The Pennsylvania State University

School of International Affairs

**PROPERTY INSTITUTIONS AND CREDIT MARKET ACCESS IN**

**LATIN AMERICA AND THE CARIBBEAN**

A Thesis in

International Affairs

by

Sara Ostergren

© 2021 Sara Ostergren

Submitted in Partial Fulfillment

Of the Requirements

for the Degree of

Master of International Affairs

August 2021

The thesis of Sara Ostergren was reviewed and approved by the following:

Eleanor Brown

Professor of Law and International Affairs

Thesis Adviser

Sophia McClennen

Professor of International Affairs and Comparative Literature

Secondary Reader

ii

Abstract

Secure property rights and secure titling institutions are understood as having a positive impact on economic development. This is due to the association between titling and credit market access. Having a title to one’s property, such as land, is vital to the process of economic development as it is what grants the owner legal authority to make use of the land as an economic asset; in particular, by using land as collateral in lending agreements. The logic of using land as collateral is that having a property title allows the poor to access credit markets and take out collateral-backed loans, by using their property as a form of security for the repayment of the loan. This is a property-rights approach to development that has been popularized by the Peruvian economist, Hernando de Soto. Nonetheless, the evidence on the true impact of land titling on credit market access, and ultimately economic development, has been historically mixed. Utilizing data on land administration institutions from the World Bank, this paper seeks to offer insights on how to enhance security within property transactions, thereby increasing access to the credit market in the regional context of Latin America and the Caribbean. Reflecting on a review of the literature and the past experiences of countries, this paper recommends geographic information system (GIS) technology as the policy path for enhancing security.

iii

Table of Contents

**List of Tables………………………………………………………………………….……. v List of Figures………………………………………………………………………..……. vi**

[1. Introduction 1](#_Toc78045070)

[2. de Soto’s Solution 4](#_Toc78045071)

[2.1 Influence of de Soto 4](#_Toc78045072)

[2.2 Critique of de Soto 6](#_Toc78045073)

[3. Securitization for Collateralization 7](#_Toc78045074)

[4. Methodology 8](#_Toc78045075)

[4.1 Model 8](#_Toc78045076)

[Figure 1. Regression Model 9](#_Toc78045077)

[Figure 2. Hypothesis Test 9](#_Toc78045078)

[4.2 Source of Data 10](#_Toc78045079)

[4.3 Dependent Variable 12](#_Toc78045080)

[(Y) Public Credit Registry Coverage (% of adults) 12](#_Toc78045081)

[4.4 Independent Variables 12](#_Toc78045082)

[(X1) Reliability of Infrastructure Index 12](#_Toc78045083)

[(X2) Transparency of Information Index 13](#_Toc78045084)

[(X3) Geographic Coverage Index 13](#_Toc78045085)

[(X4) Land Dispute Resolution Index 14](#_Toc78045086)

[(X5) Population, total 14](#_Toc78045087)

[(X6) Rural population (% of total population) 14](#_Toc78045088)

[5. Research Findings 15](#_Toc78045089)

[5.1 Initial Regression 15](#_Toc78045090)

[Table 1. Initial Regression Model Fit 15](#_Toc78045091)

[Table 2. Initial Regression Results 16](#_Toc78045092)

[5.2 Log-Adjusted Regression 18](#_Toc78045093)

[Table 3. Log-Adjusted Model Fit 18](#_Toc78045094)

[Table 4. Log-Adjusted Regression Results 19](#_Toc78045095)

[5.3 Limitations of Findings 20](#_Toc78045096)

[6. Policy Recommendations & Concluding Remarks 20](#_Toc78045097)

[6.1 Recommended Policy Path 20](#_Toc78045098)

[6.2 Concluding Remarks 22](#_Toc78045099)

**Bibliography………………………………………………………………………….…… 23 Appendix……………………………………………………………………….……..…… 26**

iv

List of Figures

*Figure 1. Regression Model*

***Public Credit Registry Coverage* = βo + β1(*Reliability of Infrastructure*) + β2 (*Transparency of Information*) + β3(*Geographic Coverage*) + β4(*Land Dispute Resolution*) + β5(*Population*) + β6(*Rural Population*) + ui**

*Figure 2. Hypothesis Test*

**H0 : β1 = β2 = β3 = β4 = β5 = β6 = 0**

**HA : At least one βi ≠ 0 (for i = 1, 2, 3, 4, 5, 6)**

**α=0.05**

v

List of Tables

*Table 1. Initial Regression Model Fit*

|  |  |
| --- | --- |
| Initial Regression Model Fit | |
| R2 | 0.715441 |
| Adjusted R2 | 0.641208 |
| RSS | 5565.4092 |
| F | 9.638 [0.000]\*\* |

*Note: \*\* indicate significance at α=0.01*

*Table 2. Initial Regression Results*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Term | Estimate | Standard Error | t-value | p-value |
| *Constant* | 35.654 | 16.112 | 2.213 | 0.037 |
| *Reliability of Infrastructure* | -98.818 | 28.729 | -3.440 | 0.002 |
| *Transparency of Information* | 99.388 | 28.736 | 3.459 | 0.002 |
| *Geographic Coverage* | 3.455 | 1.670 | 2.068 | 0.050 |
| *Land Dispute Resolution* | 2.660 | 3.066 | 0.868 | 0.395 |
| *Population* | -0.000 | 0.000 | -2.396 | 0.025 |
| *Rural Population* | -0.882 | 0.168 | -5.260 | 0.000 |

*Table 3. Log-Adjusted Model Fit*

|  |  |
| --- | --- |
| Log-Adjusted Model Fit | |
| R2 | 0.747394 |
| Adjusted R2 | 0.681497 |
| RSS | 4940.45771 |
| F | 11.34 [0.000]\*\* |

*Note: \*\* indicate significance at α=0.01*

*Table 4. Log-Adjusted Regression Results*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Term | Estimate | Standard Error | t-value | p-value |
| *Constant* | 102.823 | 39.408 | 2.609 | 0.016 |
| *ln\_Reliability of Infrastructure* | -252.566 | 96.812 | -2.609 | 0.016 |
| *ln\_Transparency of Information* | 249.888 | 95.940 | 2.605 | 0.016 |
| *ln\_Geographic Coverage* | -0.009 | 4.731 | -0.002 | 0.999 |
| *ln\_Land Dispute Resolution* | 21.411 | 16.527 | 1.296 | 0.208 |
| *ln\_Population* | -1.037 | 1.614 | -0.643 | 0.527 |
| *ln\_Rural Population* | -31.974 | 5.946 | -5.377 | 0.000 |

vi

# 1. Introduction

#### Secure property rights and titling institutions are understood as having a positive impact on economic development. This is due to the association between titling and credit market access. The World Bank (2019) advocates for land and property rights through its assertion:

#### “Secure property rights and efficient land registration institutions are a cornerstone of any modern economy. They give confidence to individuals and businesses to invest in land, allow private companies to borrow – using land as a collateral – to expand job opportunities, and enable governments to collect property taxes, which are necessary to finance the provision of infrastructure and services to citizens”[[1]](#footnote-1)

#### “Without land tenure systems that work, economies risk missing the foundation for sustainable growth, threatening the livelihoods of the poor and vulnerable the most. It is simply not possible to end poverty and boost shared prosperity without making serious progress on land and property rights”[[2]](#footnote-2)

Additionally, the Heritage Foundation includes property rights as one of the measured areas comprising their 2021 *Index of Economic Freedom,* further emphasizing the economic importance of land and property rights. Heritage (2021) states:

*“Property rights are a primary factor in the accumulation of capital for production and investment. Secure titling is key to unlocking the wealth embodied in real estate, making natural resources available for economic use, and providing collateral for investment financing.”*[[3]](#footnote-3)

Historically, the general consensus among development researchers and scholars has been in support of the connection between property rights and desirable economic outcomes.[[4]](#footnote-4) To proliferate and protect property rights, it is essential for a country to have functioning land and property institutions. The World Bank (2015) stresses the importance of “institutions to document and record the legitimate owner of property,” recognizing property and land institutions as “a key part of the institutional infrastructure of any economy.”[[5]](#footnote-5)

Although development literature and influential organizations like the World Bank recognize the importance of land and property, many countries “still place significant impediments to registering property, thereby making it difficult to be used as collateral.”[[6]](#footnote-6) In particular, within much of the Latin American and Caribbean (LAC) region, this paradigm remains true. A majority of LAC countries exhibit highly unequal distributions of land coupled with insecure property rights.[[7]](#footnote-7) Not only does the insecurity of rights hinder the ability of property to be utilized as collateral, but insecure property rights have also been shown to adversely affect economic growth directly by “influencing the choice of production process and the efficiency with which production is carried out, and indirectly, by reducing incentives to invest.”[[8]](#footnote-8)

The International Property Rights Alliance produces an International Property Rights Index (IPRI). According to the 2018 IPRI ranking, Latin American countries continue to fall short in comparison to the global average in the improvement of property-rights protections.[[9]](#footnote-9) In fact, the region is home to the worst-rated country in terms of property-rights protections—Haiti. Conversely, the highest-ranking Latin American countries include Chile, Costa Rica, and Uruguay.[[10]](#footnote-10) It is of no surprise, then, that these three countries are also ranked as the highest in the region in terms of stability of economic and political institutions.[[11]](#footnote-11) These statistics further demonstrate the importance of institutional protections when it comes to property rights.

