower probability of government expropriaiton; averaged for the years from 1982-1997.	International Country Risk Guide, Political Risk Services
Public Protection Index	Constraints on the Executive: Captures the extent of institutionalized constraints on the decision-making powers of chief executives, whether individuals or collectivities. Averaged from 1960-2000; scale 1-7 with 7 representing the highest constraints.	Polity IV
Private Protection Index	First principle component of three contract enforcement variables: a measure of the number of procedures, number of days, and the cost to enforce a contract. Scaled between 0 and 10 with 10 being the highest.	Djankov et al. (2003); World Bank Doing Business Project
Formal Constraints:		
Formal-Public Constraints	First principle componenet of four constitutional rules: : plurality, proportional representation, judicial independence, and constitutional review. Scaled between 0-10 with 10 being the highest.	La Porta et al. (2004); Beck et al. (2001)
Judicial Independence	Judicial independence is computed as the sum of three variables. The first measures the tenure of Supreme Court judges (highest court in any country) and takes a value of 2 - if tenure is lifelong, 1 - if tenure is more than six years but not lifelong, and 0 - if tenure is less than six years. The second measures the tenure of the highest ranked judges ruling on administrative cases and takes a value of 2 - if tenure is lifelong, 1 - if tenure is more than six years but not lifelong, 0 – if tenure is less than six years. The third measures the existence of case law and takes a value of 1 if judicial decisions in a given country are a source of law and 0 otherwise. The variable is normalized from zero to one where higher values equal a higher degree of judicial independence. This variable is measured as of 1995.	La Porta et al. (2004)

Proportional Representation	This variable is equal to one for each year in which candidates were elected using a proportional representation system; equals zero otherwise. Proportional representation means that candidates are elected based on the percentage of votes received by their party. This variable is measured as the average from 1975 through 2000.	Beck et al. (2001)
Constitutional Review	Constitutional review is computed as the sum of two variables. The first variable measures the extent to which judges (either Supreme Court or constitutional court) have the power to review the constitutionality of laws in a given country. The variable takes three values: 2- if there is full review of constitutionality of laws, 1 - if there is limited review of constitutionality of laws, 0 - if there is no review of constitutionality of laws. The second variable measures (on a scale from 1 to 4) how hard it is to change the constitution in a given country. One point each is given if the approval of the majority of the legislature, the chief of state and a referendum is necessary in order to change the constitution. An additional point is given for each of the following: if a supermajority in the legislature (more than 66% of votes) is needed, if both houses of the legislature have to approve, if the legislature has to approve the amendment in two consecutive legislative terms or if the approval of a majority of state legislature is required. This variable is normalized from zero to one where higher values equal a higher degree of constitutional review by the courts. This variable is measured as of 1995.	La Porta et al. (2004)
Plurality	This variable is equal to one for each year in which legislators were elected using a winner-take-all / first past the post rule; it equals zero otherwise. This variable is measured as the average from 1975 through 2000.	Beck et al. (2001)
Formal-Private Constraints	First principle componenet of three legal instittuional rules: creditor rights, legal formalism, and anti-self dealing index. Scaled between 0-10 with 10 being the highest.	

Creditor Rights	Creditor rights is an aggregate index computed as the sum of four measures of credit protection. This includes 1) restrictions for a debtor to file for reorganization, 2) secured creditors are able to seize collateral after a reorganization petition is approved, 3) secured creditors are paid first out of the proceeds of liquidating a bankrupt firm, and 4) management does not retain administration of its property pending reorganization. The index ranges from 0 (weak creditor rights) to 4 (strong creditor rights) and is constructed as at January for every year from 1978 to 2003.	Djankov et al. 2007
Legal Formalism	Measures the number of formal legal procedures necessary to resolve a simple case of collecting on an unpaid check. Scaled between 1-7.	Djankov et al. 2003
Anti-Self Dealing Index	This approach to self dealing emphasizes extensive disclosure, approval procedures for transactions, and faciliatation of private litigation. Gov. regulates the framework but leaves enforcement to private parties. The index is an average of ex-ante and ex-post private control of self dealing.	Djankov et al. 2008
Informal Constraints:		
Informal-Culture WVS	The first princple component of three positive beliefs (control, respect, trust) and the negative belief (obedience). Scaled between 0-10 with 10 being the highest	World Values Survey 1981-2007
Trust	Trust is measured as the percentage of respondents who answered that "Most people can be trusted.	World Values Survey 1981-2007
Respect	Respect is measured as the percentage of respondents that mentioned the quality "tolerance and respect for other people" as being important.	World Values Survey 1981-2007
Self-Control	Self-control is measured as the unconditional average response (multiplied by 10) to the question asking to indicate how much freedom of choice and control in your life you have over the way your life turns out (scaled from 1 to 10).	World Values Survey 1981-2007
Obedience	Obedience is the percentage of respondents that mentioned obedience as being important.	World Values Survey 1981-2007
Informal-Culture Schwartz	The first princple component of embeddedness, harmony, hierarchy. Scaled between 0-10 with 10 being the highest.	Schwartz (1994, 1999)

Embeddedness	Captures the emphasis on the individual as part of group and committed to maintaining group soladarity and traditional order. Higher score implies greater group embeddedness instead of individual autonomy.	Schwartz (1994, 1999)
Harmony	Refers to the relationship between mankind and the natural and social world. Higher score suggests an emphasis on accepting the world as is, instead of trying to change it.	Schwartz (1994, 1999)
Hierarchy	Measures cultural emphasis on obeying rules and traditional roles within society. Higher score suggest a great hierarchical society.	Schwartz (1994, 1999)
Informal-Culture Hofstede	The first princple component of individualism, power distance, uncertainity, and masculinity. Scaled between 0-10 with 10 being the highest	Hofstede (1980, 2001)
Individualism	Measures the degree to which individuals are integrated into groups; individualism assumes weak ties among group members. Scaled between 0 and 10 with 10 representing strong individualism.	Hofstede (1980, 2001)
Power Distance	Measures the degree to which less powerful group members accept or expect power to be distributed unevenly. Scaled between 0 and 10 with 10 representing greater power distance among different levels of society.	Hofstede (1980, 2001)
Uncertainty Avoidance	Measures the degree to which a society tolerates uncertainty; captures how comfortable a group member is with unstructured situations. Scaled between 0 and 10 with 10 representing a society with a lower tolerance of uncertainty.	Hofstede (1980, 2001)
Masculinity	Masculinity refers to the distribution of roles between the genders. This dimension ranges from assertive and competitive (masculine) to modest and caring (feminine).	Hofstede (1980, 2001)
Controls:		
GDP Growth	Growth of GDP per capita, PPP basis, constant 2000 international dollars; averaged for the years from 1960-2000.	World Development Indicators 2010.
Population	Log of population averaged from 1981-2007.	World Development Indicators 2010.
Urban Population	Percent of population living in an urban area; average for the years 1981-2007.	World Development Indicators 2010.

Government Consumption	Real government consumption expenditure, measured as a percentage of GDP; averaged from 1981-2007.	World Development Indicators 2010.
Inflation	Measured as the percentage change in the consumer price index. Average from 1981 to 2007.	World Development Indicators 2010.
% Catholic	Measured as the percentage of population in 1980 (or for 1990-1995 for countries formed more recently) that belonged to Roman Catholic religion.	La Porta, Lopez-de-Silanes, Shleifer, and Vishny 1999
Initial Democracy	The index is measured on a scale from 0 to 10 with 10 representing most democratic. The variable is derived from a combination of quantifying the competitiveness of the political process, the openness and competiveness of executive recruitment, and constraints on the chief executive. Measured in 1950.	Polity IV
Instruments:		
Latitude	Measured as the absolute value of the latitude of the country, scaled to values between 0 and 1 (0 is the equator).	La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1999)
English Legal Origin	Dummy variable coded 0 or 1: 1 indicates that a country was colonized by Britain and English legal code was transferred.	La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1999)
Pronoun Drop	Dummy variable coded 0 or 1: 1 indicates grammatical rules allow pronoun drop.	Licht, Chanan, Schwartz (2007)

