

IS CODIFICATION OF INFORMAL PROPERTY INSTITUTIONS NECESSARY FOR ECONOMIC DEVELOPMENT?

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Abstract

Controversy surrounds the importance of formal versus informal property rights institutions in the current development literature. Hernando de Soto attributes the poor economic performance of developing countries to insecure property rights. Taking this argument further, de Soto continues to argue that informal property rights are not sufficient to promote economic growth, and advocates codification of these informal rights. In this paper, we provide arguments supporting the view that informal institutions may be sufficient to stimulate economic development and that the codification of these institutions may not be necessary.

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1. Introduction

Throughout their work, Ludwig von Mises and F.A. Hayek emphasize the fundamental role of institutions, specifically the security of private property. Recent literature empirically illustrates the importance of the relationship between institutions and economic growth and development. De Soto (2000) attributes the relatively poor economic performance of developing countries to a lack of incentives and an insufficient amount of capital formation arising from insecure property rights. Taking this argument further, de Soto continues to argue that informal property rights are not sufficient to promote entrepreneurial activity, and advocates codification of these informal rights. The work of Acemoglu and Johnson (2005) is a preliminary step to empirically test different types of property rights institutions. They conclude that property rights institutions, measured by constraints on government, have a larger effect than government enforcement of private contracts on investment, financial development, and economic growth. Their work supports the view that codification of informal institutions is not necessary.

Following the work of de Soto (1989, 2000) and Acemoglu and Johnson (2005), this paper empirically examines the importance of formal (*de jure*) versus informal (*de facto*) property rights institutions to examine whether codification of informal rights is necessary for economic development. We find that formal institutions have a positive and statistically significant effect on the protection of property. However, this result is economically insignificant. Therefore, we are unable to support the primacy of formal over informal mechanisms for protecting property in our analysis.

The remainder of the paper is organized as follows. Section 2 introduces the works of Hernando de Soto. We outline his emphasis on private property, the role of the extralegal sector, and his arguments for the codification of informal property institutions. Section 3 outlines the fundamentals of private property: private property as a fundamental right, a fundamental institution, and its derivation fundamentally of human action, not design. Section 4

provides a background for the arguments of our paper. Section 5 presents a unified framework in which to analyze the level of formality present at different levels of development. Section 6 describes the model and the data. Section 7 summarizes our results and section 8 concludes.

2. Hernando de Soto

Hernando de Soto (1989, 2000), in his books *The Other Path* and *The Mystery of Capital: Why Capitalism Triumphs in the West and Fails Everywhere Else*, explains the channels through which insecure and poorly-defined property rights stifle economic development. De Soto defines property rights as those rights “which confer on their holders inalienable and exclusive entitlement to them” (1989, p. 159). He highlights many beneficial aspects of secure property rights, including their ability to fix the economic potential of assets, integrate dispersed information into one system, make individuals accountable and assets fungible, network individuals, and protect transactions (de Soto 2000). De Soto argues that insecure property rights weaken the incentive for owners to make long-term capital investments, and hinder the ability of owners to use their property as collateral to secure loans to finance capital investment. Insecure property rights also increase uncertainty, further altering the nature of investment.

2.1 Informal Sectors

To better understand the causes and implications of insecure property rights, de Soto and his research team at the Instituto Libertad y Democracia (ILD) investigate the extralegal sector in Peru. They note that migration from the countryside to the cities in Peru was a consequence of agricultural and property rights problems. This migration eventually led to a large extralegal sector. Migrants to the cities were not embraced by the legal system and were denied access to housing, education, and economic activities. As a result, migrants became informals and the legal system began to lose social relevance. De Soto (1989)

estimates that 48 percent of Peru's population participates in informal activities, and that these activities contribute 38.9 percent to the gross domestic product.

Throughout *The Other Path*, de Soto differentiates between the formal and informal sectors that exist in housing, markets, and transportation. Informal sectors exist outside of the established legal structure and are comprised of arrangements that substitute for legal institutions and laws. Table 1 illustrates the emergence of the informal sectors in Lima, Peru's capital city, between 1940 and 1985.

Table 1: Informal Sectors, Lima

	Houses per 100 owned by informals	State versus informal markets	Mass-transit vehicles per 100 controlled by informals
1940	4		
1961	41		
1962		2 informal per 3 state	
1968	57		
1970		2 informal per 1 state	
1971			70
1975	62		
1976			81
1977		3 informal per 1 state	
1979	65		
1984			91
1985	69	5 informal per 1 state	

Source: de Soto (1989)

As of 1984, the ILD estimated that 42.6 percent of all housing in Lima was settled illegally and was valued at \$8,319.8 million in 1984 dollars. The value of an average informal house was \$22,038. The importance of the informal sector can be seen clearly when compared to the level of state investment in similar housing: \$173.6 million between 1960 and 1984, or 2.1 percent of informal investment. Total public state housing investment, which includes investment in middle-class housing, was 10.4 percent of informal investment. By 1985, 69 of every 100 houses in Lima were owned by informals. Independently owned housing increased by 375 percent between 1961 and 1981, while rented housing decreased by 34 percent during the same time period. Low-income residents benefited the most from informality.

