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A Difficult Question in Deed: A Cost-Benefit Framework for Titling Programs

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A DIFFICULT QUESTION IN DEED: A COST-BENEFIT FRAMEWORK FOR TITLING PROGRAMS¹

JEAN O. LANJOUW* & PHILIP LEVY**

ABSTRACT

In this Article we explore the potential benefits and costs of a program to grant title to individuals who are occupying land informally. Only some of these benefits and costs have received careful empirical consideration in the literature. This Article references existing studies and draws on findings from original surveys of urban households in Ecuador. We consider how a titling program might affect the welfare of landowners and occupants, how it could alter the functioning of real estate markets, and whether it could build a community's social capital. Potential benefits must be

1. This Article was prepared in conjunction with the Institute of Bill of Rights Law Symposium "Property Rights and Economic Development" and presented at the College of William and Mary Marshall-Wythe School of Law on February 28, 2003. We thank the organizer, Eric Kades, and other participants for their input at an early stage. We are grateful to Emmanuel Jimenez of the World Bank for his encouragement of our initial study in Ecuador. We thank the World Bank, the Yale Center for International and Area Studies, and GTZ for their financial support of the Ecuador survey. Finally, we thank Alejandro Queral for providing excellent research assistance and Peter Lanjouw and Margaret MacLeod for their comments.

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weighed against a range of costs, including those accruing to the government for implementation of the program, as well as those perceived by individuals in their efforts to obtain title. There also may be dynamic implications of a titling program. For example, these programs can spur further land invasions and render the role of intermediaries more lucrative. The importance of formal property rights and of formal legal systems in governing transactions and land use is of particular interest given that property rights are frequently assigned the prominent role of a prerequisite to economic growth.

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INTRODUCTION

Property rights are commonly regarded as a fundamental underpinning of a capitalist economic system.² For individuals to engage in transactions with each other and to undertake investments that spur economic growth, a system must be in place that establishes the range of transactions that individuals are allowed to undertake. This Article addresses the role of property rights in economic systems by considering the transition from an informal system of property rights to a formal one. Specifically, we consider the costs and benefits of formalizing the ownership of land that is informally occupied or has been developed illegally.

Recent studies of economic growth have given a central role to the institutions governing property rights. A study of growth in incomes worldwide since 1500 notes that "a cluster of institutions ensuring secure property rights for a broad cross section of society ... are essential for investment incentives and successful economic performance."³ In fact, this study argues that it is the propagation of such institutions that has led previously laggard areas of the world to the forefront of the world income distribution.⁴ This point emphasizes an important policy question: Are there significant social benefits to be obtained by extending formal systems of property rights into new areas? The well-known Peruvian advocate Hernando de Soto argues that there are in fact significant social benefits gained by such extension.⁵ His central thesis is that by clarifying the ownership of property and simplifying the regulations that govern its use, it is possible to unleash the great potential of the developing world.⁶

2. See, e.g., Armen A. Alchian & Harold Demsetz, *The Property Rights Paradigm*, 33 J. ECON. HIST. 16, 16 (1973); Harold Demsetz, *Toward a Theory of Property Rights*, 57 AM. ECON. REV. 347, 362 (1967).

3. Daron Acemoglu et al., *Reversal of Fortune: Geography and Institutions in the Making of the Modern World Income Distribution*, 117 Q. J. ECON. 1231, 1235 (2002).

4. *Id.* at 1235-37.

5. See HERNANDO DE SOTO, *THE MYSTERY OF CAPITAL: WHY CAPITALISM TRIUMPHS IN THE WEST AND FAILS EVERYWHERE ELSE* 46-62 (2000).

6. *Id.*

The extent of informality is impressive. In most urban areas of developing countries "in Asia, Latin America, sub-Saharan Africa and the Arab States, between 25 and 70 per cent of the urban population is living in irregular settlements."⁷ De Soto also estimates that as many as 85% of urban parcels of land in the developing world are informal.⁸ Of course, it is the least well-off members of society who are most likely to occupy the marginal lots. In almost all cases, in fact, information on urban housing and tenure security indicates that the situation of the poor has worsened over time.⁹

To be concrete about the type of situation under consideration, imagine a parcel of unoccupied urban land in a developing country. The land in question is owned by the state. Now imagine an entrepreneurial organizer gathering up some poor compatriots from the countryside and moving in to occupy this parcel of land. This occupation may be accomplished quite systematically, with the land subdivided among the new occupants and boundaries clearly settled. It may be with either the tacit or direct approval of a local politician and there may be payments made from the new occupants to the organizer and the politician. Thus, the result is a settlement of poor individuals residing and perhaps also working on the property.¹⁰

Subsequently, these new settlers will face a series of critical decisions. They must decide whether to invest in their own property and whether to participate in communal efforts to address neighborhood concerns. For any investment, they may need to assess how they might obtain credit. They must determine how much effort to exert to protect their land from other claimants. Finally, they may need to decide whether they can safely rent or sell their property.