This paper seeks to better understand the security of property rights and land institutions in the context of LAC countries. The question of concern here, then, is what dimensions of land institutions are most security-enhancing, allowing for property to be realized as capital, thereby facilitating access to the credit market? Utilizing data on land administration institutions from the World Bank’s *Doing Business* dataset[[12]](#footnote-12), this paper seeks to offer insights on how institutions can enhance security within property transactions, thereby increasing access to the credit market. It is of importance to note that this paper does not aim to provide a prescriptive answer to the property rights paradigm in Latin America and the Caribbean. But rather the aim of this paper is to further this discussion and recommend a policy path, informed by the literature review and regression analysis.

In regards to the policy avenue for enhancing security, this paper is in support of advancing the development of geographic information system (GIS) technology in the LAC region. The digitalization of the land administration system has been shown to securitize property transactions through the reliability, quality, and transparency that technology and online information can inherently provide.[[13]](#footnote-13) Nonetheless, this paper acknowledges the limitations of digitalization and thus stresses the need for a local and participatory dimension to complement and inform the technological processes.

The remainder of this paper is structured as follows. The next section (Section II) will provide a discussion of the property rights theory of development popularized by Hernando de Soto and its influence on land policies and practice. Additionally, this section will identify issues that have been noted with this theory. Section III focuses the discussion of property rights on the dimension of security and the collateral potential of property. Section IV outlines the methodology for the research contribution made by this paper. This section also details this paper’s source of secondary data—The World Bank’s *Doing Business* Index and the applicability of the indicators for this paper. Section V discusses this paper’s research findings as well as the limitations to these findings. Section VI concludes with policy recommendations and suggestions for future research.

# 2. de Soto’s Solution

## 2.1 Influence of de Soto

This paper attempts to advance the understanding of a property-rights approach to development that has gained popularity in recent years. Peruvian economist, Hernando de Soto, has become an influential theorist in the property-rights literature. His first book, *The Other Path: The Economic Answer to Terrorism[[14]](#footnote-14),* quickly became a best-seller in Latin America and the Caribbean following its publication in 1989. Shortly after, de Soto released a second book, *The Mystery of Capital:**Why Capitalism Triumphs in the West and Fails Everywhere Else[[15]](#footnote-15),* expanding upon his ideas presented in *The Other Path.* Since the publication of these influential books, de Soto’s ideas have spread beyond academia and have since gained popularity among policymakers. The influence of de Soto’s property-rights approach to development can be seen across LAC cities and countries as it has become actualized in policies and practice.[[16]](#footnote-16)

Many LAC policymakers have accepted de Soto’s rhetoric as “a route to tenure security, economic development and poverty reduction in urban and peri-urban areas” within the region.[[17]](#footnote-17) Nonetheless, the empirical evidence in support of de Soto’s causal logic of formalization and credit market access seems to be lacking in countries who have followed de Soto on ‘the other path’ to development. Goldfinch (2015) finds that “the most devastating critique of de Soto’s thesis is the lack of empirical support for one of his central claims – that title assists in the gaining of credit.”[[18]](#footnote-18) This paper seeks to understand where de Soto’s theory falls short in producing desirable economic outcomes in the context of Latin America and the Caribbean.

Using the words of de Soto (2001) to summarize his message in *The Other Path* and *The Mystery of Capital*:

*“What the poor lack is easy access to the property mechanisms that could legally fix the economic potential of their assets so that they could be used to produce, secure, or guarantee greater value in the expanded market…*

*Formal property records and titles thus represent our shared concept of what is economically meaningful about any asset. They capture and organize all the relevant information required to conceptualize the potential value of an asset and so allow us to control it.”*[[19]](#footnote-19)

Following this logic, a formal title is necessary for any property to be utilized as an economic asset. De Soto emphasizes the importance of a title as it “functions as the means to secure the interests of other parties and to create accountability by providing all the information, references, rules, and enforcement mechanisms required to do so.”[[20]](#footnote-20) In this sense, a formal title offers a source of security and assurance that an asset is good for its perceived economic value. De Soto argues that formalizing property not only protects individual ownership but also the security of financial transactions. As a result, de Soto attributes the inability of citizens in developing countries to receive credit, among other financial services, to their lack of formal property titles.[[21]](#footnote-21) However, even after the formalization of property titles has been achieved, the supposed gains from the ability to utilize property as an economic asset have not always been realized. Unfortunately, this has been a common outcome in many Latin American countries, even in de Soto’s home country of Peru.[[22]](#footnote-22)

## 2.2 Critique of de Soto

A reccurring critique of de Soto has been the lack of evidence that formalizing property titles will result in credit access, thereby reducing poverty in the developing world. Latorre (2015) finds “[m]uch like de Soto, officials believe that, from the moment that ownership of unsettled or legally disputed land is mapped out and legally defined, progress and wealth will spread.”[[23]](#footnote-23) For example, in 1996 de Soto collaborated with the Peruvian government to establish the Commission for Formalizing Informal Property. [[24]](#footnote-24) Following the lead of de Soto, the Peruvian government was successful in formalizing the property held by millions of Peruvian residents, both in rural and urban areas. Yet, contrary to the theorized benefits of formalization, Peru instead experienced a rise in poverty, not the reduction of it.[[25]](#footnote-25)

Another critique of de Soto is that his theory is neither a novel nor revolutionary approach to the reduction of poverty, but rather a repackaging of “a Washington-consensus type capitalism that had noticeably failed in development terms throughout the ‘lost decades’ of the 1980s and 1990s and continues to be questioned.”[[26]](#footnote-26) However, de Soto does offer a potential explanation for these less than desirable outcomes in his discussion of institutions.

According to de Soto, a key feature of formal property systems is a network of public agencies to protect transactions. Public agencies administer and maintain property records which serve to “alert anyone eager to use an asset about things that may restrict or enhance its utilization, such as encumbrances, easements, leases, arrears, bankruptcies, or mortgages.”[[27]](#footnote-27) In sum, public agencies serve to protect the security of both ownership and transactions in a formal property system. De Soto, however, identifies a crucial distinction between the public agencies of Western, developed nations and those found in the developing world. When it comes to the provision of security, de Soto argues that Western systems emphasize the securitization of transactions, whereas developing systems tend to prioritize the securitization of ownership. De Soto describes the role of security in formal property systems as:

*“Security is principally focused on producing trust in transactions so that people can more easily make their assets lead a parallel life as capital. The Western emphasis on the security of transactions allows citizens to move large amounts of assets with very few transactions.”*[[28]](#footnote-28)

According to de Soto’s reasoning, the failure of titling to result in credit access can be attributed to a lack of security within institutions in many Latin American countries. Specifically, a lack of security within transactions, hindering the ability of titled property to be pledged as collateral. The following section furthers details the connection between the security of property and collateral ability of property.