Informality is also an important component of trade activity and transportation in Lima. An estimated 91,455 street vendors distributed consumer goods and supported over 314,000 relatives and dependents in 1985. An ILD survey estimated gross sales of \$322.2 million a year, for a net per capita income of \$58 per month from street vending, 38 percent more than the minimum legal wage. Informals were also responsible for 274 informal markets, valued at \$40.9 million. These markets accounted for 83 percent of Lima's total markets in 1985, supporting an additional 125,000 individuals. By 1985, informals created 5 markets for every market created by the state. The ILD calculated that of the 16,228 vehicles used for mass-transit in 1984, 91 percent were operated informally. The estimated replacement value in 1984 dollars was \$620 million.

2.2 Costs of Informality

Many developing countries lack institutions of secure property rights, the absence of which imposes significant costs on these societies. For instance, de Soto and researchers of the ILD estimate that operating an extralegal business in Peru results in 10 to 15 percent of annual income being paid in bribes and commissions to authorities. A survey of small industrial firms reveals that remaining formal can cost a firm 11.3 percent of production costs and 347.7 percent of after-tax profits. They note that the costs of

informality also include the costs of avoiding penalties, transacting outside of the legal structure, and operating without credit or insurance. Firms outside the legal system operate on a small scale in order to avoid detection by the authorities and are therefore unable to achieve economies of scale. Firms also use less capital to avoid detection, and this further exacerbates the undercapitalization of informal businesses.

The primary obstacle in obtaining legal titles and securing property in many developing countries is the formal legal institution itself. As emphasized by de Soto, bad legal and administrative systems encourage individuals to operate in the extralegal sectors. To illustrate, in 1983 it took 289 days, working 6 hours a day, for the ILD to register a business in Lima at a cost of \$1,231. Building a home on state-owned land requires legal authorization that takes 207 administrative steps over 6 years and 11 months (Table 2). An additional 728 steps are required to obtain legal title to that land. In light of these obstacles, it is no wonder that many individuals prefer to bypass the legal system and become informals.

Table 2: Legal Obstacles

Procedure	Administrative Steps	Duration
Obtain legal authorization to build a house on state-owned land, Lima	207	6 years, 11 months
Formalize informal urban property, Philippines	168	13-25 years
Gain access to desert land (construction purposes) and register rights, Egypt	77	6-14 years
Obtain a sales contract following the five year lease contract, Haiti	111	4,112 days

Source: de Soto (2000)

In response to a lack of secure property, many individuals form their own set of institutions outside the formal legal sector and create what de Soto refers to as “expectative property rights”. These rights do not entail all of the benefits associated with legal property rights, and are applied temporarily. They provide sufficient security among informals to undertake some investment in housing. As the level of security of expectative property rights increases, so too does the level of investment. For example, an average house in Peru in a legal settlement was valued at 41 times more than the value of a similar house in an informal settlement. Likewise, buildings whose owners possess legal title have a value 9 times greater than buildings whose owners do not possess legal title.

2.3 Codification and Economic Growth

Throughout his works, de Soto often refers to the importance of property rights. Specifically, he refers to the importance of a written formal legal property rights system. He stresses the importance of incorporating the informal, or extralegal, sector inside the established legal sector. He argues that to best facilitate economic growth, an integrated system of standard legal titles is necessary. In short, de Soto believes that codification of unarticulated, informal property rights is needed in order to realize economic development.

3. The Fundamentals of Private Property

Before examining the necessity of codification, it is important first to recognize the integral role of private property to ensure a well-functioning economy. Austrian economists have long recognized private property as a fundamental right guaranteeing liberty. Rothbard (1978) asserts in the “nonaggression axiom” of the libertarian creed that no man may invade, or expropriate, the property of another individual. This view regards private property as a right that confers upon an individual the right to free exchange in the absence of government intervention. In fact, government

expropriation of private property violates the “natural right” theory of property in which an individual “employs his own means” so as to attain his chosen ends. Ayn Rand (1964) states “without property rights, no other rights are possible.” She illustrates that the right to life includes the right to sustain life and this necessitates the right to the product of one’s own effort, or the fruit of one’s labour. Private property is the force that guarantees the ownership of the product of one’s efforts, and thus is a fundamental right.