7. Alain Durand-Lasserve & Lauren Royston, *International Trends and Country Contexts—From Tenure Regularization to Tenure Security*, in *HOLDING THEIR GROUND: SECURE LAND TENURE FOR THE URBAN POOR IN DEVELOPING COUNTRIES* 1, 3 (Alain Durand-Lasserve & Lauren Royston eds., 2002) [hereinafter *HOLDING THEIR GROUND*].

8. See DE SOTO, *supra* note 5, at 36. Given the nature of informality in property ownership arrangements, it is unsurprising that these estimates should vary. De Soto's organization is one of the few that has worked systematically to document the extent of informal property holdings.

9. See Durand-Lasserve & Royston, *supra* note 7, at 3.

10. For a specific example, Solomon Benjamin gives a detailed account of the settlement of unauthorized colonies in and around Delhi, India. See SOLOMON J. BENJAMIN, *JOBS, LAND, AND URBAN DEVELOPMENT: THE ECONOMIC SUCCESS OF SMALL MANUFACTURERS IN EAST DELHI, INDIA* 9 (1992).

The resolution of these issues is likely to differ under a formal and an informal system of property ownership. Although the cost-benefit framework we develop in this Article will not provide a final answer to the question of whether moving towards formalization is worthwhile, we will describe the potential gains or losses to different members of the society and discuss empirical evidence regarding the magnitude of these impacts. Assessing the empirical balance between the costs and benefits of property ownership is essential for determining the advisability of undertaking formal titling programs.

Due to their prevalence throughout the developing world, land invasions and informal systems of land tenure have been the focus of considerable research.¹¹ This growing body of work includes examples from many countries.¹² In this study, we draw extensively on surveys that we fielded in Guayaquil and Quito, Ecuador,¹³ as well as discuss these other important studies.

Part I of this Article describes the ways in which landholdings may be informal and describes a formalization program. Part II lays out the theoretical benefits and costs of a land titling program. Part

11. Several previous studies provide useful reviews of the issues and case study evidence. See, e.g., GEOFFREY PAYNE, CENTRE FOR DEVELOPMENT AND ENVIRONMENTAL PLANNING, INFORMAL HOUSING AND LAND SUBDIVISIONS IN THIRD WORLD CITIES: A REVIEW OF THE LITERATURE 30-34 (1989) [hereinafter PAYNE, INFORMAL HOUSING]; GEOFFREY PAYNE, URBAN LAND TENURE AND PROPERTY RIGHTS IN DEVELOPING COUNTRIES: A REVIEW 15 (1997) [hereinafter PAYNE, URBAN LAND TENURE]. Catherine Farvacque and Patrick McAuslan discuss the political and legal aspects of land tenure policy, the role of intermediaries in the process of land invasion, and the overlay of customary and formal systems. See CATHERINE FARVACQUE & PATRICK MCAUSLAN, THE WORLD BANK, REFORMING URBAN LAND POLICIES AND INSTITUTIONS IN DEVELOPING COUNTRIES 6-29, 36-54 (Urban Mgmt. Program, Policy Paper No. 5, 1992).

12. Specifically, studies on this topic include evaluations of the issues and evidence in rural Africa. See JEAN-PHILIPPE PLATTEAU, INSTITUTIONS, SOCIAL NORMS, AND ECONOMIC DEVELOPMENT 134-89 (Kaushik Basu ed., 2000). In addition, the relevant research encompasses an interesting and detailed description of irregular land acquisition in three cities: Mexico City, Mexico; Valencia, Venezuela; and Bogotá, Colombia. At the time of this subsequent survey work, each city was estimated to have more than forty percent of its inhabitants living in irregular settlements, but with considerably different patterns of access through illegal subdivisions and invasion. Significantly, these studies emphasize the role of politicians in determining whether invasion is a common form of land redistribution and discuss in detail the political aspects of infrastructure development. See ALAN GILBERT & PETER M. WARD, HOUSING, THE STATE, AND THE POOR 1-2 (1985).

13. Jean O. Lanjouw & Philip Levy, *Untitled: A Study of Formal and Informal Property Rights in Urban Ecuador*, 112 ECON. J. 986, 990 (2002).