Appendix 2: Data Sorted by Public Property Protection

Country	Overall	Property Protection Public Index	Property Protection Private Index	Formal Constraints Public Index	Formal Constraints Private Index (3)	Informal Avg. Culture	GDP PC PPP 2004
Weak Public Protection							
Bangladesh	5.18	3.17	0.22	9.44		3.77	1,871
Indonesia	7.53	2.39	1.10	1.17	6.02	3.05	3,601
Pakistan	6.06	3.92	1.16	9.38	5.58	3.00	2,224
Guatemala	5.12	3.08	1.87			0.00	4,309
Egypt, Arab Rep.	6.77	3.00	1.93	8.94	2.64	2.68	4,215
Iraq	1.81	1.00	2.26	8.88		3.63	
Algeria	6.55	1.54	2.86	3.86		1.59	6,605
Saudi Arabia	7.60	1.00	3.30			4.51	13,792
Brazil	7.90	3.30	3.41	4.68	3.52	3.23	8,207
Burkina Faso	4.50	1.95	3.47			0.92	1,172
Taiwan PR	9.23	3.17	3.52	7.25	8.23	3.78	
Philippines	5.46	4.05	3.69	9.44	0.44	2.72	4,620
Nepal		3.24	3.74	9.31		1.09	1,489
Mali	4.00	2.30	4.07			2.01	1,000
Bolivia	5.74	4.17	4.13		0.14	2.82	2,719
Jordan	6.76	2.05	4.18	9.52	1.61	4.38	4,688
Poland	7.67	3.88	4.24		1.32	3.70	12,958
Morocco	7.09	1.98	4.51		2.35	3.24	4,329
Uganda	4.46	2.75	4.90	9.44	7.50	0.59	1,478
Armenia		4.40	4.95			4.15	4,098
Ecuador	6.56	4.68	5.06	0.62	0.00	2.04	3,977
Peru	5.94	3.79	5.17	0.75	0.29	2.35	5,688
Bulgaria	8.92	4.07	5.33		4.70	3.92	8,079
Panama	5.93	3.56	5.50	4.30	0.88	0.69	7,275
Nigeria	5.49	2.90	5.66	0.47	8.67	2.24	1,155
Albania	6.96	1.98	5.72			2.89	4,981
Ethiopia	5.70	2.03	5.83	9.15		2.58	756

Iran, Islamic Rep.	4.78	3.21	5.88			4.90	7,522
Spain	9.62	4.63	5.99	4.75	1.47	6.17	25,059
Croatia		3.33	6.05		5.29	4.13	12,201
Mexico	7.51	3.46	6.16	3.67	0.58	4.33	9,808
Weak Private Protection	*6.32*	*3.03*	*4.06*	*6.05*	*3.22*	*2.94*	*5,858*
Zimbabwe	6.18	3.48	6.27	9.52	8.38	1.08	2,070
Zambia	6.68	2.41	6.32	9.65		1.41	939
Argentina	6.50	3.71	6.38	0.75	0.73	5.56	13,281
Chile	7.82	3.95	6.54	9.15	4.41	4.28	10,870
Dominican Republic	6.25	4.43	6.71			4.20	7,448
El Salvador	5.01	4.31	6.82		4.11	2.37	5,043
Ghana	6.32	2.05	6.93	9.44	7.05	0.38	2,235
Kyrgyzstan		4.00	7.42			3.83	1,936
Thailand	7.61	3.37	7.86	9.01	8.82	4.12	8,085
Romania	7.28	3.38	7.92		2.94	3.18	8,479
Azerbaija		2.40	8.08			3.72	4,153
Portugal	9.14	4.69	8.30	0.38	2.79	4.77	19,619
Vietnam	6.57	2.79	8.36			5.02	2,749
Russian Federation	8.25	3.50	8.41		5.00	3.43	9,861
Ukraine		4.50	8.52		1.76	3.44	6,379
China	7.79	2.54	8.58		7.79	4.02	5,877
Hungary	9.01	4.10	8.74		1.91	5.80	16,832
Rwanda		1.18	8.80			0.00	1,261
Belarus		4.10	9.73			4.19	6,972
Singapore	9.32	3.00	10.00	9.44	9.41	3.30	28,064
Strong Private Protection	*7.31*	*3.39*	*7.83*	*7.17*	*5.01*	3.41	*8,108*
Strong Public Protection							
India	8.28	6.95	0.17	4.91	6.47	3.08	3,139
Trinidad and Tobago	7.42	7.00	0.44			3.17	12,218
Colombia	7.39	6.10	0.94	0.00	2.05	3.08	7,261
Italy	9.46	7.00	1.21	1.54	3.82	7.18	28,125

Slovenia		7.00	2.92			6.14	20,931
Costa Rica	7.07	7.00	3.03			4.25	9,476
Cyprus	8.44	6.83	3.25			4.14	22,763
Greece	7.78	5.40	3.80	4.68	1.17	5.74	22,162
Israel	8.59	7.00	3.91	1.31	8.97	4.66	24,420
Uruguay	7.07	5.08	3.96		3.23	4.16	9,420
Jamaica	7.04	7.00	4.73		6.61	7.02	4,159
Canada	9.74	7.00	6.21	9.52	7.94	7.80	31,250
Weak Private Protection	8.03	6.61	2.88	3.66	5.03	5.04	16,277
Macedonia, FYR		5.00	6.87			3.22	6,599
Estonia		7.00	7.20			6.06	14,529
South Africa	6.96	7.00	7.53	0.75	9.55	5.25	11,187
Venezuela, RB	7.10	5.76	7.64	0.00	5.88	3.33	6,205
Malaysia	7.98	5.20	7.70	9.65	9.11	2.70	10,281
Slovak Republic	9.00	6.38	7.75			4.29	14,622
Turkey	7.46	6.05	7.97	0.96	6.76	2.77	7,755
Georgia		5.00	8.03			3.32	2,833
Sweden	9.52	7.00	8.14	0.96	3.67	9.45	29,582
Czech Republic	9.80	7.00	8.19		4.55	6.04	19,412
Denmark	9.74	7.00	8.25	0.62	8.52	9.18	31,825
Namibia	4.12	5.00	8.47			1.74	7,416
Switzerland	10.00	7.00	8.63	5.09	3.08	7.81	33,019
United Kingdom	9.79	7.00	8.85	10.00	9.85	6.51	30,885
Moldova		6.60	8.91			3.82	1,728
Finland	9.74	7.00	8.96	1.17	4.26	8.30	30,030
Japan	9.74	7.00	9.02	4.40	6.32	5.56	29,219
Germany	9.91	7.00	9.13	4.91	5.73	7.90	28,364
United States	10.00	7.00	9.18	9.31	6.91	6.56	39,796
Netherlands	10.00	7.00	9.24	0.52	5.44	7.54	31,779
Norway	9.90	7.00	9.29	0.62	6.17	8.60	38,553
Australia	9.32	7.00	9.35	4.91	9.26	7.02	30,348
France	9.74	4.93	9.46	6.23	2.20	6.17	29,305

Belgium	9.69	7.00	9.51	0.46	7.64	5.01	31,154
New Zealand	9.74	7.00	9.57	8.65	9.70	8.05	23,418
Latvia		7.00	9.62		5.14	4.65	11,674
Austria	9.74	7.00	9.68	0.38	4.85	8.17	32,300
Ireland	9.74	7.00	9.79	0.62	8.08	6.67	38,837
Iceland	9.74	7.00	9.84	0.47		6.87	33,037
Luxembourg	10.00	7.00	9.90			6.13	69,932
Strong Private Protection	*9.14*	*6.56*	*8.72*	*3.37*	*6.49*	*5.96*	*24,187*