In addition to its role as a fundamental right, private property is also a fundamental institution. Mises (1949) espoused this idea in claiming that a market economy is founded upon the institution of private ownership of the factors of production. Mises (1920) further illustrates this idea in “Economic Calculation in the Socialist Commonwealth.” In this work he addresses the idea that private property leads to a price mechanism that makes possible a system of profits and losses, in essence, economic calculation. Hayek (1945, 1960) also examines the price mechanism but focuses on the importance of property rights to convey knowledge and information.

Douglass North (1990) takes this one step further and asserts that institutions are the “underlying determinant” of economic performance. He defines institutions as constraints created to reduce uncertainty in exchange and stabilize expectations by structuring political, economic, and social interaction. Property rights institutions internalize externalities by guiding incentives, and arise when the gains outweigh the costs of internalization (Demsetz 1967).¹ Property rights institutions provide incentives, facilitate production and exchange, and lead to increased capital accumulation, investment, technological innovation, and entrepreneurship. Hence, property rights ultimately promote capital formation and economic growth (Scully 1988; Boettke 1994;

¹ For a historical analysis of the evolution of property rights, see also North and Thomas (1973), North (1981), Rosenberg and Birdzell (1986), and North and Weingast (1989).

Leblang 1996; Acemoglu, Johnson, and Robinson 2001; Acemoglu, Johnson, and Robinson 2002; Kerekes and Williamson 2006).

De Soto claims that to further stimulate economic growth in many developing countries, informal property rights should be codified within a written formal legal system. This paper questions the necessity of codification, as do other papers in the recent literature. F. A. Hayek (1967) illustrates the importance of distinguishing between actions that occur as a consequence of human action, or by a spontaneous order, and those that are a consequence of human design. He argues that constructive rationalism led to a false anthropomorphic interpretation of institutions as the result of human design. Institutions, including those of property rights, evolve and derive their significance through human action. In this sense, the presence of informal norms and customs precedes a written formal property system. In the same manner that “no system of articulated law can be applied except within a framework of generally recognized but often unarticulated rules of justice,” (p. 102) no written formal property system can be applied except within a framework of generally recognized, unarticulated, informal property rights.

4. Recent Literature

Much of the recent literature examines formal versus informal institutions, including those of property rights. Although inconclusive, many studies point out the significance of informal property rights institutions and their function for economic performance. These ideas have been presented in both historical, or conceptual, and empirical papers.

4.1 Conceptual Literature

Bruce Benson (1993) argues that the establishment and enforcement of property rights can and has been done without government, or a coercive state. He shows that customary law

existed in primitive societies to govern and enforce property rights. For instance, property rights were definitively drawn and respected in the primitive society of the Yurok Indians. Furthermore, law enforcement arose through voluntary cooperation. This occurred as individuals realized that the gains of respecting other's property outweighed the costs. These Indian tribes also developed a system to enforce property rights through a process of private judging. Outcomes were upheld because the threat of boycott or ostracism was sufficient to ensure cooperation from the members of these primitive societies. Obviously, it was in each individual's self-interest to abide by the local rules of conduct and respect one another's property². This system was successful because of the matching process that occurred to facilitate interaction and efficiency. This is an example of the spontaneous order and evolution of informal, customary law that can emerge from human action, not by the design of a formal, coercive state.

Benson (1989) also provides us with another demonstration of how law can be established and enforced without a formal legal system. Commercial law, or the Medieval Law Merchant, spontaneously evolved based on customs and traditions that served to guide international trade during the time period of the tenth, eleventh, and twelfth centuries. Not only does he provide evidence for the possible existence of law and order without a formal state, Benson goes on to show how codification of the Law Merchant actually weakened the code. This resulted as the Law Merchant became more rigid, less efficient, and no longer depended on the informal norms of tradition and customs.

These two papers provide evidence that in order for markets to exist and function properly, property rights do not need to be imposed on a society from a formal legal system. Instead, property rights can and have been enforced based on customary law that

² Mises (1949) explains how a market economy can operate without government when incentives are aligned for people to cooperate and act in their own self interest.

spontaneously arose and evolved to facilitate cooperation and exchange between members of society. Public production of law is not necessary for markets to function. This is illustrated in the existing anarchy literature (Benson 1989; Greif 1993; Greif, Milgrom, and Weingast 1994; Benson 2001; Nenova and Hartford 2004; Leeson 2005; Leeson 2006a; Leeson 2006b; Leeson 2006c). Somalia has been stateless since 1991, but has coped without a formal state. The private sector intervened to provide functions that normally would be provided by a formal government (Nenova and Hartford 2004). Networks of trust have been established to secure property rights, air safety has been outsourced, and clan systems have been used in place of a legal system. Not only has the private sector innovated ways of overcoming statelessness, Leeson (2006a) argues that overall, Somalia is better off stateless. He contends that if proper checks are not in place to ensure protection from the state, then it is possible that social welfare may be lower with a formal government than without one.