# 3. Securitization for Collateralization

The economic relevance of property rights to development lies in the ability of property to be utilized as an economic asset. Hillhorst and Meunier (2015) note that the collateral potential of property can be attributed to the immovable nature of land which implies that “with sufficiently liquid land sales markets, [land] can provide ideal collateral for financial markets, boosting entrepreneurial development.” [[29]](#footnote-29) Evidence from past studies has also found that “improvements in rights which affect the ability of borrowers to use collateral are strongly positively correlated with credit market development in a cross-section of countries.”[[30]](#footnote-30) Enhancing collateral potential has also been proven to result in either larger loans and/or lower interest rates, according to the findings.[[31]](#footnote-31)It is important to note, however, that the process of collateralization of land can only take place“if authoritative and comprehensive registry information on land ownership is available and can be routinely accessed at low cost by third parties such as banks and mortgage lenders.”[[32]](#footnote-32) Keefer and Knack (2002) suggest that for economic actors, “the most important aspect of the policy environment is the reliability of a country’s guarantees of property and contract rights.”[[33]](#footnote-33)

Besley and Ghatak (2009) find that “significant disparities remain across countries in the extent to which property can be registered and hence used as collateral.”[[34]](#footnote-34) In these cases, “contract enforcement is limited due to imperfections in property rights protection which reduce the collateralizability of wealth.”[[35]](#footnote-35) This paper seeks to advance the understanding of how security provisions within property transactions influence the ability of property to be registered and ultimately used as collateral to access credit. Besley and Ghatak (2009) assert:

*“Supporting the creation of credit markets to foster investment is a key role of the state in promoting economic development. Policies aimed at extending and improving property rights so that assets can be pledged as collateral for loans are an important aspect of this.”*[[36]](#footnote-36)

This paper aims to better understand how to enhance security within property transactions so that land may be recognized as a secure, economic asset and pledged as collateral. By examining the dimensions of security within land administration institutions, this paper hopes to identify which functions of land institutions provide security within property transactions, allowing for the collateral potential of land to be realized, thereby successfully facilitating credit market access. The following section outlines the research methodology employed to reach this aim.

# 4. Methodology

## 4.1 Model

This paper aims to answer the following research question—what dimensions of land institutions are most security-enhancing, allowing for property to be realized as capital, thereby facilitating access to the credit market? To address this research question, this paper utilizes an econometric analysis, employing an ordinary least squares (OLS) regression on cross-sectional data. Specifically, testing for the influence of reliability, transparency, coverage, and dispute mechanisms within land institutions on facilitating credit access. The regression model incorporates cross-sectional data across 6 indicators for 30 Latin American and Caribbean countries during the year 2019. Below, *Figure 1* depicts the regression model employed in this paper.

### *Figure 1. Regression Model*

***Public Credit Registry Coverage* = βo + β1(*Reliability of Infrastructure*) + β2 (*Transparency of Information*) + β3(*Geographic Coverage*) + β4(*Land Dispute Resolution*) + β5(*Population*) + β6(*Rural Population*) + ui**

For the regression model above in *Figure 1*, the dependent variable is *(Y) Public Credit Registry Coverage (% of adults)*and the sixindependent variables are *(X1) Reliability of Infrastructure Index, (X2) Transparency of Information Index, (X3) Geographic Coverage Index, (X4) Land Dispute Resolution Index, (X5) Population,* and *(X6) Rural population.* While employing a cross-sectional OLS regression, the calculation and estimation applications were conducted using a combination of OxMetrics econometric software and Minitab statistical software. This regression model is testing for the hypothesis depicted in *Figure 2* below.

### *Figure 2. Hypothesis Test*

**H0 : β1 = β2 = β3 = β4 = β5 = β6 = 0**

**HA : At least one βi ≠ 0 (for i = 1, 2, 3, 4, 5, 6)**

**α=0.05**

The hypothesis testing of this paper is being conducted to determine if the regression model contains at least one indicator useful in predicting credit registry coverage, at the 5% significance level. For the hypothesis test stated above in *Figure 2*, the null hypothesis is testing that all six slope parameters are equal to zero in the model. The alternative hypothesis is testing that at least one of the slope parameters is not equal to zero in the model. If the null hypothesis were to be rejected by the regression model, the implication would be that a linear statistical relationship exists between the response variable and at least one of the predictor variables. As a result, it could then be inferred from the regression model that one of the independent variables has a statistically significant impact on the dependent variable, *Public Credit Registry Coverage*. The next section describes in detail the variables that are included in the regression model and the rationale for their inclusion.

## 4.2 Source of Data

To run a regression model, this paper relies on the use of secondary data. The majority of data that is incorporated in the regression model is derived from the World Bank’s *Doing Business* report. The *Doing Business* projectfocuses on the challenges to starting a business in a country-specific context.[[37]](#footnote-37) For this research, the focus is not necessarily business activity in particular. However, this report offers information regarding the effectiveness of legal and financial institutions in facilitating financial transactions. In particular, the report offers quantitative indictors on property rights and property institutions within a specific country context. In the *Doing Business* report, property-related indicators are used to measure the quality of the institutions that collectively form a country’s land administration system.[[38]](#footnote-38)

The term land administration was coined by the United Nations Economic Commission for Europe (UNECE) in 1993.[[39]](#footnote-39) The UNECE has cited the influence of Hernando de Soto and his books as the primary motivation for prioritizing a country’s land administration and its evaluation. In this paper, the term land administration is used to refer to “all the infrastructure necessary for the implementation of processes such as: institutional arrangements, legal frameworks, land information systems, standards, and the management and dissemination of systems and technologies necessary for implementing these processes” within a country.[[40]](#footnote-40)

The World Bank *Doing Business* indicators pertaining to a country’s land administration will be used to assess the quality of land-related institutions in LAC countries. The methodology for the World Bank’s *Doing Business* reportrelies on contributions from experts in both the private and public sector. This information is obtained through a questionnaire format. There is a questionnaire for each of the 11 indicator sets that are produced in the *Doing Business* report. For the indicator pertaining to the registration of property, local property lawyers, notaries and property registries provide the World Bank primary sources of information regarding the procedures, costs, and time that is associated with registering property in their country.[[41]](#footnote-41)

According to the findings of the latest *Doing Business* report, not one of the 33 LAC economies ranks in the top 50 global rankings for the ease of doing business.[[42]](#footnote-42) As a result, the specific regional context is of relevance for assessing land and property institutions. The LAC region is comprised of 33 countries— 20 within Latin America and 13 within the Caribbean.[[43]](#footnote-43) This paper initially aimed to run a regression model that included a complete sample of all countries (n=33) within the LAC region. However, the final sample size was reduced to 30 due to missing data for the Bahamas, Cuba, and Venezuela. The data for each of the countries included in the model was derived from the historical datasets of the World Bank *Doing Business* report.[[44]](#footnote-44) For each variable, data was collected for the most recent year—2019. The following section outlines each of the variables individually.

## 4.3 Dependent Variable

### ***(Y) Public Credit Registry Coverage (% of adults)***

Aligning with this paper’s discussion of secure property rights and credit market access, the dependent variable of interest in the regression model is *Public Credit Registry Coverage (% of adults)*, obtained from the World Bank’s *Doing Business* project.[[45]](#footnote-45) The World Bank’s definition of a credit registry is the database “managed by the public sector, usually by the central bank or the superintendent of banks, that collects information on the creditworthiness of borrowers (individuals or firms) in the financial system and facilitates the exchange of credit information among banks and other regulated financial institutions (while their primary objec­tive is to assist banking supervision).”[[46]](#footnote-46) Coverage of the registry is reported as “the number of individuals and firms listed in a public credit registry with current information on repayment history, unpaid debts, or credit outstanding.”[[47]](#footnote-47) This number is expressed as a percentage of the adult population (the popula­tion age 15 to 64) who is currently listed in the registry. In the absence of a formal public credit registry operation, a country receives a coverage value of 0.0%.

## 4.4 Independent Variables

Regarding the independent variables that are included in the model, four are concerning dimensions of security within property and land institutions—reliability, transparency, coverage, and dispute mechanisms. Two additional variables were also included to serve as confounding variables in the model—total population and rural population. Each of the six independent variables is described below.

### ***(X1) Reliability of Infrastructure Index***

The first variable of interest from the World Bank’s *Doing Business* report is the *Reliability of Infrastructure Index.* Reliability is essential in facilitating credit access as it ensures the accuracy of the records used for land-related transactions. The *Reliability of Infrastructure Index* assesses the quality of infrastructure for ensuring the reliability of information on property titles and property boundaries.[[48]](#footnote-48) Specifically, this index is concerned with the format in which land records and land parcel maps are kept at the registry. A country will receive a high score for reliability if they utilize digital records in a consolidated electronic database between the land ownership registry and mapping agency.[[49]](#footnote-49) In contrast, a greater reliance on paper format would result in a lower score in this dimension of the land administration system.