Appendix 3: Data Sorted by Culture

Country	Overall	Property Protection Public Index	Property Protection Private Index	Formal Constraints Public Index	Formal Constraints Private Index (3)	Informal Avg. Culture	GDP PC PPP 2004
Weak Culture							
Guatemala	5.12	3.08	1.87			0.00	4,309
Rwanda		1.18	8.80			0.00	1,261
Ghana	6.32	2.05	6.93	9.44	7.05	0.38	2,235
Uganda	4.46	2.75	4.90	9.44	7.50	0.59	1,478
Panama	5.93	3.56	5.50	4.30	0.88	0.69	7,275
Burkina Faso	4.50	1.95	3.47			0.92	1,172
Zimbabwe	6.18	3.48	6.27	9.52	8.38	1.08	2,070
Nepal		3.24	3.74	9.31		1.09	1,489
Zambia	6.68	2.41	6.32	9.65		1.41	939
Algeria	6.55	1.54	2.86	3.86		1.59	6,605
Namibia	4.12	5.00	8.47			1.74	7,416
Mali	4.00	2.30	4.07			2.01	1,000
Ecuador	6.56	4.68	5.06	0.62	0.00	2.04	3,977
Nigeria	5.49	2.90	5.66	0.47	8.67	2.24	1,155
Peru	5.94	3.79	5.17	0.75	0.29	2.35	5,688
El Salvador	5.01	4.31	6.82		4.11	2.37	5,043
Ethiopia	5.70	2.03	5.83	9.15		2.58	756
Egypt, Arab Rep.	6.77	3.00	1.93	8.94	2.64	2.68	4,215
Malaysia	7.98	5.20	7.70	9.65	9.11	2.70	10,281
Philippines	5.46	4.05	3.69	9.44	0.44	2.72	4,620
Turkey	7.46	6.05	7.97	0.96	6.76	2.77	7,755
Bolivia	5.74	4.17	4.13		0.14	2.82	2,719
Suriname	4.65		0.06			2.85	
Albania	6.96	1.98	5.72			2.89	4,981
Pakistan	6.06	3.92	1.16	9.38	5.58	3.00	2,224
Indonesia	7.53	2.39	1.10	1.17	6.02	3.05	3,601
India	8.28	6.95	0.17	4.91	6.47	3.08	3,139

Colombia	7.39	6.10	0.94	0.00	2.05	3.08	7,261
Trinidad and Tobago	7.42	7.00	0.44			3.17	12,218
Romania	7.28	3.38	7.92		2.94	3.18	8,479
Macedonia, FYR		5.00	6.87			3.22	6,599
Brazil	7.90	3.30	3.41	4.68	3.52	3.23	8,207
Morocco	7.09	1.98	4.51		2.35	3.24	4,329
Singapore	9.32	3.00	10.00	9.44	9.41	3.30	28,064
Georgia		5.00	8.03			3.32	2,833
Venezuela, RB	7.10	5.76	7.64	0.00	5.88	3.33	
Bosnia and Herzegovina			4.57			3.36	7,034
Russian Federation	8.25	3.50	8.41		5.00	3.43	9,861
Ukraine		4.50	8.52		1.76	3.44	6,379
Puerto Rico			5.00			3.52	
Iraq	1.81	1.00	2.26	8.88		3.63	
Poland	7.67	3.88	4.24		1.32	3.70	12,958
Azerbaija		2.40	8.08			3.72	4,153
Bangladesh	5.18	3.17	0.22	9.44		3.77	1,871
Taiwan PR	9.23	3.17	3.52	7.25	8.23	3.78	
Moldova		6.60	8.91			3.82	1,728
Kyrgyzstan		4.00	7.42			3.83	1,936
Bulgaria	8.92	4.07	5.33		4.70	3.92	8,079
Hong Kong, China	8.13		9.95		10.00	3.95	30,802
China	7.79	2.54	8.58		7.79	4.02	5,877
Malta	7.45					4.06	18,889
Thailand	7.61	3.37	7.86	9.01	8.82	4.12	8,085
Croatia		3.33	6.05		5.29	4.13	12,201
Cyprus	8.44	6.83	3.25			4.14	22,763
Armenia		4.40	4.95			4.15	4,098
Uruguay	7.07	5.08	3.96		3.23	4.16	9,420
Belarus		4.10	9.73			4.19	6,972
Dominican Republic	6.25	4.43	6.71			4.20	7,448
Average	*6.59*	*3.75*	*5.31*	*6.14*	*4.89*	*2.86*	*6,716*

Strong Culture							
Costa Rica	7.07	7.00	3.03			4.25	9,476
Chile	7.82	3.95	6.54	9.15	4.41	4.28	10,870
Slovak Republic	9.00	6.38	7.75			4.29	14,622
Mexico	7.51	3.46	6.16	3.67	0.58	4.33	9,808
Jordan	6.76	2.05	4.18	9.52	1.61	4.38	4,688
Korea, Rep.	8.71		9.07		7.35	4.40	20,499
Saudi Arabia	7.60	1.00	3.30			4.51	13,792
Latvia		7.00	9.62		5.14	4.65	11,674
Lithuania		7.00				4.65	
Israel	8.59	7.00	3.91	1.31	8.97	4.66	24,420
Portugal	9.14	4.69	8.30	0.38	2.79	4.77	19,619
Iran, Islamic Rep.	4.78	3.21	5.88			4.90	7,522
Belgium	9.69	7.00	9.51	0.46	7.64	5.01	31,154
Vietnam	6.57	2.79	8.36			5.02	2,749
South Africa	6.96	7.00	7.53	0.75	9.55	5.25	11,187
Japan	9.74	7.00	9.02	4.40	6.32	5.56	29,219
Argentina	6.50	3.71	6.38	0.75	0.73	5.56	13,281
Greece	7.78	5.40	3.80	4.68	1.17	5.74	22,162
Hungary	9.01	4.10	8.74		1.91	5.80	16,832
Czech Republic	9.80	7.00	8.19		4.55	6.04	19,412
Estonia		7.00	7.20			6.06	14,529
Luxembourg	10.00	7.00	9.90			6.13	69,932
Slovenia		7.00	2.92			6.14	20,931
Spain	9.62	4.63	5.99	4.75	1.47	6.17	25,059
France	9.74	4.93	9.46	6.23	2.20	6.17	29,305
United Kingdom	9.79	7.00	8.85	10.00	9.85	6.51	30,885
United States	10.00	7.00	9.18	9.31	6.91	6.56	39,796
Ireland	9.74	7.00	9.79	0.62	8.08	6.67	38,837
Iceland	9.74	7.00	9.84	0.47		6.87	33,037
Australia	9.32	7.00	9.35	4.91	9.26	7.02	30,348
Jamaica	7.04	7.00	4.73		6.61	7.02	4,159
Italy	9.46	7.00	1.21	1.54	3.82	7.18	28,125

Netherlands	10.00	7.00	9.24	0.52	5.44	7.54	31,779
Canada	9.74	7.00	6.21	9.52	7.94	7.80	31,250
Switzerland	10.00	7.00	8.63	5.09	3.08	7.81	33,019
Germany	9.91	7.00	9.13	4.91	5.73	7.90	28,364
New Zealand	9.74	7.00	9.57	8.65	9.70	8.05	23,418
Austria	9.74	7.00	9.68	0.38	4.85	8.17	32,300
Finland	9.74	7.00	8.96	1.17	4.26	8.30	30,030
Norway	9.90	7.00	9.29	0.62	6.17	8.60	38,553
Denmark	9.74	7.00	8.25	0.62	8.52	9.18	31,825
Sweden	9.52	7.00	8.14	0.96	3.67	9.45	29,582
Average	*8.83*	*6.01*	*7.43*	*3.76*	*5.32*	*6.18*	*23,611*

Appendix 4: Pairwise Correlations

	Priv. Prot.	Priv. Constraints	Public Prot.	Public Constraints	WVS	Hofstede	Schwartz	Property Protection	GDP PC PPP 2004
Private Protection	1.00								
Formal-Priv. Constraints	**0.35**	1.00							
Public Protection	**0.31**	**0.29**	1.00						
Formal-Pub. Constraints	-0.18	0.21	-0.45	1.00					
Informal-WVS Culture	**0.44**	0.21	**0.58**	**-0.29**	1.00				
Informal-Hofstede Culture	**0.43**	**0.44**	**0.69**	-0.06	**0.65**	1.00			
Informal-Schwartz Culture	0.21	**-0.40**	**0.56**	**-0.45**	**0.51**	**0.41**	1.00		
Property Protection	**0.54**	**0.28**	**0.67**	**-0.29**	**0.66**	**0.66**	**0.60**	1.00	
GDP PC PPP 2004	**0.45**	0.23	**0.67**	**-0.32**	**0.70**	**0.72**	**0.70**	**0.83**	1.00

Bold coefficient represents significance at 5% level.