Leeson (2006c) examines the formation of government using cost-benefit analysis. He argues that anarchy is efficient at low levels of development or when government is prohibitively costly, in primitive societies or globally. The transition from anarchy to the establishment of a formal government may be justified when the benefits of doing so outweigh the costs.

This analysis can be applied to the formation of property rights institutions. Informal institutions arise from the ground up, are based on norms, customs, and traditions, and allow for an evolutionary process that reflects the local conditions of a society. This idea has been explicitly demonstrated by Boettke, Coyne, and Leeson (2005). Their paper concludes that formal institutions should not be exogenously imposed. Instead, formal institutions should be based on a society's culture, reflective of local traditions and informal norms. This supports the Hayekian view that informal institutions are of human action and precede codification and a written formal legal system.

4.2 Empirical Literature

The argument for informal institutions has been well defined and demonstrated conceptually throughout the existing literature. However, only recently has the empirical literature attempted to explain the relationship between formal and informal institutions.

Acemoglu and Johnson (2005) attempt to “unbundle institutions” by examining the effect of property rights institutions and contracting institutions on economic growth, investment, and financial development. They define contracting institutions as those institutions that enforce private contracts between individuals. Property rights institutions are those that protect individuals from public predation. They find that property rights institutions have a positive and significant effect on economic growth and development, whereas contracting institutions only weakly affect financial development. We consider contracting institutions to be a type of formal institution. However, their measure of property institutions captures both formal and informal components of property rights. This suggests that informal institutions may be a component of economic growth, the importance of which has been underestimated. This brings into question de Soto’s conjecture that codification is necessary for development. Acemoglu and Johnson conclude that property rights institutions need to be further broken down and the channels through which they operate identified.

We consider this analysis a preliminary step in examining the effects of formal versus informal property rights institutions. Tabellini (2005) provides the next step by investigating the effect that culture, an informal institution, has on development. This paper hypothesizes that identical formal institutions perform differently across countries due to culture, defined as a system of values and social norms. His paper provides evidence that formal institutions may not be the most important factor for growth, and highlights the role of informal institutions, i.e. culture. Knack and Keefer (1997) also discuss the importance of informal norms and culture. In their examination of informal institutions, they claim that trust can protect private property when government does not.

They also argue that dependence on formal institutions is less in high trust societies.

Our paper provides the next step in the empirical literature and builds on the work discussed above. We investigate the specific channels through which property rights affect development. Specifically, we separate property rights institutions into those representing formal property rights and those representing informal property rights. We empirically test de Soto's hypothesis that codification is a precursor for economic development. In the next section, we outline a unified framework in which to examine the role of formality at different levels of development.

5. Formality and Levels of Development

As illustrated in the above literature, informal mechanisms are sufficient to define and protect property in primitive societies, or at low levels of development. Likewise, informal mechanisms may also be sufficient to define and protect property at high levels of development. As we move from low to high levels of development, the benefits of a formal written legal system of property, or codification of the informal institutions, may outweigh the costs. The following figure illustrates how different levels of development may affect the formalization of property rights institutions. It may be constructive to regard this figure as representing a process as one moves through different stages of development and formality.

Figure 1: Levels of Formality and Development

(1) Low Development Low Formality	(2) High Development Low Formality
(3) Low Development High Formality	(4) High Development High Formality

Quadrant 1 represents a situation characterized by a low level of development and a low level of formality. Benson (1989) demonstrates that informal property rights institutions are effective in primitive societies. In addition, Johnson, McMillan, and Woodruff (2002) state that at low levels of institutional development, secure property rights are necessary and sufficient for economic growth. Knack and Keefer (1997) also support the view that informal institutions are sufficient in primitive societies. They illustrate that trust is more important for subsistence economies, which are present at low levels of development.³ Due to the embeddedness of culture and trust in these societies, a high degree of formality is not required.

Taking this idea a step further, culture and trust may also explain why we might witness less formality at high levels of development. This situation is represented by quadrant 2. It is possible that we reach a point where informal mechanisms are again sufficient to protect private property due to the high potential cost of government. Public choice theory provides explanations for the high costs of government (Buchanan and Tullock 1962; Tullock 1967; Sobel and Leeson 2006).