### ***(X2) Transparency of Information Index***

The second variable of interest from the World Bank’s *Doing Business* report is the *Transparency of Information Index.* Transparency helps to facilitate credit access by allowing potential lenders “to ascertain property ownership and to acquire data on the operation of property markets, particularly prices and transaction numbers to feed into economic decisions.”[[50]](#footnote-50) The *Transparency of Information Index* assesses the public availability of information concerning land ownership, land parcel maps, documents for property transactions, fee schedules, and service standards.[[51]](#footnote-51) A country will receive a higher score in transparency based on the extent to which land-related information is publicly accessible online. Conversely, if such information can only be accessed in person or has not been made public, the lower a country’s score will be in this dimension of the land administration system.

### ***(X3) Geographic Coverage Index***

The third variable of interest from the World Bank’s *Doing Business* report is the *Geographic Coverage Index.* Coverage is an indispensable dimension of the land administration system as the utility of the system is inherently limited when it lacks completeness of coverage. Hillhort and Frederic (2015) argue that “covering only a small fraction of relevant land may mean forgoing important external effects from land registration and may make those not covered vulnerable to loss of their rights through often speculative land acquisition.”[[52]](#footnote-52) As a result, the *Geographic Coverage Index* concerns the completeness of coverage in land ownership registration and cadastral mapping that exists in a country’s largest business city and the economy overall.[[53]](#footnote-53) A higher score in this area suggests that a country’s land administration system is not only concerned with the most economically relevant land.

### ***(X4) Land Dispute Resolution Index***

The fourth variable of interest from the World Bank’s *Doing Business* report is the *Land Dispute Resolution Index.* Dispute prevention and resolution mechanisms are important as disputes or uncertainty over ownership hinder the primary step of the collateralization process—obtaining a formal title. The *Land Dispute Resolution Index* assesses the legal framework for immovable property registration and the accessibility of dispute resolution mechanisms.[[54]](#footnote-54) A high score in this area is dependent on the presence of “a clear legal and regulatory framework with clear processes to ensure accuracy of the records used for land transactions, as well as the identity of transacting parties” within the land administration system.[[55]](#footnote-55)

### ***(X5) Population, total***

The fifth and sixth variables were included in the regression model to serve the function of confounding variables. A confounding variable serves to account for extraneous influences in the model, beyond the primary variables of interest. The fifth variable *Population, total* was included to account for differences in population sizes across the countries included in the sample. A larger population size would necessitate a greater institutional capacity of the land administration system to accommodate more individuals. Thus, it is of relevance to include in the regression model. The variable *Population, total* refers toall residents within a country, regardless of legal status or citizenship.[[56]](#footnote-56) The aggregation method for this variable is sum. The source of the data is based on national population censuses.

### ***(X6) Rural population (% of total population)***

The sixth variable *Rural population (% of total population)* also serves the purpose of a confounding variable. *Rural population (% of total population)* refers to the number of individuals living in rural areas, as defined by national statistical offices. Although the definition used to distinguish rurality varies contextually, this variable operationalizes a definition of rurality in terms of population density and proximity to larger cities.[[57]](#footnote-57) The percentage is calculated as the difference between the total population and the urban population. The aggregation method for this variable is weighted average. The World Bank’s estimate for *Rural population (% of total population)* is based on the United Nations World Urbanization Prospects.[[58]](#footnote-58) By including the dimension of rurality, the model seeks to account for geographic disparities within the land administration system that affect the scope of coverage and accessibility of services throughout a country.

# 5. Research Findings

## 5.1 Initial Regression

*Table 1* below displays the model fit from running the initial OLS regression. The overall R2 value of the model is 0.7154. This indicates that the regression model and the predictor variables are able to explain 71.54% of the variation in the response variable. Ideally, an R2 value ≥ 0.5 is desired for the model to be considered successful in explaining the relationship between the dependent and independent variables. The adjusted R2 value of the model is 0.6412. The Residual Sum of Squares (RSS) value is 5565.4092, which is considered high. This signals that there is a high degree of variation in the dataset. Ideally, a lower RSS value is desired.

### *Table 1. Initial Regression Model Fit*

|  |  |
| --- | --- |
| Initial Regression Model Fit | |
| R2 | 0.7154 |
| Adjusted R2 | 0.6412 |
| RSS | 5565.4092 |
| F | 9.638 [0.000]\*\* |

*Note: \*\* indicate significance at α=0.01*

The reported F-test statistic of the regression is 9.638 with a p-value of 0.000, as shown in *Table 1* above. When comparing the p-value of the F-test statistic to the significance level indicated in the table: 0.000 < 0.01. As a result, the null hypothesis for the F-test of no joint significance of the parameters (H0 : β1 = β2 = β3 = β4 = β5 = β6 = 0) is rejected. This indicates that the regression model is considered statistically significant at the 1% significance level. This allows for the conclusion that one of the independent variables in the model has a statistically significant impact on the dependent variable.

The hypothesis test of this study determined if the security-enhancing dimensions of the land administration system are useful in predicting credit market access, represented by the dependent variable, *Public Credit Registry Coverage*. By passing the F-test, it may be concluded that these dimensions are indeed useful to determine the resulting credit coverage. However, the intent of this paper was also to take this understanding a step further and determine which of the predictor variables is the most statistically significant in its relationship with the dependent variable. This can be determined by comparing the associated probability values (p-values) for each variable. The information contained in *Table 2* belowprovides greater detail on each of the independent variables, including their associated p-values.

### *Table 2. Initial Regression Results*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Term | Estimate | Standard Error | t-value | p-value |
| *Constant* | 35.654 | 16.112 | 2.213 | 0.037 |
| *Reliability of Infrastructure* | -98.818 | 28.729 | -3.440 | 0.002 |
| *Transparency of Information* | 99.388 | 28.736 | 3.459 | 0.002 |
| *Geographic Coverage* | 3.455 | 1.670 | 2.068 | 0.050 |
| *Land Dispute Resolution* | 2.660 | 3.066 | 0.868 | 0.395 |
| *Population* | -0.000 | 0.000 | -2.396 | 0.025 |
| *Rural Population* | -0.882 | 0.168 | -5.260 | 0.000 |

From *Table 2* above, the associated p-values for each variable are of note. A predictor variable is considered statistically significant if its p-value is less than the overall significance level set for the model (α=0.005). As a result, the variables *Reliability of Infrastructure, Transparency of Information, Population,* and *Rural Population* are considered statistically significant in this model. As mentioned in the previous section, the fifth and sixth independent variables in the model, *Population* and *Rural Population,* were included to serve the role of confounding variables. Consequently, the statistical significance of these parameters is of less concern to the overall aim of this research.

Also shown in *Table 2* on the previous page, the estimates for the predictor variables are of note, as well. The variables *Reliability of Infrastructure, Transparency of Information, Geographic Coverage, and Land Dispute Resolution* each pertain to the land administration system. According to the literature, a high score in these areas should enhance the security of property transactions, thereby facilitating access to credit and being listed in the credit registry. As result, it is expected that the estimates for each of these variables would positively impact the dependent variable, *Public Credit Registry Coverage.*

While the estimates for *Transparency of Information, Geographic Coverage, and Land Dispute Resolution* reveal a positive impact on *Public Credit Registry Coverage,* the regression results reveal *Reliability of Infrastructure* as having a negative impact on the *Public Credit Registry Coverage.* This finding is not only unexpected but also unaligned with the findings from the literature review. However, a study conducted by the London School of Economics may serve to offer an explanation for this unexpected finding. According to Besley and Ghatak (2009), the economic efficiency of improving the security of property rights is shown to be dependent on the existence of market competition. According to their findings, in the absence of competition, improving property rights “increases the prospect of exploitation of borrowers by lenders.”[[59]](#footnote-59) Intuitively, the prospect of exploitation would have a negative impact on credit access.