Appendix 5: First Stage Results

	Dep. Var: Informal-WVS Culture (1)	**Formal-Private Constraints** (2)	**Formal-Public Constraints** (3)
Common Law	-0.112	4.432***	3.738**
	(0.606)	(0.605)	(1.509)
Latitude	3.577*	0.029	-3.392
	(1.995)	(1.666)	(3.563)
Pronoun Drop	-1.735**	-0.494	-0.433
	(0.823)	(0.713)	(1.447)
Constant	4.863***	4.327***	4.639*
	(1.325)	(1.063)	(2.352)
Observations	39	40	33
F-statistic	11.50	12.70	6.00
Adj. R-squared	0.50	0.48	0.33

Note: Standard errors are in parentheses. Significance level: *** at 1%, ** at 5%, * at 10%.

Results are efficient for homeskedasticity and robust to heteroskedasticity. Hansen J indicates that the instruments are uncorrelated with the error terms.

Figure 1: Property Rights, Outcomes, and Institutional Constraints

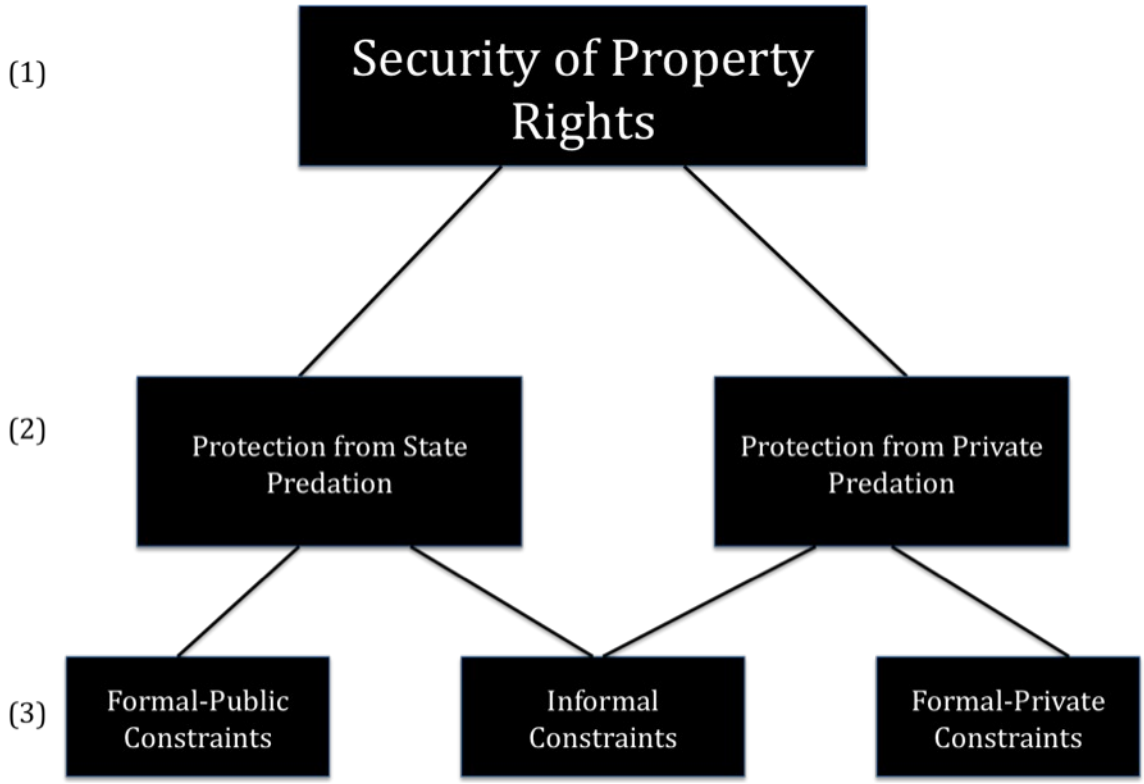

Figure 2: Public versus Private Protection

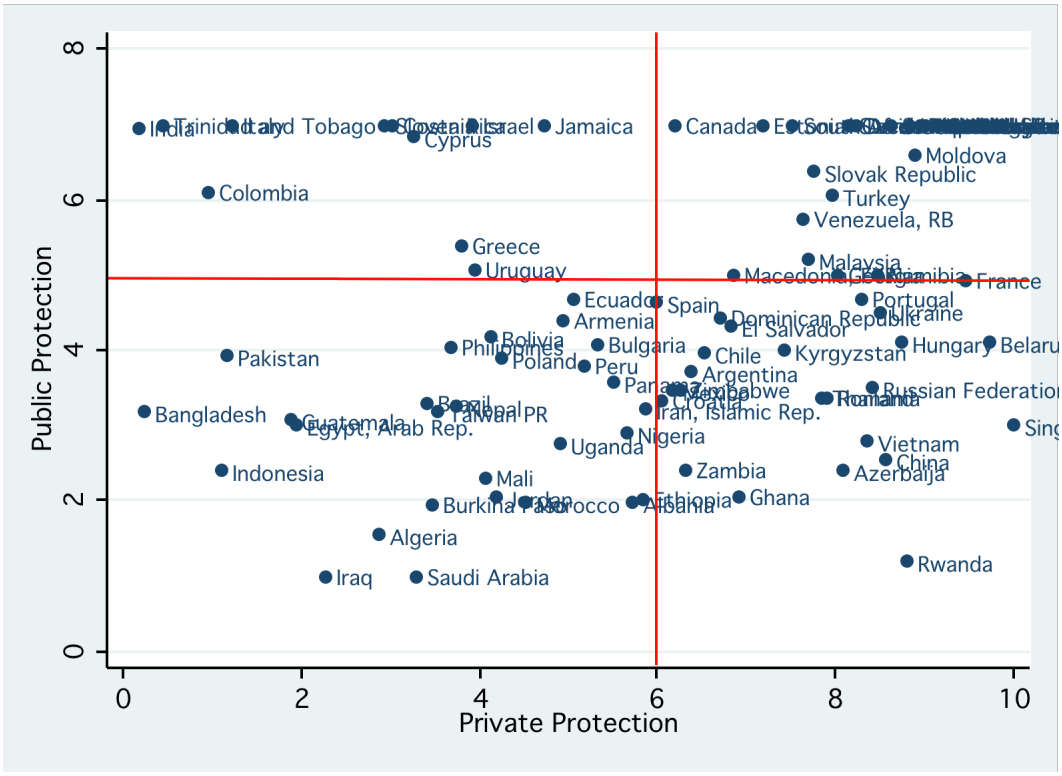

Figure 3a: Overall Property Protection and Public Protection Index

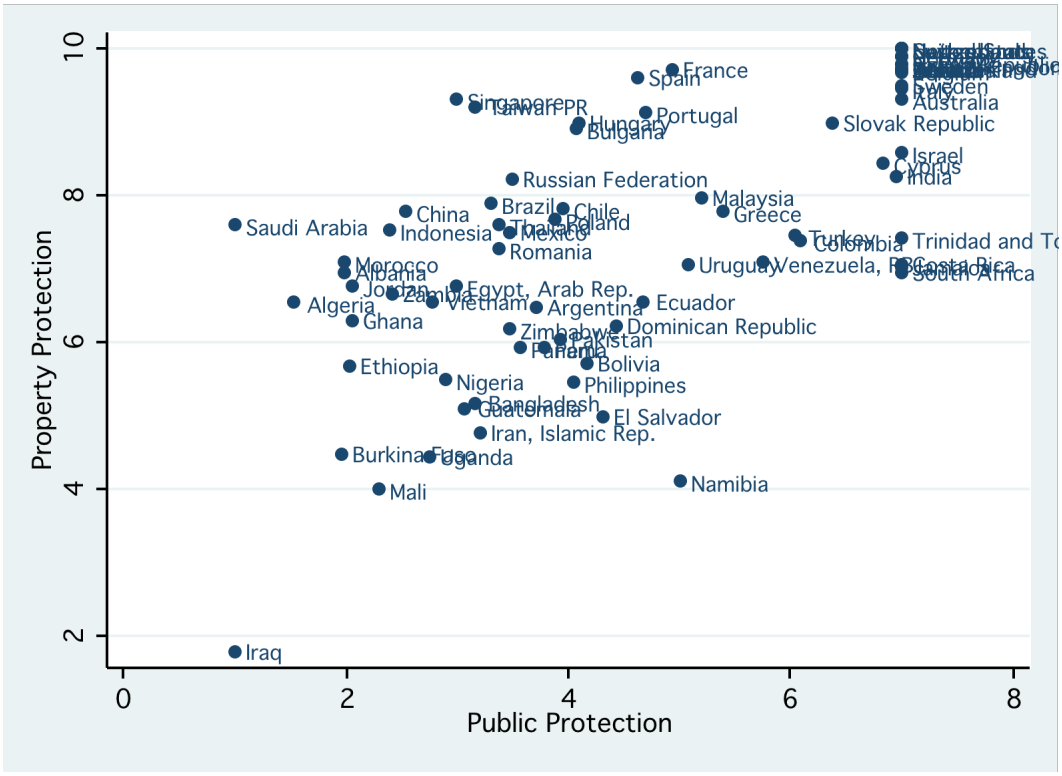

Figure 3b: Overall Property Protection and Private Protection Index

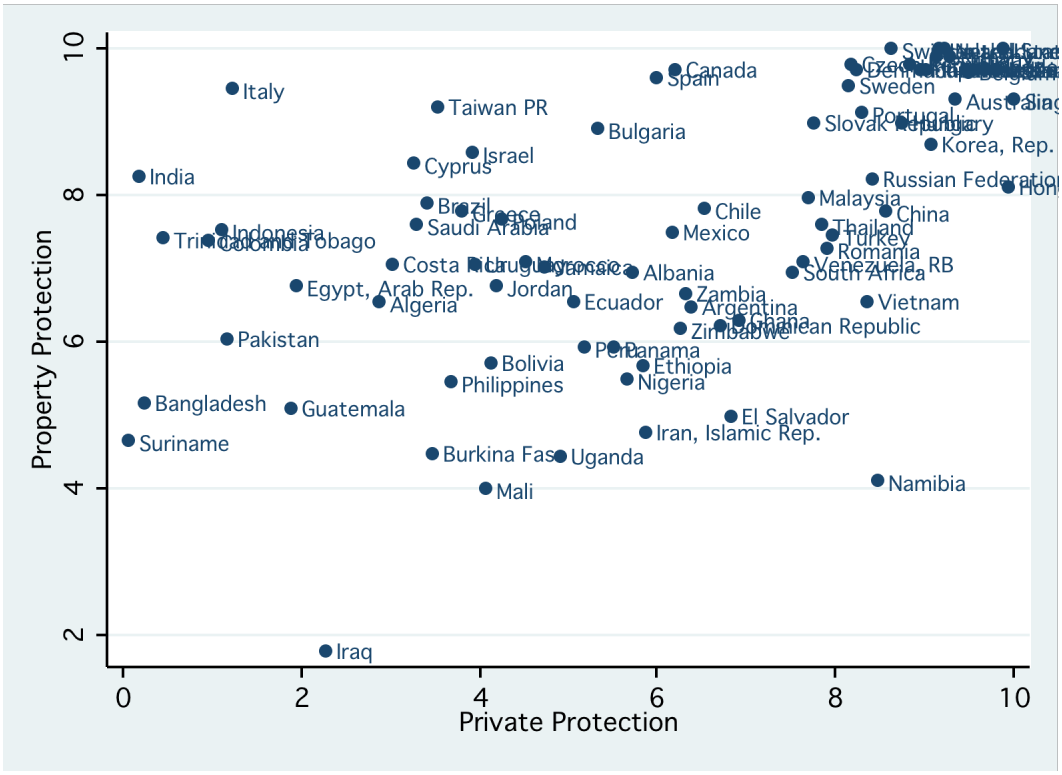