Quadrants 3 and 4 represent intermediate stages as we move from low development and low formality to high development and low formality. De Soto argues that the codification of informal property institutions is necessary to achieve further economic growth. His argument is that the exclusion of the extralegal sector hinders a country's potential growth. This is due to the inability of individuals to reap the benefits of their labour and to gain access to the formal written legal system. According to this logic, codification, or increased formality, can move a country from low development to high development. This is represented as a move from quadrant 3 to quadrant 4. This paper examines whether

³ Bauer (2000) characterizes subsistence economies in developing countries as involving individuals and small groups that trade with one another.

increased formality is necessary to move from low to high levels of development.

6. The Model and Data

In order to investigate the necessity of codification, we empirically examine the relationship between formal and informal property rights institutions. We analyze the link between actual protection of private property and formal constraints on government. Due to data availability, we are indirectly testing the impact of informal institutions by regressing the security of property on formal constraints on the executive. Our dependent variable measures the outcome of property rights institutions. This variable is actually capturing the security of private property, *ex ante*. Therefore, it contains both informal and formal property rights institutions (Glaeser, La Porta, Lopez-de-Silanes, and Shleifer 2004, Acemoglu and Johnson 2005, Tabellini 2005). Our main independent variable, measured by constraint on the executive, captures formal institutions.

We use as our dependent variable the average protection against risk of expropriation, or the risk of "outright confiscation and forced nationalization" of property, compiled by Political Risk Services. This index is measured on a scale of 0 to 10, with a higher score indicating less risk and more protection against government expropriation. This variable is an average for the years 1985 – 1995 for each country. Our formal measure is Polity IV's "constraint on the executive." This variable is measured on a scale of 1 to 7, with a higher score indicating more constraint on the executive. We use an average of this measure for the years 1900 to 2000 for each country.

A cursory examination of the raw data shows a positive relationship between constraint on the executive and average protection against risk of expropriation for all countries in our sample. To better examine the effects of formal property rights at low levels of development, we construct a sub-sample comprised only of developing countries. Although the relationship between

these two variables remains positive, it is less pronounced. This suggests that formal institutions are less important at low levels of development.

Figure 2a: World Sample

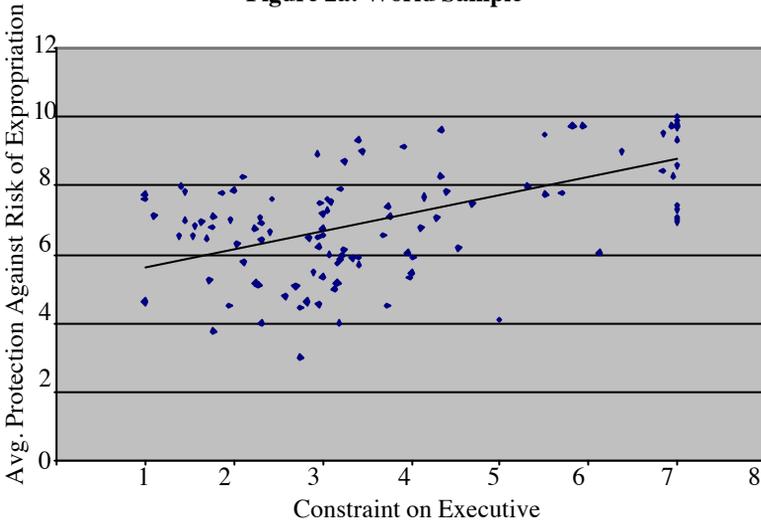
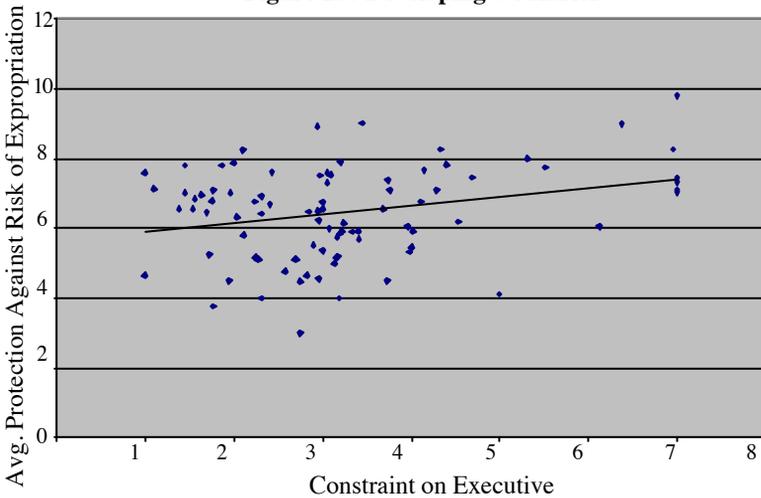