Additionally, the estimates for the confounding variables included in the model also reveal *Population* and *Rural Population* to have a negative impact on *Public Credit Registry Coverage.* Regarding *Population*’s negative impact on *Public Credit Registry Coverage,* a possible explanation for this is that a larger population size would necessitate a greater institutional capacity to maintain the credit registry. Many countries lack such capacity, especially in a developing context. Similarly, the greater extent to which a population is defined by rurality can also lead to increased coordination and coverage issues as the credit registry must service geographically disadvantaged areas. According to the World Bank, with a high presence of rurality, “the unit cost of delivering most social services and many types of infrastructure is high.”[[60]](#footnote-60) It is possible that the negative estimation of *Rural Population* may also be interacting with the estimation of *Reliability of Infrastructure* as it concerns infrastructure.

To adjust for potential issues that are arising from the data and impacting the regression results, a natural-logarithmic transformation was applied to each of the independent variables. Applying the natural log helps to compress the scale of the variables and to simplify the number of interaction terms among them. After computing the log-transformation, a second OLS regression was run using the log-adjusted explanatory variables to predict the same dependent variable, *Public Credit Registry Coverage*. Ideally, applying a log-transformation to the predictor variables will allow for a better regression analysis by revealing the true structure of the data in the regression results. The following section describes the results of the log-adjusted regression model.

## 5.2 Log-Adjusted Regression

Directly below, *Table 3* displays the model fit from running the log-adjusted OLS regression. The overall R2 value of the model is 0.7474. This indicates that the regression model and the predictor variables are able to explain 74.74% of the variation in the response variable. As a result, the explanatory power of the model increased during the second regression as a result of the log-transformation of the independent variables. The adjusted R2 value of the model is 0.6815. Similar to the results of the initial regression, the RSS value for the log-adjusted regression is considered high. However, an improvement in RSS can be noted as the RSS value decreased from the initial regression as a result of the log-transformation.

### *Table 3. Log-Adjusted Model Fit*

|  |  |
| --- | --- |
| Log-Adjusted Model Fit | |
| R2 | 0.7474 |
| Adjusted R2 | 0.6815 |
| RSS | 4940.4577 |
| F | 11.34 [0.000]\*\* |

*Note: \*\* indicate significance at α=0.01*

Also shown in *Table 3* on the previous page, the reported F-test statistic of the log-adjusted regression is 11.34 with a p-value of 0.000. When comparing the p-value of the F-test statistic to the overall significance level of the model, 0.000 < 0.01. As a result, the null hypothesis for the F-test of no joint significance of the parameters (H0 : β1 = β2 = β3 = β4 = β5 = β6 = 0) is also rejected in the log-adjusted model. Again, this indicates that the regression model is considered statistically significant at the 1% significance level, allowing for the conclusion that one of the independent variables in the log-adjusted model has a statistically significant impact on the dependent variable. The information contained in *Table 4* below provides greater detail on each of the independent variables in the log-adjusted model.

### *Table 4. Log-Adjusted Regression Results*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Term | Estimate | Standard Error | t-value | p-value |
| *Constant* | 102.823 | 39.408 | 2.609 | 0.016 |
| *ln\_Reliability of Infrastructure* | -252.566 | 96.812 | -2.609 | 0.016 |
| *ln\_Transparency of Information* | 249.888 | 95.940 | 2.605 | 0.016 |
| *ln\_Geographic Coverage* | -0.009 | 4.731 | -0.002 | 0.999 |
| *ln\_Land Dispute Resolution* | 21.411 | 16.527 | 1.296 | 0.208 |
| *ln\_Population* | -1.037 | 1.614 | -0.643 | 0.527 |
| *ln\_Rural Population* | -31.974 | 5.946 | -5.377 | 0.000 |

Above, *Table 4* displays the regression results for the log-adjusted independent variables. Since the log-adjusted regression also rejects the null of the F-test, it is of interest to again look towards the associated p-values for each variable to determine their individual impact on the model. At the 5% significance level, the variables *ln\_Reliability of Infrastructure, ln\_Transparency of Information,* and *ln\_Rural Population* are considered statistically significant due to their low p-values. Resulting from the log-transformation, *ln\_Population* is no longer statically significant as it was in the initial regression.

Another detectable change that has resulted from the log-transformation is the estimation for *ln\_Geographic Coverage.* Previously, the estimation for *Geographic Coverage* revealed a positive impact on the dependent variable, *Credit Registry Coverage.* It is possible to attribute this change to the log-transformation of the *Geographic Coverage* which compressed the scale of the variable, allowing the model to reveal its true impact.

## 5.3 Limitations of Findings

To conclude this section, it is important to acknowledge the limitations of the regression findings. First, the high RSS values in both the initial and log-transformed regression are a potential concern. Further study and statistical analysis of the model is recommended to greater understand the fit of the data to the model. This type of advanced analysis is beyond the scope of this paper, however. Second, the variables *Reliability of Infrastructure* and *Transparency of Information* were both revealed to be the statistically significant dimensions of security within the land administration. However, the estimations for both of these variables did not reveal a positive impact on the dependent variable. The estimation results for *Reliability of Infrastructure* were shown to have a negative impact on *Credit Registry Coverage* across both models.As this research finding is not in line with this paper’s findings from the literature review, it is recommended that further study be done to understand the source of the negative estimation. While it is possible that this outcome may be due to statistical issues within the model, it would be interesting to further explore this finding as it relates to the findings of Besley and Ghatak (2009) on the economic efficiency of improving the security of property rights.

# 6. Policy Recommendations & Concluding Remarks

## 6.1 Recommended Policy Path

Reflecting on the findings of the literature review and research model, this paper advocates for future land reform policies to be directed towards improving security within the land administration system. This paper recommends the incorporation of geographic information system (GIS) technology in the land administration system as the policy avenue for enhancing security in property transactions. GIS technology allows for the consolidation of all information managed by the land administration in an accessible and reliable format. The use of a single, comprehensive, and digitalized system allows governments “to accurately represent and understand property value as well as provide secure and authoritative land records and parcel data for widespread government and public use.”[[61]](#footnote-61) In terms of policy recommendations for the use of GIS technology, this paper draws upon the experiences of countries whose land administration systems have undergone reform to increase the technological capacity of their institutions.

Digitalization of the land administration system to enhance the security of property rights is not a novel policy approach being presented here in this paper. It is one of the modern approaches to the management of land administration systems that continues to gain popularity as GIS technological capabilities continue to improve. The World Bank, for example, has advocated for the process of digitalization and has since funded the implementation of programs globally. Recently in Latin America, the World Bank has allocated over 45 million USD to fund a rural property registration program in Brazil and 100 million USD to support Colombia’s multipurpose cadastre.[[62]](#footnote-62)

The Environmental Systems Research Institute (Esri) is a geographic information system company that is currently advancing the use of GIS in Latin America. Esri advocates for the use of GIS technologies to enhance the “reliability, quality, and accessibility of land information for both the government and the public.”[[63]](#footnote-63) Esri is of note for its success in balancing GIS technologies with local capacities. Acharya, Ramaprasad, and Vasudevan (2018) find that in a developing context, “it becomes necessary to fit in human intermediaries to ensure appropriate penetration of ICT technology to reach the poor as well as to endorse participatory land governance.”[[64]](#footnote-64) Brandford (2020) elaborates on this view stating, “[w]hen this digital process is used exclusively, and not coupled with more traditional surveying techniques, the process lacks confirmation via ground truthing, risking fraud.”[[65]](#footnote-65)Aligning with these understandings of GIS, this paper emphasizes the need for an anthropological complement to the technological component of GIS. To protect local stakeholders, a participatory and inclusive approach to GIS is recommended. To learn from the experience of successful participatory GIS programs, this paper looks to the experience of GIS in Suriname.

Conservation International Suriname (CI Suriname) is currently implementing a participatory mapping process to facilitate a “community bottom-up approach” which combines community mapping with GIS technology. [[66]](#footnote-66) Through this participatory approach, local spatial knowledge is being used to inform the production of digital maps. Reflecting on the program’s success in Suriname, Esri notes: “[i]ndigenous communities see the importance of the maps to facilitate dialog with outsiders.”[[67]](#footnote-67) In sum, the participatory GIS program in Suriname was successful in that it met the needs for technological advancement while honoring the practices and traditions of the local stakeholders. This paper is in support of comparable participatory forms of GIS as a policy path to increasing security within land and policy institutions in the LAC region.