Figure 4a: Public Protection Index and Formal Public Constraints

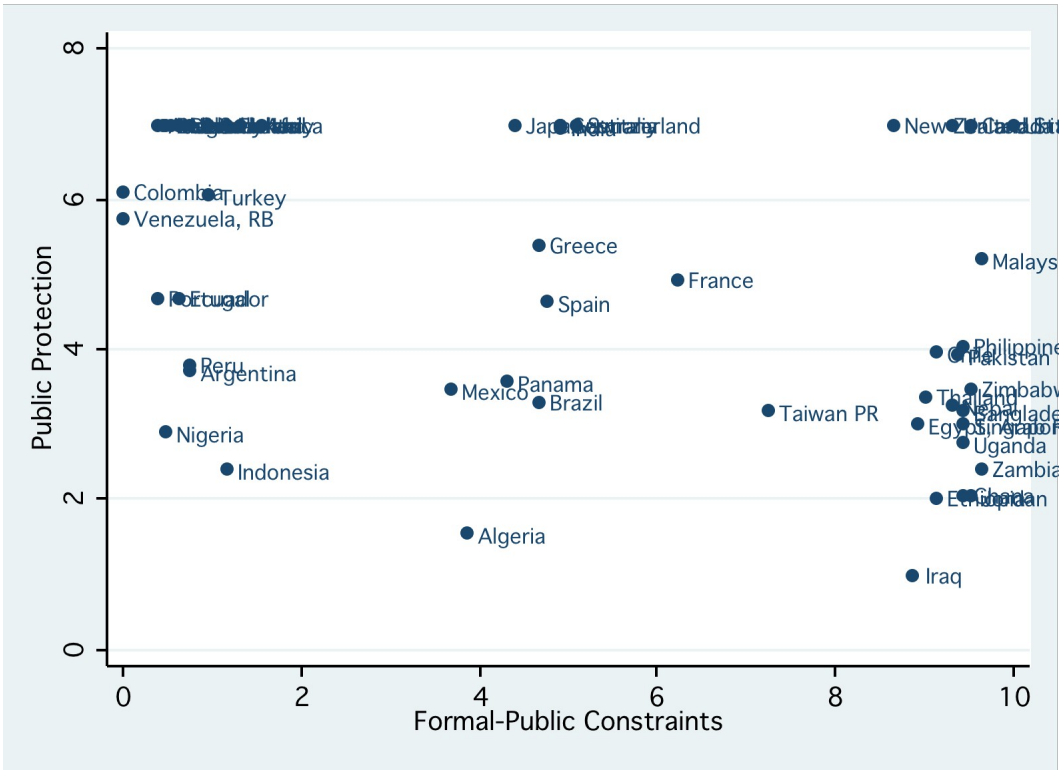

Figure 4b: Public Protection Index and Informal Constraints

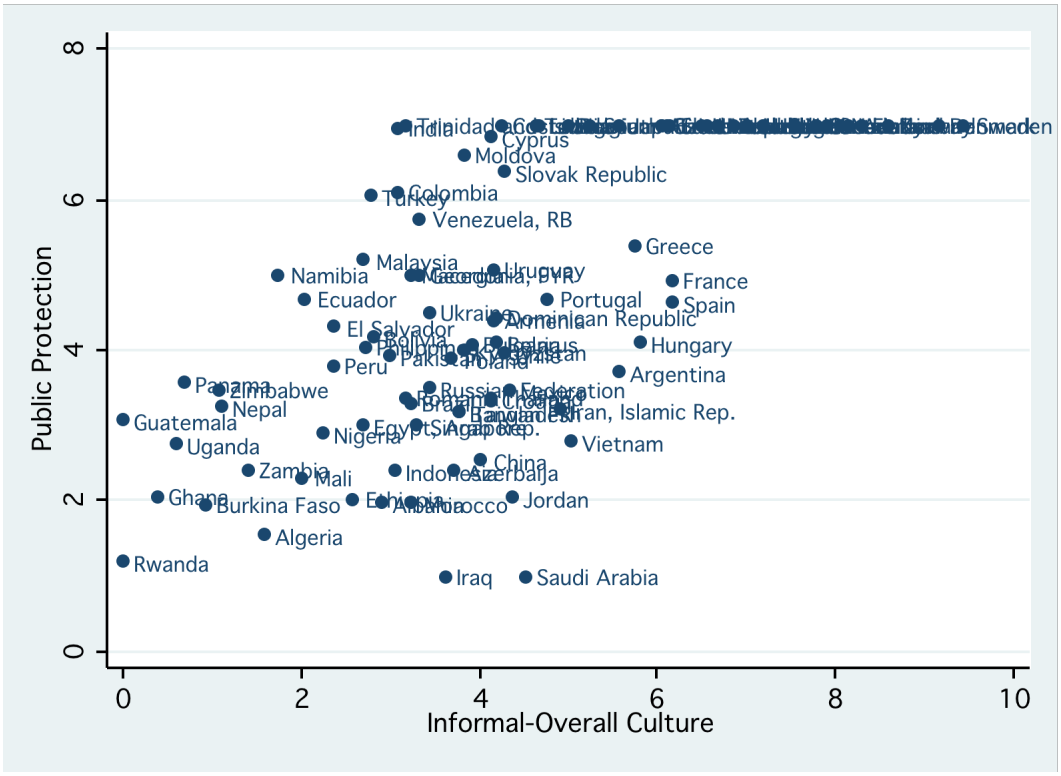

Figure 5a: Private Protection Index and Formal Private Constraints

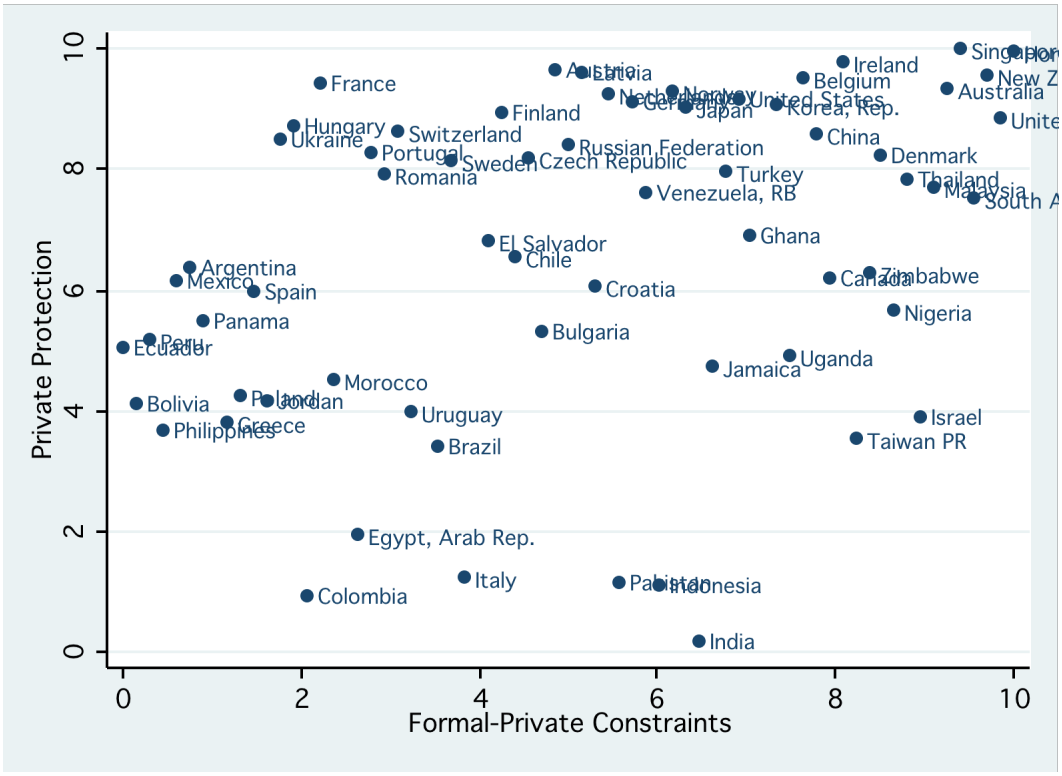

Figure 5b: Private Protection Index and Informal Constraints

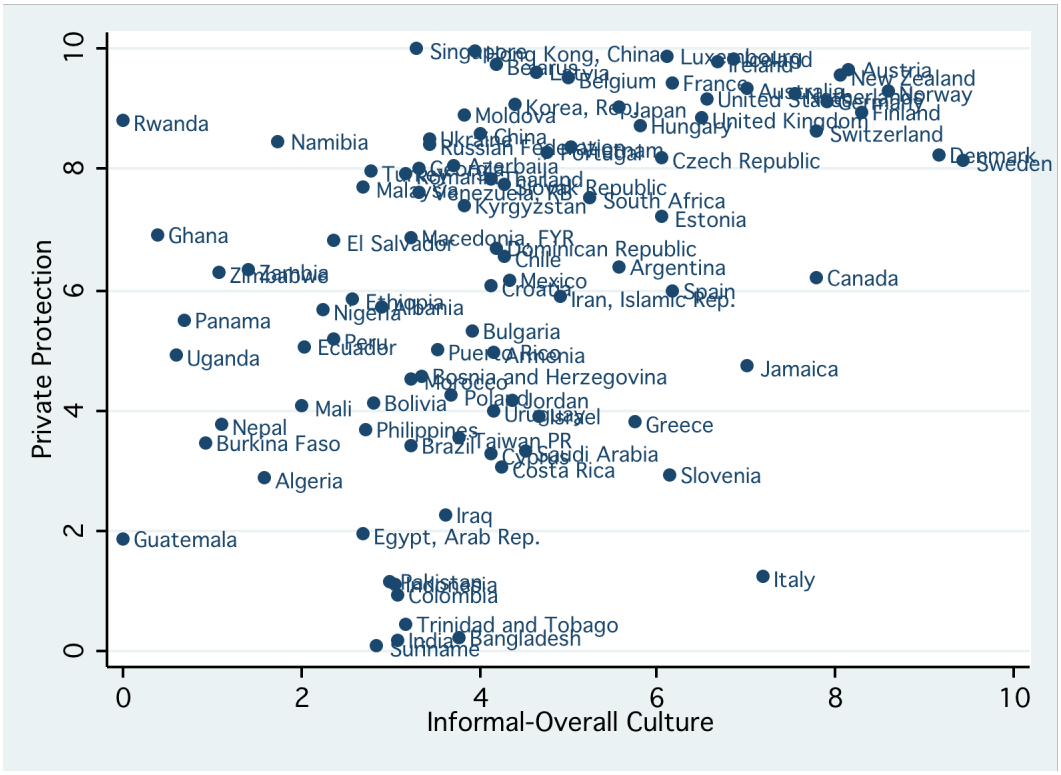

Table 1: Summary Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Property Protection	83	7.62	1.82	1.81	10.00
Public Protection	94	4.74	1.92	1.00	7.00
Judicial Independence	58	0.78	0.31	0.00	1.00
Constitutional Review	58	0.58	0.28	0.00	1.00
Plurality	94	0.62	0.47	0.00	1.00
Proportional Representation	93	0.70	0.45	0.00	1.00
Formal-Public Constraints	54	4.91	3.84	0.00	10.00
Procedures (number)	98	35.11	6.13	20.00	51.00
Time (days)	98	571.26	305.38	150.00	1715.00
Cost (% of claim)	98	27.77	16.36	6.20	122.70
Private Protection	98	6.20	2.77	0.06	10.00
Creditor Rights	93	1.96	0.97	0.00	4.00
Anti-Self Dealing Index	67	0.45	0.24	0.08	1.00
Legal Formalism	79	3.51	1.05	0.73	5.84