Figure 2b: Developing Countries



To construct our complete ordinary least squares (OLS) model specification, we follow the existing literature that examines the impact of property rights protection on economic development:

$$Y_i = aX_i + Z_i d + e_i$$

where Y_i is our dependent variable, average protection against risk of expropriation; X_i is our independent variable, constraint on the executive; and Z_i is a vector of control variables, including inflation, geography, religion, legal origin, and ethnolinguistic fractionalization. We use the log of inflation, as measured by the consumer price index, and government consumption as a percent of GDP. Geography, measured as distance from the equator is included as a control variable because of its possible effects on development (Engerman and Sokoloff 1997; Hall and Jones 1999; La Porta, Lopez-de-Silanes, Shleifer, and Vishny 1999; Gallup, Sachs, and Mellinger 1999; Sachs 2001; Sachs 2003). Religion is accounted for in our regression as a proportion of the population in 1980 classified as Roman Catholic, Protestant, Muslim, and other (Grier 1997; La Porta, Lopez-de-Silanes, Shleifer, and Vishny 1999). Legal origin is controlled to capture the effects of common versus civil law (Rubin 1977; La Porta, Lopez-de-Silanes, Shleifer, and Vishny 1999; Glaeser and Shleifer 2002; Djankov, La Porta, Lopez-de-Silanes, and Shleifer 2003; La Porta, Lopez-de-Silanes, Pop-Eleches, and Shleifer 2004). It is included as dummy variables representing English, French, German, Scandinavian, and Socialist origin. Lastly, we include ethnolinguistic fractionalization as a control variable to account for the possible effects of ethnic and linguistic diversity on development (Easterly and Levine 1997; La Porta, Lopez-de-Silanes, Shleifer, and Vishny 1999; Easterly 2001; Leeson 2005).⁴

⁴ See appendices 1 and 2 for a complete description of the variables and summary statistics, respectively.

7. Results

In a previous study (Kerekes and Williamson 2006), we find that property rights institutions significantly affect gross domestic product, domestic credit, gross capital formation, and gross fixed capital formation. Average protection against risk of expropriation and the Heritage Private Property Index⁵ are used as measures of property rights. These indices are outcome measures of the actual security of private property and contain formal and informal components. We repeat this analysis with Polity IV's formal measure of property rights and find insignificant effects on our dependent variables.

Table 3 see Appendix 3.

These results imply that formal institutions are not the driving component in the protection of property rights. This suggests that informal institutions play a significant role in the development process.

Table 4 presents the results of the OLS regression using the world sample. Constraints on the executive have a positive and significant effect on the protection of property rights. Although this effect is statistically significant, it is economically insignificant. A one unit increase in the index measuring constraints would lead to a 0.271 increase in the index measuring protection of private property. For example, increasing average protection against risk of expropriation by this amount is the difference between Peru and Zimbabwe. Both countries are at great risk for their property being expropriated. Therefore, formalizing property rights may not have as great an effect on development as predicted by de Soto.

⁵ The Heritage Foundation provides an index that measures the security of private property. A further description of this variable is provided in Appendix 1.

Table 4: World Sample

Dependent Variable: Avg. of Risk of Expropriation

Constraint on Executive	0.271*** (0.094)
Inflation	-0.195 (0.125)
Latitude	4.472*** (0.907)
Ethnofractionalization	0.110 (0.604)
Constant	3.871*** (1.126)
R-squared / # of Observation	0.6223 / 93

Note: Standard errors are in parentheses. Significance level: *** at 1%, ** at 5%, * at 10%. Religion and Legal Origin Variables were included in regressions, but omitted to save space.

Table 5: Developing Countries Sample

Dependent Variable: Avg. of Risk of Expropriation

Constraint on Executive	0.261** (0.108)
Inflation	-0.048 (0.138)
Latitude	2.010 (1.718)
Ethnofractionalization	0.287 (0.667)
Constant	4.350*** (1.512)
R-squared / # of Observation	0.251 / 68

Note: Standard errors are in parentheses. Significance level: *** at 1%, ** at 5%, * at 10%. Religion and Legal Origin Variables were included in regressions, but omitted to save space.

Table 5 presents the results of the OLS regression using a sub-sample of developing countries. Constraint on the executive continues to have a positive and significant effect on average protection against risk of expropriation. However, the coefficient is smaller and is now significant at the 5 percent level, versus the 1 percent level in the world sample. The most notable difference between the samples is the difference between the R-squares. The R-squared is 0.62 in the world sample but drops to 0.25 in the sub-sample. The amount of variation explained by the formal measure of property rights is less in developing countries. This result implies that formal property institutions have a smaller effect at lower levels of development. Informal institutions, therefore, cannot be ignored as an important component of the protection of private property. Given these results, we cannot support de Soto's claim that codification is a necessary condition for development. Although a formal written legal system may promote economic growth, its primacy is not supported by our empirical analysis.