## 6.2 Concluding Remarks

This paper provided a discussion of property rights and land institutions in the context of Latin America and the Caribbean. The link between property rights and credit market access was explored and the dimension of security underscored the discussion. Hernando de Soto’s property rights theory of development was assessed in terms of its influence on policymakers and the flaws in his theory were identified. This paper employed a cross-sectional regression model to determine the impact of security on credit market access in a sample of Latin American and Caribbean countries. Due to the limitations of secondary research, this paper recommends that more research on this topic be conducted in the future. Finally, this paper concludes by recommending the digitalization of the land administration system as a policy path for enhancing the security of property rights through a form of participatory geographic information system (GIS) technology.

Bibliography

Acharya Vijeth, Ramaprasad, Arkalgud, Vasudevan, Shraddha. 2018. “eLand Governance in India: Transcending Digitization.” In: Parycek P. et al. (eds) *Electronic Government*, EGOV 2018, Lecture Notes in Computer Science, Vol. 11020. Springer, Cham. Available at <https://doi.org/10.1007/978-3-319-98690-6_7>.

Besley, Timothy, and Ghatak, Maitreesh, 2009, “The De Soto Effect,” The London School of Economics, Research Paper No. EOPP008, Available at <http://sticerd.lse.ac.uk/dps/eopp/eopp08.pdf>.

Bourbeau, Heather. 2009. “Property Wrongs: How Weak Ideas Gain Strong Appeal in the World of Development Economics.” *Foreign Policy Magazine*. Available at <https://foreignpolicy.com/2009/11/17/property-wrongs/>.

Branford, Sue. 2020. “‘Digital land grab’ deprives traditional LatAm peoples of ancestral lands: Report.” Mongabay, Conservation News, Available at <https://news.mongabay.com/2020/10/digital-land-grab-deprives-traditional-latam-peoples-of-ancestral-lands-report/>.

Daley, Elizabeth and Hobley, Mary. 2005. *Land: Changing Contexts, Changing Relationships, Changing Rights.* DFID. Available at <https://sarpn.org/documents/d0001801/Land_changing_Sept2005.pdf>.

Djankov, Simeon, McLiesh, Caralee and Shleifer, Andrei, 2007, “Private Credit in 129 Countries,” Journal of Financial Economics, Vol. 84, No. 2, 299- 329. Available at <https://www-sciencedirect-com.ezaccess.libraries.psu.edu/science/article/pii/S0304405X06002170?via%3Dihub>.

“*Doing Business* Data,” data from World Bank. Available at <https://www.doingbusiness.org/en/data>.

Esri. “GIS in South America.” 2013. Redlands, CA: Esri*.* Available at <https://www.esri.com/~/media/Files/Pdfs/library/ebooks/gis-in-south-america.pdf>

FAO. “Tools for Designing, Monitoring and Evaluating Land Administration Programmes in Latin America.” Food and Agriculture Organization of the United Nations. Available at <http://www.fao.org/in-action/herramienta-administracion-tierras/introduction/concept-land-administration/en/>.

Fernandes, Edesio. 2002. “The Influence of de Soto’s “The Mystery of Capital”.” *Land Lines,* Jan 2002. Available at <https://www.lincolninst.edu/publications/articles/influence-sotos-mystery-capital>.

Field, Erica, and Torero, Maximo. 2006. “Do Property Titles Increase Credit Access Among the Urban Poor? Evidence from a Nationwide Titling Program.” Research Program in Development Studies Working Paper No. 223, Princeton University. Available at <https://scholar.harvard.edu/files/field/files/fieldtorerocs.pdf>.

Goldfinch, Shaun. 2015. “Property Rights and the Mystery of Capital: A Review of de Soto’s Simplistic Solution to Development.” *Progress in Development Studies* 15, 1: 87–96. Available at <https://www.researchgate.net/publication/273093918_Property_rights_and_the_mystery_of_capital_A_review_of_de_Soto%27s_simplistic_solution_to_development>.

Gómez, Paz. 2018. “Latin-American Nations Fall Behind for Property Rights.” Econ Americas. Available at <https://econamericas.com/2018/08/latin-america-property-rights-fall-behind/>.

Heritage Foundation, 2021, “The 12 Economic Freedoms: Policies for Lasting Progress

and Prosperity,” 2021 Index of Economic Freedom, Heritage Foundation, Available at <https://www.heritage.org/index/pdf/2021/book/2021_IndexofEconomicFreedom_CHAPTER02.pdf>.

Hilhorst, Thea, and Meunier, Frederic. 2015*. How Innovations in Land Administration Reform Improve on Doing Business : Cases from Lithuania, the Republic of Korea, Rwanda and the United Kingdom.* Washington, DC: World Bank*.* Available at <https://documents.worldbank.org/en/publication/documents-reports/documentdetail/450041467995100809/how-innovations-in-land-administration-reform-improve-on-doing-business-cases-from-lithuania-the-republic-of-korea-rwanda-and-the-united-kingdom>.

Keefer, Phillip, Knack, Stephen, 2002, “Polarization, Politics and Property Rights: Links Between Inequality and Growth,” *Public Choice* 111**,**pp. 127–154. Available at <https://doi.org/10.1023/A:1015168000336>.

Latorre, Sergio. 2015. “The Making of Land Ownership: Land Titling in Rural Colombia – A Reply to Hernando De Soto.” *Third World Quarterly*, Vol. 36, No. 8, pp. 1546–1569. Available at <http://dx.doi.org/10.1080/01436597.2015.1046984>.

“Population, total,” data from World Bank. Available at <https://data.worldbank.org/indicator/SP.POP.TOTL>.

“Public credit registry coverage (% of adults),” data from World Bank. Available at <https://data.worldbank.org/indicator/IC.CRD.PUBL.ZS>.

“Registering Property methodology,” Available at <https://www.doingbusiness.org/en/methodology/registering-property>.

“Rural population (% of total population),” data from World Bank. Available at <https://data.worldbank.org/indicator/SP.RUR.TOTL.ZS>.

Soto, Hernando de. *The Other Path: The Economic Answer to Terrorism.* New York: Basic Books, 1989.

\_\_\_\_. *The Mystery of Capital:**Why Capitalism Triumphs in the West and Fails Everywhere Else.* New York: Basic Books, 2001.

\_\_\_\_. 2001. “The Mystery of Capital.” *Finance and Development*, Vol., No.1. IMF. Available at <http://www.imf.org/external/pubs/ft/fandd/2001/03/desoto.htm>.

Tuck, Laura, and Zackout, Wael, 2019, “7 reasons for land and property rights to be at the top of the global agenda,” World Bank Blogs, World Bank, Available at <https://blogs.worldbank.org/voices/7-reasons-land-and-property-rights-be-top-global-agenda>.

World Bank. 2018. *Doing Business 2019:* *Training for Reform.* Washington, DC: World Bank. Available at <https://www.doingbusiness.org/en/reports/global-reports/doing-business-2019>.

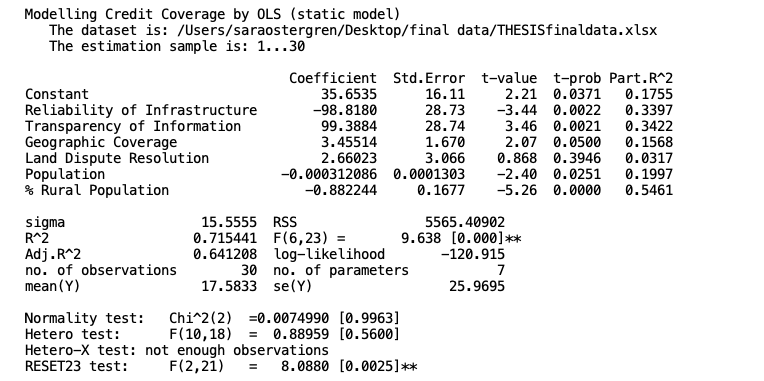
\_\_\_\_. 2019. “*Doing Business 2020* Overview.” *Doing Business.* World Bank, <https://www.doingbusiness.org/en/reports/global-reports/doing-business-2020>

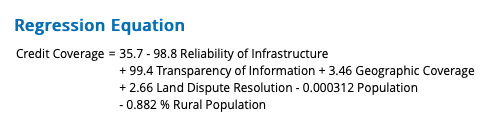
Appendix

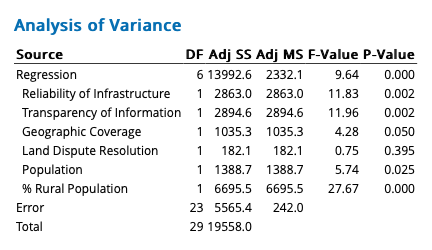
***List of Latin American and Caribbean countries included in regression sample (n=30):***

Antigua and Barbuda, Argentina, Barbados, Belize, Bolivia, Brazil, Chile, Colombia, Costa Rica, Dominica, Ecuador, El Salvador, Guatemala, Grenada, Guyana, Haiti, Honduras, Jamaica, Mexico, Nicaragua, Paraguay, Peru, Panama, Dominican Republic, Saint Kitts and Nevis, Saint Vincent and The Grenadines, St. Lucia, Suriname, Trinidad and Tobago, and Uruguay.