Formal-Private Constraints	64	5.10	2.98	0.00	10.00
Self-control	90	67.05	7.51	46.80	82.80
Trust	91	26.09	13.73	3.80	63.77
Obedience	91	38.99	18.04	2.24	81.74
Respect	91	66.12	11.20	14.23	87.70
Informal-WVS Culture	90	4.33	2.00	0.00	10.00
Power	67	4.80	2.32	0.00	10.00
Uncertainty	67	4.30	2.31	0.00	10.00
Individualism	67	4.51	2.85	0.00	10.00
Masculinity	67	4.29	1.83	0.00	10.00
Informal-Hofstede Culture	67	4.88	2.40	0.00	10.00
Embeddedness	51	3.79	0.35	3.04	4.50
Hierarchy	51	2.26	0.50	1.41	3.63
Harmony	51	4.22	0.37	3.35	4.91
Informal-Schwartz Culture	51	5.21	3.02	0.00	10.00
Average Culture Index	100	4.25	2.09	0.00	9.45
Growth Rate	66	0.02	0.01	-0.01	0.05
Population (log)	99	16.20	1.58	12.37	20.72
Urban Population (%)	99	54.22	21.61	6.32	100.00
Inflation Rate	99	55.74	108.98	2.77	593.92
Gov. Consumption (%)	97	15.60	5.15	5.84	29.87
Catholic (%)	91	0.37	0.49	0.00	1.00
Democracy Score	93	4.73	1.86	1.00	7.00
Common Law	98	0.27	0.44	0.00	1.00
Pronoun Drop	41	0.56	0.50	0.00	1.00
Latitude	98	0.35	0.20	0.01	0.72
GDP PC PPP (1975-2004)	97	9,820	8,130	631	34,995
GDP PC PPP 2004	94	14,085	12,726	756	69,932