8. Conclusion

This paper provides further empirical analysis on the debate over formal versus informal property rights institutions. Specifically, we test de Soto's claim that the codification of informal property rights into a formal written legal system is necessary to promote economic development. We do not find support for this conjecture in our analysis. Our paper provides further justification for the argument that informal mechanisms play an important role in the development process.

This idea has long been emphasized by the Austrian school of thought. Private property is a cornerstone in the attainment of a free society. This institution guarantees liberty and facilitates the market process. Informal property mechanisms resulting from human action better ascribe to the ideals of liberalism. The imposition of formal mechanisms, or the codification of property rights according to human design, threatens the essence of a market system.

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Appendix 1: Data Description and Sources

Variable	Description	Source
Average Protection Against Risk of Expropriation	Measures protection from government expropriation, on a scale of 0-10, with a higher score meaning less risk; we averaged the data for all years from 1985-1995	Political Risk Services, March 2006
Constraint on the Executive	A seven-category scale, from 1 to 7, with a higher score indicating more constraint; values were averaged over the years 1900 to 2000, treating interregnums as missing values	Polity IV data set, downloaded from Inter-University Consortium for Political and Social Research
GDP	Logarithm of GDP per capita, PPP basis, constant 2000 international dollars	World Development Indicators 2005, World Bank
Domestic Credit	Financial resources available to private sector, measured as a percentage of GDP, in 1998	World Development Indicators 2005, World Bank
Gross Capital Formation	Consists of expenditures on fixed assets plus changes in inventories, measured as a percentage of GDP, averaged for all years for 1990-1999	World Development Indicators 2005, World Bank
Gross Fixed Capital Formation	Consists of expenditures on fixed assets, measured as a percentage of GDP, averaged for all years for 1990-1999	World Development Indicators 2005, World Bank
Inflation	Logarithm of annual inflation measured by the consumer price index, averaged for all years from 1970-1998	World Development Indicators 2005, World Bank
Government Consumption	Real government consumption expenditure, measured as a percentage of GDP, averaged for all years from 1970-1989	World Development Indicators 2005, World Bank
Ethnolinguistic Fractionalization	Average value of five different indices of ethnolinguistic fractionalization. Its value ranges from 0 to 1. The five component indices are: (1) probability that two randomly selected people from a given country will not belong to the same ethnolinguistic group (2) probability of two randomly selected individuals speaking different languages; (3) probability of two randomly selected individuals do not speak the same language; (4) percent of the population not speaking the official language; and (5) percent of the population not speaking the most widely used language	La Porta, Lopez-de-Silanes, Shleifer, and Vishny 1999
Legal Origin	Included as dummy variables representing English, French, German, Scandinavian, and Socialist legal origins	La Porta, Lopez-de-Silanes, Shleifer, and Vishny 1999
Religion	Measured as the percentage of population in 1980 (or for 1990-1995 for countries formed more recently) that belonged to the following religions: Roman Catholic, Protestant, Muslim, and "other"	La Porta, Lopez-de-Silanes, Shleifer, and Vishny 1999
Geography	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
Settler Mortality	Settler mortality is the estimated mortality rate for European settlers during the period from 1500 to 1900; it measures the effects of local diseases on people without acquired immunities	Acemoglu et al 2001
Heritage Private Property Index	Measures protection of private property, on a scale from 1 to 5, with a higher score meaning more protection; we used 1997 values; original data has been transformed by multiplying by -1 and adding 6	Index of Economic Freedom 2005, Heritage Foundation