***First Regression Statistical Output:***

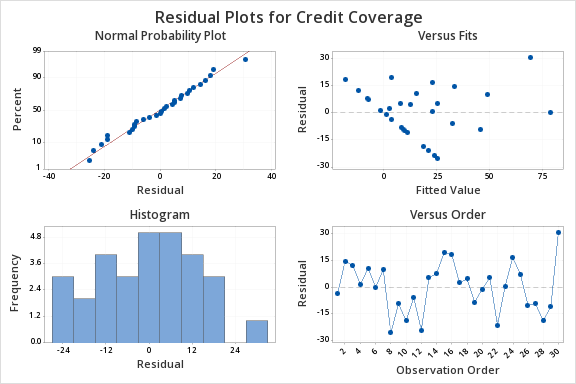


****

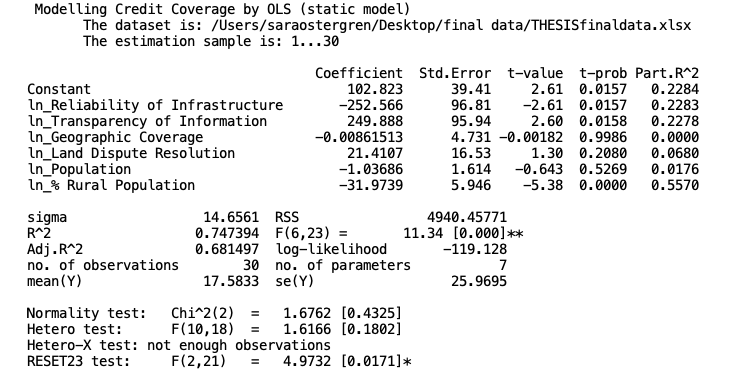


***First Regression Statistical Output cont’d:***

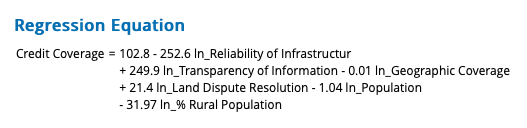


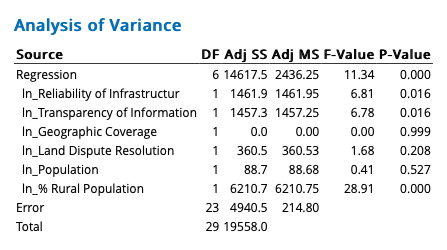
****

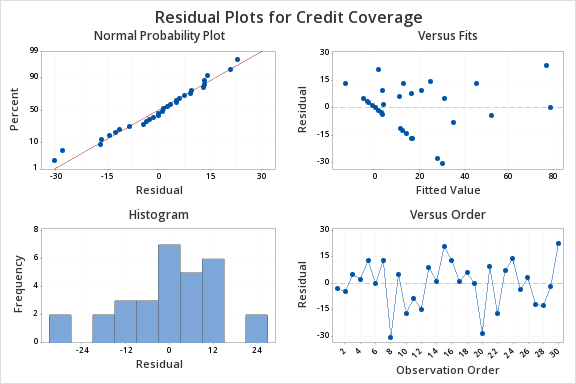
***Second Regression Statistical Output:***



***Second Regression Statistical Output cont’d:***

****



****

1. Tuck, Laura, and Zackout, Wael, 2019, “7 Reasons for Land and Property Rights to be at the Top of the Global Agenda,” World Bank Blogs, World Bank, Available at <https://blogs.worldbank.org/voices/7-reasons-land-and-property-rights-be-top-global-agenda>. [↑](#footnote-ref-1)
2. Tuck, Laura, and Zackout, Wael, 2019, “7 Reasons” [↑](#footnote-ref-2)
3. The Heritage Foundation, 2021, “The 12 Economic Freedoms: Policies for Lasting Progress