Table 2: Summary of Institutional Variables

	Strong Private Protection	Weak Private Protection
Strong Public Protection	$24,187	$16,277
Weak Public Protection	$8,108	$5,858
	Strong Culture	Weak Culture
Overall Property Protection	8.83	6.59
Private Property Protection	7.43	5.31
Public Property Protection	6.01	3.75
Formal Public Constraints	3.76	6.14
Formal Private Constraints	5.32	4.89
GDP PC PPP 2004	$23,611	$6,716

Table 3: Property Rights Main OLS Regressions

	Panel A **Dep. Var: Private Protection Index**							**Panel C** **Dep. Var: Private Protection Index**			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Formal-Private Constraints	0.289***				0.259**	0.440***	0.213*	0.332**	0.318**	0.461***	0.114
	(0.081)				(0.088)	(0.086)	(0.109)	(0.099)	(0.099)	(0.106)	(0.148)
Informal-WVS Culture		0.602***			0.515***				0.523***		
		(0.108)			(0.100)				(0.117)		
Informal-Schwartz Culture			0.183			0.399**				0.523**	
			(0.138)			(0.142)				(0.181)	
Informal-Hofstede Culture				0.517***			0.307**				0.459**
				(0.104)			(0.129)				(0.170)
Formal-Public Constraints								-0.126	-0.053	0.087	-0.013
								(0.095)	(0.094)	(0.115)	(0.115)
Constant	5.063***	3.827***	5.897***	3.814***	2.965***	2.473**	4.078***	5.192***	2.552**	0.955	3.627***
	(0.501)	(0.591)	(0.835)	(0.680)	(0.740)	(1.015)	(0.652)	(0.742)	(1.114)	(1.723)	(0.943)
Observations	69	89	51	67	59	43	55	48	44	35	41
Adj. R-squared	0.088	0.188	0.026	0.168	0.263	0.240	0.162	0.094	0.276	0.243	0.180
	Panel B **Dep. Var: Public Protection Index**							**Panel D** **Dep. Var: Public Protection Index**			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Formal-Public Constraints	-0.208**				-0.134**	-0.059	-0.103**	-0.218***	-0.128**	-0.082	-0.108**
	(0.062)				(0.054)	(0.083)	(0.041)	(0.061)	(0.056)	(0.063)	(0.042)
Informal-WVS Culture		0.553***			0.537***				0.464***		
		(0.073)			(0.073)				(0.070)		

Informal-Schwartz Culture			0.304*** (0.061)			0.243** (0.096)				0.371*** (0.091)	
Informal-Hofstede Culture				0.478*** (0.040)			0.449*** (0.048)				0.415*** (0.079)
Formal-Private Constraints								0.205** (0.067)	0.129* (0.067)	0.359*** (0.077)	0.045 (0.071)
Constant	5.570*** (0.401)	2.313*** (0.360)	3.790*** (0.423)	2.918*** (0.300)	3.132*** (0.588)	4.429*** (0.940)	3.570*** (0.439)	5.083*** (0.406)	2.904*** (0.520)	1.797* (0.993)	3.548*** (0.422)
Observations	65	85	50	63	50	36	42	48	44	35	41
Adj. R-squared	0.141	0.324	0.295	0.466	0.546	0.230	0.605	0.239	0.538	0.492	0.582

Note: Standard errors are in parentheses. Significance level: *** at 1%, ** at 5%, * at 10%.

Table 4: Property Rights OLS Regressions with Controls

	Panel A **Dep. Var: Private Protection Index**								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Formal-Private Constraints	0.304** (0.087)	0.341** (0.105)	0.421** (0.122)	0.154 (0.138)	0.250** (0.108)	0.234 (0.149)	0.478*** (0.096)	0.476** (0.203)	0.465* (0.267)
Informal-WVS Culture	0.519*** (0.114)	0.409** (0.196)	0.387 (0.232)						
Informal-Schwartz Culture				0.343** (0.161)	0.266 (0.196)	0.419* (0.244)			
Informal-Hofstede Culture							0.408** (0.164)	0.449* (0.230)	0.365 (0.344)
Growth Rate	-0.309 (22.094)		39.837 (25.498)	30.072 (31.036)		68.511* (35.355)	-1.438 (28.067)		3.845 (44.597)
Population (log)		-0.477* (0.272)	-0.593* (0.333)		-0.271 (0.289)	-0.522 (0.343)		-0.273 (0.316)	-0.413 (0.496)
Urban Population (%)		0.027* (0.015)	0.030 (0.020)		0.039* (0.020)	0.051* (0.028)		0.023 (0.020)	0.025 (0.038)
Inflation Rate		0.004 (0.004)	-0.001 (0.005)		-0.005 (0.004)	-0.008 (0.005)		-0.003 (0.004)	-0.006 (0.005)
Gov. Consumption (%)		-0.034 (0.081)	-0.043 (0.116)		-0.022 (0.100)	-0.162 (0.156)		-0.057 (0.095)	-0.080 (0.136)
Catholic (%)		-0.027 (0.679)	0.735 (0.846)		0.014 (0.772)	0.521 (0.906)		-0.242 (1.029)	0.027 (1.134)
Democracy Score		-0.024 (0.271)	-0.178 (0.328)		-0.340 (0.367)	-0.368 (0.452)		-0.432 (0.406)	-0.385 (0.482)

Constant	2.469**	10.046*	11.077*	3.289**	8.589	11.639*	2.145*	8.740	11.326
	(0.764)	(5.155)	(6.476)	(1.008)	(5.611)	(6.804)	(1.141)	(6.127)	(9.086)
Observations	47	56	45	45	53	44	35	41	34
Adj. R-squared	0.302	0.309	0.321	0.159	0.171	0.187	0.238	0.236	0.154
	Panel B								
	Dep. Var: Public Protection Index								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Formal-Public Constraints	-0.110**	-0.139**	-0.126*	-0.038	-0.100	-0.092	-0.079**	-0.110**	-0.129**
	(0.053)	(0.061)	(0.064)	(0.085)	(0.066)	(0.062)	(0.037)	(0.047)	(0.049)
Informal-WVS Culture	0.492***	0.380**	0.327**						
	(0.074)	(0.118)	(0.125)						
Informal-Schwartz Culture				0.211*	0.113	0.067			
				(0.108)	(0.076)	(0.089)			
Informal-Hofstede Culture							0.434***	0.316***	0.336***
							(0.048)	(0.063)	(0.072)
Growth Rate	19.892		10.358	18.257		8.650	-0.771	-5.921	
	(15.772)		(14.222)	(25.188)		(22.384)	(19.323)	(15.313)	
Population (log)		0.327*	0.232		0.273	0.184		0.097	0.186
		(0.163)	(0.206)		(0.192)	(0.238)		(0.154)	(0.142)
Urban Population (%)		0.016	0.025*		0.013	0.029**		0.016	0.007
		(0.010)	(0.012)		(0.011)	(0.012)		(0.011)	(0.010)
Inflation Rate		-0.008**	-0.009**		-0.011***	-0.012***		-0.009***	-0.008***
		(0.003)	(0.003)		(0.003)	(0.003)		(0.002)	(0.002)
Gov. Consumption (%)		0.028	-0.003		0.125**	0.078		0.003	0.037
		(0.053)	(0.054)		(0.051)	(0.060)		(0.044)	(0.047)
Catholic (%)		0.384	0.217		-0.389	-0.511		-0.183	0.055

		(0.417)	(0.425)		(0.422)	(0.431)		(0.303)	(0.358)
Constant	2.883*** (0.599)	-2.791 (2.632)	-1.145 (3.285)	4.146*** (1.055)	-1.490 (3.329)	-0.016 (3.993)	3.630*** (0.623)	2.203 (2.543)	0.400 (2.379)
Observations	46	46	44	33	35	33	39	39	41
Adj. R-squared	0.552	0.602	0.582	0.148	0.526	0.513	0.590	0.681	0.670

Note: Standard errors are in parentheses. Significance level: *** at 1%, ** at 5%, * at 10%.