Appendix 2: Summary Statistics

	World Sample				Developing Countries Sample		Ex-Colonies Sample	
	(1) # of Observations	Mean (St. Deviation)	(2) # of Observations	Mean (St. Deviation)	(1) # of Observations	Mean (St. Deviation)	(2) # of Observations	Mean (St. Deviation)
Average Risk of Expropriation	117	7.131 (1.711)	---	---	87	6.441 (1.326)	---	---
Constraint on the Executive	119	3.873 (1.915)	153	3.784 (1.926)	89	3.255 (1.478)	57	3.718 (1.736)
Settler Mortality	---	---	---	---	---	---	57	203.428 (338.237)
GDP	---	---	146	7,088.582 (7660.791)	---	---	57	5,605.877 (6779.470)
Domestic Credit	---	---	144	39.506 (41.356)	---	---	56	39.027 (42.148)
Gross Capital Formation	---	---	153	22.180 (7.477)	---	---	57	21.073 (5.608)
Gross Fixed Capital Formation	---	---	151	21.202 (7.448)	---	---	57	20.381 (5.528)
Inflation	100	42.208 (130.716)	113	42.682 (129.015)	72	54.300 (152.379)	53	65.985 (176.152)
Government Consumption	---	---	133	16.220 (6.301)	---	---	56	14.287 (5.020)
Ethnolinguistic Fractionalization	107	0.341 (0.304)	125	0.351 (0.305)	80	0.400 (0.315)	57	0.424 (0.305)
English	117	0.316 (0.467)	152	0.283 (0.452)	87	0.287 (0.455)	57	0.368 (0.487)
Socialist	117	0.111 (0.316)	152	0.211 (0.409)	87	0.149 (0.359)	57	0.018 (0.132)
French	117	0.496 (0.502)	152	0.447 (0.499)	87	0.563 (0.499)	57	0.596 (0.495)
German	117	0.043 (0.203)	152	0.033 (0.179)	87	0.000 0	57	0.018 (0.132)
Scandinavian	117	0.034 (0.182)	152	0.026 (0.161)	87	0.000 0	57	0.000
Protestant	117	11.808 (20.315)	150	11.268 (19.671)	87	7.753 (12.944)	57	9.344 (12.655)
Catholic	117	32.666 (36.401)	152	29.404 (34.940)	87	33.329 (36.629)	57	40.021 (38.098)
Muslim	117	25.137 (36.914)	152	25.408 (36.798)	87	28.821 (37.878)	57	24.174 (34.214)
Other	117	30.389 (30.816)	150	33.942 (32.436)	87	30.098 (30.111)	57	26.461 (24.960)
Latitude	117	0.280 (0.186)	152	0.293 (0.188)	87	0.217 (0.151)	57	0.185 (0.141)

Note: Columns (1) represent the samples from the regressions explaining property rights institutions.
Columns (2) represent the samples from the regressions explaining growth.

Appendix 3

Table 3 Cross Section Regressions With Controls
Polity IV's Constraint On Executive

	Ex-Colonies			Ex-Colonies		
	World (OLS)	OLS	2SLS	World (OLS)	OLS	2SLS
	1	2	3	4	5	6
	Dependent Var: Log GDP			Dependent Var: Domestic Credit		
Constraint on Executive	0.243 (0.0401)***	0.160 (0.085)*	1.000 (1.000)	5.424 (1.512)***	2.717 (2.780)	5.185 (5.240)
Gov Consumption	0.006 (0.011)	0.006 (0.025)	0.019 (0.029)	0.686 (0.423)	1.352 (0.809)	0.985 (1.525)
Log Inflation	0.029 (0.054)	0.000 (0.079)	-0.081 (0.093)	-0.683 (2.143)	-0.290 (2.586)	-4.647 (4.875)
Ethnofractionalization	-0.682 (0.240)***	-0.873 (0.411)**	-0.993 (0.4820711)**	-0.910 (9.564)	-13.833 (13.370)	-21.451 (25.199)
Latitude	3.126 (0.466)***	2.941 (0.848)***	2.353 (0.9955814)**	79.961 (18.922)***	74.506 (27.61222)	60.564 (52.042)
Constant	6.225 (0.572)***	6.664 (0.733)***	7.404 (1.181902)***	-41.548 (19.625)**	-0.508 (20.951)	18.699 (39.487)
	Dependent Var: Gross Capital Formation			Dependent Var: Gross Fixed Capital Formation		
Constraint on Executive	0.533 (0.421)	-0.586 (0.798)	-0.437 (0.744)	0.487 (0.388)	-0.427 (0.757)	-0.334 (0.734)
Gov Consumption	0.072 (0.116)	0.187 (0.232)	0.231 (0.216)	0.036 (0.107)	0.153 (0.220)	0.204 (0.214)
Log Inflation	0.160 (0.590)	-0.880 (0.742)	-1.063 (0.692)	0.345 (0.537)	-0.444 (0.704)	-0.865 (0.683)
Ethnofractionalization	-4.162 (2.630)	-8.976 (3.838)**	-9.267 (3.576768)**	-3.505 (2.395)	-6.847 (3.640986)	-8.006 (3.532042)
Latitude	-3.953 (5.070)	-7.719 (7.926)	-9.994 (7.387)	-0.358 (4.695)	-4.529 (7.519)	-9.061 (7.294)
Constant	16.653 (5.218)***	30.577 (6.847)***	30.062 (8.769)***	14.342 (4.750)***	26.048 (6.496)***	30.598 (8.660)***

Note Standard errors are in parentheses. Significance level: *** at 1%, ** at 5%, * at 10%.
 Religion and Legal Origin Control Variables were included in the regressions, but omitted to save space.