   and Prosperity,” 2021 Index of Economic Freedom, the Heritage Foundation, Available at <https://www.heritage.org/index/pdf/2021/book/2021_IndexofEconomicFreedom_CHAPTER02.pdf>. [↑](#footnote-ref-3)
4. Goldfinch, Shaun, 2015, “Property Rights and the Mystery of Capital: A Review of de Soto’s Simplistic Solution to Development,” *Progress in Development Studies* 15, 1: 87–96. Available at <https://www.researchgate.net/publication/273093918_Property_rights_and_the_mystery_of_capital_A_review_of_de_Soto%27s_simplistic_solution_to_development>. [↑](#footnote-ref-4)
5. Hilhorst, Thea, and Meunier, Frederic, 2015*, How Innovations in Land Administration Reform Improve on Doing Business : Cases from Lithuania, the Republic of Korea, Rwanda and the United Kingdom,* Washington, DC: World Bank*,* Available at <https://documents.worldbank.org/en/publication/documents-reports/documentdetail/450041467995100809/how-innovations-in-land-administration-reform-improve-on-doing-business-cases-from-lithuania-the-republic-of-korea-rwanda-and-the-united-kingdom>. [↑](#footnote-ref-5)
6. Besley, Timothy, and Ghatak, Maitreesh, 2009, “The De Soto Effect,” The London School of Economics, Research Paper No. EOPP008, Available at <http://sticerd.lse.ac.uk/dps/eopp/eopp08.pdf>. [↑](#footnote-ref-6)
7. Keefer, Phillip, Knack, Stephen, 2002, “Polarization, Politics and Property Rights: Links Between Inequality and Growth,” *Public Choice* 111**,**pp. 127–154. Available at <https://doi.org/10.1023/A:1015168000336>. [↑](#footnote-ref-7)
8. Keefer, Phillip, Knack, Stephen, 2002, “Polarization” [↑](#footnote-ref-8)
9. Gómez, Paz, 2018, “Latin-American Nations Fall Behind for Property Rights,” Econ Americas. Available at <https://econamericas.com/2018/08/latin-america-property-rights-fall-behind/>. [↑](#footnote-ref-9)
10. Ibid. [↑](#footnote-ref-10)
11. Ibid. [↑](#footnote-ref-11)
12. “*Doing Business* Data,” data from World Bank, Available at <https://www.doingbusiness.org/en/data>. [↑](#footnote-ref-12)
13. Acharya Vijeth, Ramaprasad Arkalgud, Vasudevan Shraddha, 2018, “eLand Governance in India: Transcending Digitization,” In: Parycek P. et al. (eds) *Electronic Government*, EGOV 2018, Lecture Notes in Computer Science, Vol. 11020. Springer, Cham. Available at <https://doi.org/10.1007/978-3-319-98690-6_7>. [↑](#footnote-ref-13)
14. Hernando de Soto, *The Other Path: The Economic Answer to Terrorism* (New York: Basic Books, 1989). [↑](#footnote-ref-14)
15. Hernando de Soto, *The Mystery of Capital:**Why Capitalism Triumphs in the West and Fails Everywhere Else* (New York: Basic Books, 2001). [↑](#footnote-ref-15)
16. Fernandes, Edesio, 2002, “The Influence of de Soto’s “The Mystery of Capital”,” *Land Lines,* Jan 2002, Available at <https://www.lincolninst.edu/publications/articles/influence-sotos-mystery-capital>. [↑](#footnote-ref-16)
17. Daley, Elizabeth and Hobley, Mary, 2005, *Land: Changing Contexts, Changing Relationships, Changing Rights,* DFID, Available at <https://sarpn.org/documents/d0001801/Land_changing_Sept2005.pdf>. [↑](#footnote-ref-17)
18. Goldfinch, Shaun, 2015, “Property Rights” [↑](#footnote-ref-18)
19. de Soto, Hernando, 2001, “The Mystery of Capital,” *Finance and Development*, Vol., No.1. IMF. Available at <http://www.imf.org/external/pubs/ft/fandd/2001/03/desoto.htm>. [↑](#footnote-ref-19)
20. Ibid. [↑](#footnote-ref-20)
21. Ibid. [↑](#footnote-ref-21)
22. Field, Erica, and Torero, Maximo, 2006, “Do Property Titles Increase Credit Access Among the Urban Poor? Evidence from a Nationwide Titling Program,” Research Program in Development Studies Working Paper No. 223, Princeton University. Available at <https://scholar.harvard.edu/files/field/files/fieldtorerocs.pdf>. [↑](#footnote-ref-22)
23. Latorre, Sergio, 2015, “The Making of Land Ownership: Land Titling in Rural Colombia – A Reply to Hernando De Soto,” *Third World Quarterly*, Vol. 36, No. 8, pp. 1546–1569. Available at <http://dx.doi.org/10.1080/01436597.2015.1046984>. [↑](#footnote-ref-23)
24. Bourbeau, Heather, 2009, “Property Wrongs: How Weak Ideas Gain Strong Appeal in the World of Development Economics,” *Foreign Policy Magazine*, Available at <https://foreignpolicy.com/2009/11/17/property-wrongs/>. [↑](#footnote-ref-24)
25. Ibid. [↑](#footnote-ref-25)
26. Goldfinch, Shaun, 2015, “Property Rights” [↑](#footnote-ref-26)
27. Ibid. [↑](#footnote-ref-27)
28. Ibid. [↑](#footnote-ref-28)
29. Hilhorst, Thea, and Meunier, Frederic, 2015*, “How Innovations”* [↑](#footnote-ref-29)
30. Djankov, Simeon, McLiesh, Caralee and Shleifer, Andrei, 2007, “Private Credit in 129 Countries,” Journal of Financial Economics, Vol. 84, No. 2, 299- 329. Available at <https://www-sciencedirect-com.ezaccess.libraries.psu.edu/science/article/pii/S0304405X06002170?via%3Dihub>. [↑](#footnote-ref-30)
31. Besley, Timothy, and Ghatak, Maitreesh, 2009, “The De Soto Effect” [↑](#footnote-ref-31)
32. Ibid. [↑](#footnote-ref-32)
33. Keefer, Phillip, Knack, Stephen, 2002, “Polarization, Politics and Property Rights: Links Between Inequality and Growth,” *Public Choice* 111**,**pp. 127–154. Available at <https://doi.org/10.1023/A:1015168000336>. [↑](#footnote-ref-33)
34. Ibid. [↑](#footnote-ref-34)
35. Besley, Timothy, and Ghatak, Maitreesh, 2009, “The De Soto Effect” [↑](#footnote-ref-35)
36. Besley, Timothy, and Ghatak, Maitreesh, 2009, “The De Soto Effect” [↑](#footnote-ref-36)
37. 2019. “*Doing Business 2020* Overview.” *Doing Business.* World Bank, <https://www.doingbusiness.org/en/reports/global-reports/doing-business-2020>. [↑](#footnote-ref-37)
38. “Registering Property methodology,” Available at <https://www.doingbusiness.org/en/methodology/registering-property>. [↑](#footnote-ref-38)
39. FAO, “Tools for Designing, Monitoring and Evaluating Land Administration Programmes in Latin America,” Food and Agriculture Organization of the United Nations, Available at <http://www.fao.org/in-action/herramienta-administracion-tierras/introduction/concept-land-administration/en/>. [↑](#footnote-ref-39)
40. FAO, “Tools for Designing” [↑](#footnote-ref-40)
41. “Registering Property methodology,” Available at <https://www.doingbusiness.org/en/methodology/registering-property>. [↑](#footnote-ref-41)
42. World Bank, 2019, “*Doing Business 2020* Overview” [↑](#footnote-ref-42)
43. **Note**: The 33 member countries of the Community of Latin America and Caribbean States (CELAC) include Antigua and Barbuda, Argentina, Bahamas, Barbados, Belize, Bolivia, Brazil, Chile, Colombia, Costa Rica, Cuba, Dominica, Ecuador, El Salvador, Guatemala, Grenada, Guyana, Haiti, Honduras, Jamaica, Mexico, Nicaragua, Paraguay, Peru, Panama, Dominican Republic, Saint Kitts and Nevis, Saint Vincent and The Grenadines, St. Lucia, Suriname, Trinidad and Tobago, Venezuela and Uruguay. [↑](#footnote-ref-43)
44. “*Doing Business* Data,” data from World Bank, Available at <https://www.doingbusiness.org/en/data>. [↑](#footnote-ref-44)
45. “Public credit registry coverage (% of adults),” data from World Bank. Available at <https://data.worldbank.org/indicator/IC.CRD.PUBL.ZS>. [↑](#footnote-ref-45)
46. Ibid. [↑](#footnote-ref-46)
47. Ibid. [↑](#footnote-ref-47)
48. “*Doing Business* Data,” data from World Bank, Available at <https://www.doingbusiness.org/en/data>. [↑](#footnote-ref-48)
49. Hilhorst, Thea, and Meunier, Frederic, 2015*, “How Innovations”* [↑](#footnote-ref-49)
50. Ibid. [↑](#footnote-ref-50)
51. “Registering Property,” data from World Bank, Available at <https://www.doingbusiness.org/en/data>. [↑](#footnote-ref-51)
52. Hilhorst, Thea, and Meunier, Frederic, 2015*, “How Innovations”* [↑](#footnote-ref-52)
53. “Registering Property,” data from World Bank, Available at <https://www.doingbusiness.org/en/data>. [↑](#footnote-ref-53)
54. “Registering Property,” data from World Bank, Available at <https://www.doingbusiness.org/en/data>. [↑](#footnote-ref-54)
55. Hilhorst, Thea, and Meunier, Frederic, 2015*, “How Innovations”* [↑](#footnote-ref-55)
56. “Population, total,” data from World Bank. Available at <https://data.worldbank.org/indicator/SP.POP.TOTL>. [↑](#footnote-ref-56)
57. Rural population (% of total population),” data from World Bank. Available at <https://data.worldbank.org/indicator/SP.RUR.TOTL.ZS>. [↑](#footnote-ref-57)
58. Rural population (% of total population),” data from World Bank. Available at <https://data.worldbank.org/indicator/SP.RUR.TOTL.ZS>. [↑](#footnote-ref-58)
59. Besley, Timothy, and Ghatak, Maitreesh, 2009, “The De Soto Effect,” The London School of Economics, Research Paper No. EOPP008, Available at <http://sticerd.lse.ac.uk/dps/eopp/eopp08.pdf>. [↑](#footnote-ref-59)
60. “Rural population (% of total population),” data from World Bank. Available at <https://data.worldbank.org/indicator/SP.RUR.TOTL.ZS>. [↑](#footnote-ref-60)
61. Esri, “Land Administration and Land Records,” Esri, Available at <https://www.esri.com/en-us/industries/land-administration/overview>. [↑](#footnote-ref-61)
62. Branford, Sue. 2020. “‘Digital land grab’ deprives traditional LatAm peoples of ancestral lands: Report.” Mongabay, Conservation News, Available at <https://news.mongabay.com/2020/10/digital-land-grab-deprives-traditional-latam-peoples-of-ancestral-lands-report/>. [↑](#footnote-ref-62)
63. Esri, “GIS in South America,” 2013, Redlands, CA: Esri*,* Available at <https://www.esri.com/~/media/Files/Pdfs/library/ebooks/gis-in-south-america.pdf>. [↑](#footnote-ref-63)
64. Acharya, Vijeth, Ramaprasad, Arkalgud, Vasudevan, Shraddha, 2018, “eLand” [↑](#footnote-ref-64)
65. Branford, Sue, 2020, “‘Digital land grab’” [↑](#footnote-ref-65)
66. Daley, Elizabeth and Hobley, Mary, 2005, “*Land: Changing”* [↑](#footnote-ref-66)
67. Esri, “GIS in South America” [↑](#footnote-ref-67)