Table 5: Overall Property Rights OLS Regressions

	Panel A **Dep. Var: Overall Property Protection**							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Public Protection	0.434***	0.434***	0.296**	0.255**	0.403***	0.414***	0.426***	0.386**
	(0.062)	(0.095)	(0.096)	(0.116)	(0.062)	(0.074)	(0.066)	(0.110)
Private Protection	0.211***	0.138**	0.094	0.177***	0.167***	0.103**	0.106**	0.120**
	(0.038)	(0.057)	(0.067)	(0.048)	(0.037)	(0.041)	(0.043)	(0.041)
Informal-WVS Culture		0.233**				0.194**		
		(0.084)				(0.061)		
Informal-Schwartz Culture			0.180**				0.126**	
			(0.069)				(0.040)	
Informal-Hofstede Culture				0.203**				0.177**
				(0.071)				(0.064)
Growth Rate (1960-2000)					41.071***	40.806***	47.433***	59.413***
					(8.746)	(9.870)	(9.763)	(11.929)
Constant	4.290***	3.874***	5.324***	4.682***	3.874***	3.344***	3.592***	2.907***
	(0.323)	(0.485)	(0.654)	(0.557)	(0.303)	(0.371)	(0.559)	(0.516)
Observations	116	71	45	60	81	57	34	50
Adj. R-squared	0.497	0.622	0.457	0.553	0.680	0.773	0.789	0.767
	Panel B **Dep. Var: Overall Property Protection**							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Formal-Public Constraints	-0.103	-0.008	0.010	0.008	-0.119**	-0.039	0.015	-0.020
	(0.063)	(0.043)	(0.040)	(0.053)	(0.052)	(0.033)	(0.035)	(0.047)
Formal-Private	0.153**	0.058	0.302**	0.037	0.123*	0.037	0.273***	-0.038

Constraints	(0.074)	(0.059)	* (0.048)	(0.077)	(0.062)	(0.045)	(0.039)	(0.073)
Informal-WVS Culture		0.520*** (0.069)				0.465*** (0.056)		
Informal-Schwartz Culture			0.374*** (0.046)				0.369*** (0.041)	
Informal-Hofstede Culture				0.365*** (0.050)				0.413*** (0.066)
Growth Rate (1960-2000)					71.837*** (16.748)	45.547*** (11.923)	38.792*** (9.340)	50.014** (20.224)
Constant	7.801*** (0.447)	5.510*** (0.487)	4.832*** (0.524)	6.321*** (0.353)	6.326*** (0.521)	4.901*** (0.386)	4.012*** (0.414)	5.245*** (0.646)
Observations	48	44	35	41	45	41	32	38
Adj. R-squared	0.076	0.599	0.653	0.500	0.314	0.722	0.737	0.642

Note: Standard errors are in parentheses. Significance level: *** at 1%, ** at 5%, * at 10%.

Table 6: Property Rights IV Regressions

	Panel A **Dep. Var: Private Protection Index**				**Panel C** **Dep. Var: Overall Property Index**			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Formal-Private Constraints	0.244	0.261	0.180	0.129	0.067	0.075	0.069	0.050
	(0.206)	(0.229)	(0.242)	(0.273)	(0.074)	(0.086)	(0.085)	(0.073)
Informal-WVS Culture	0.881**	0.869**	0.846**	0.968**	0.583***	0.581***	0.501***	0.531***
	(0.325)	(0.305)	(0.359)	(0.379)	(0.128)	(0.113)	(0.109)	(0.121)
Growth Rate		-17.159		-27.088		11.153		43.738**
		(38.023)		(44.739)		(21.100)		(15.783)
Formal-Public Constraints			0.094	0.064			0.022	0.027
			(0.165)	(0.165)			(0.057)	(0.049)
Constant	1.254	1.378	1.209	1.463	5.272***	4.777***	5.614***	4.396***
	(1.970)	(1.624)	(2.281)	(2.114)	(0.780)	(0.594)	(0.726)	(0.676)
Observations	39	32	32	30	39	32	32	30
Adj. R-squared	0.063	0.062	0.058	0.105	0.200	0.244	0.458	0.558
	Panel B **Dep. Var: Public Protection Index**				**Panel D** **Dep. Var: Overall Property Index**			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Formal-Public Constraints	0.104	0.168	0.036	0.052	0.095	0.074	0.041	0.070
	(0.113)	(0.120)	(0.164)	(0.163)	(0.077)	(0.067)	(0.076)	(0.082)
Informal-WVS Culture	0.683***	0.617***	0.647**	0.554**	0.544***	0.562***	0.513***	0.558***
	(0.151)	(0.158)	(0.197)	(0.199)	(0.110)	(0.105)	(0.118)	(0.135)
Growth Rate		15.683		10.054		46.006**		45.782**
		(31.491)		(23.871)		(18.433)		(18.462)

Formal-Private Constraints			0.066 (0.115)	0.111 (0.109)			0.054 (0.088)	0.006 (0.087)
Constant	1.505 (1.180)	1.256 (1.636)	1.653 (1.296)	1.650 (1.470)	5.424*** (0.867)	4.231*** (0.871)	5.544*** (0.769)	4.249*** (0.914)
Observations	32	30	32	30	32	30	32	30
Adj. R-squared	0.343	0.251	0.407	0.425	0.403	0.537	0.446	0.525

Note: Standard errors are in parentheses. Significance level: *** at 1%, ** at 5%, * at 10%.

Table 7: Property Rights and Development

	Dep. Var: GDP PC 2000 (log)							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Private Protection	0.087***	0.039	0.033	0.014	0.038			
	(0.028)	(0.024)	(0.031)	(0.023)	(0.025)			
Public Protection	0.372***	0.106***	0.271***	0.105***	0.081*			
	(0.045)	(0.037)	(0.053)	(0.035)	(0.044)			
Informal-WVS Culture			0.199***	0.092***	0.099***	0.351***	0.118***	0.114***
			(0.042)	(0.034)	(0.034)	(0.050)	(0.045)	(0.053)
Formal-Public Constraints						-0.013	0.009	-0.011
						(0.031)	(0.023)	(0.019)
Formal-Private Constraints						-0.034	-0.010	0.011
						(0.037)	(0.027)	(0.028)
Population (log)					0.112***			0.090*
					(0.037)			(0.053)
Urban Population (%)					0.004			-0.004
					(0.005)			(0.007)
Inflation Rate					-0.000			-0.001
					(0.001)			(0.001)
Gov. Consumption (%)					0.013			0.015
					(0.016)			(0.019)
Catholic (%)					0.199			0.156
					(0.131)			(0.177)
GDP PC 1960 (log)		0.854***		0.733***	0.576***		0.780***	0.769***
		(0.099)		(0.098)	(0.152)		(0.116)	(0.173)
Constant	6.475***	1.254*	6.475***	2.003**	0.829	7.735***	2.183**	0.742

	(0.248)	(0.651)	(0.240)	(0.637)	(1.080)	(0.282)	(0.831)	(1.284)
Observations	86	65	78	57	53	42	41	40
Adj. R-squared	0.584	0.832	0.687	0.853	0.863	0.634	0.819	0.835

Note: Standard errors are in parentheses. Significance level: *** at 1%, ** at 5%, * at 10%.