III describes a number of estimation issues that commonly arise when researchers attempt to quantify the benefits and costs of land titling. Part IV discusses our prior surveys drawn from Ecuador.¹⁴ Parts V through XIII each address a potential effect of formalizing property rights. Whenever possible, these Parts begin with evidence drawn from our Ecuadorian study and progress to empirical evidence drawn from other research. Part V begins quantifying the costs and benefits of formal property rights with evidence regarding the tenure security experienced by landholders with different sources of rights. Part VI assesses the extent to which people can undertake property transactions in the presence or absence of formal title. Parts VII and VIII consider the effects of formal land titles on private and social investment, respectively. In Part IX, we review studies concerning the extent to which formalization of property rights facilitates access to formal credit markets. Part X briefly describes the relationship between formalization and property taxes to finance infrastructure. In Part XI, we provide estimates of titling costs. Part XII discusses empirical work relating to some of the dynamic and distributional questions surrounding a titling program. Finally, Part XIII offers regression analyses of the impact of titling on property values.

I. TYPES OF INFORMALITY AND A FORMALIZATION PROGRAM

A. *Irregular Settlements*

Settlements may be “irregular” or “informal” for a variety of reasons. Irregular settlements include public or private land settled by squatters, illegal constructions on legal property, and land developments that are unauthorized either because the development would have been legal but permits were not obtained, or because the development does not conform with zoning, minimum infrastructure, or other requirements.¹⁵ Thus, while some forms of irregular

14. See generally *id.*

15. These forms are not mutually exclusive. For example, studies note the presence of squatters on land owned by others in an area that had been subdivided and developed illegally. See BENJAMIN, *supra* note 10, at ii.

settlements may be completely illegal, others have attributes of legality.¹⁶

The settlements that receive the most public attention are the closely planned and highly organized overnight invasions involving hundreds of families. Many squatter settlements, however, develop gradually, one household at a time, as encroachments on otherwise legally developed neighborhoods.¹⁷ The most common form of these irregular settlements are unauthorized land developments, which are often found on private agricultural land on the periphery of cities.¹⁸

B. Formal Titling Programs

In light of these unique phenomena, "formalizing property rights" may have many meanings, and may represent a more or less significant change, depending on the initial circumstances.

The range and complexity of tenure systems ... demonstrates that it is simplistic to think of tenure in black and white terms of legal or illegal, since there is generally a continuum of tenure categories within most land and housing markets. In many countries, there may even be more than one legally acceptable system operating The coexistence of these different tenure systems and submarkets within most cities creates a complex series of relationships¹⁹

Although the transfer of property to squatters is often referred to casually as "titling," land is legally titled once state lands are privatized. Thus, if an invasion occurs on private property and the squatters are then regularized, the land is not being "titled." Rather, title is being transferred from one person to another,²⁰ although

16. See Durand-Lasserve & Royston, *supra* note 7, at 4-5.

17. *Id.*

18. *Id.*

19. *Id.* at 12 (first alteration in original) (quoting Geoffrey Payne, *Urban Land Tenure Policy Options: Titles or Rights?*, Paper Presented at the International Research Group on Law and Urban Space/Centre for Applied Legal Studies Workshop on *Facing the Paradox: Redefining Property in the Age of Liberalization and Privatisation* (July 29-30, 1999)).

20. Deniz Baharoglu, *The World Bank, World Bank Experience in Land Management & The Debate on Tenure Security* 8 (July 2002) (unpublished draft report, available at

titles do not necessarily have to be issued only to individuals. A study of land rights policy and indigenous peoples, for example, indicates that the concept of communal land titles is well recognized in Latin America.²¹

Title registration guarantees all rights shown in the land register and represents the highest level of formalization.²² Registration occurs when ownership of the title deed is registered with the state. This step helps avoid overlapping claims and when done well can give confidence to potential buyers or lenders as to who actually owns a piece of land.

There are two main systems of title registration. Land recordation involves the registration of deeds. Under this system, transactions are recorded as they occur to keep an accurate historical picture of transfers related to each plot.²³ In contrast, the Torrens system involves the registration of title. This system provides a current record of parcel ownership with a State guarantee of registry information.²⁴ People can (and do) transfer their property or receive formal legal titles without registering the transactions. Accordingly, maintaining registry information has proven to be very difficult and expensive in developing countries.²⁵

The most extensive and well-known example of an urban property titling and registration effort in a developing country has taken place in Peru.²⁶ In the late 1980s and early 1990s Hernando de Soto's nongovernmental organization, the Institute for Liberty and Democracy, ran a pilot project in Peru.²⁷ Part of this effort established a new property registry in 1988 called the *Registro Praedial*

http://www.worldbank.org/urban/publicat/land_final.pdf.

21. ROGER PLANT & SOREN HVALKOF, LAND TITLING AND INDIGENOUS PEOPLES 23 (Inter-Am. Dev. Bank Sustainable Dev. Dep't, Technical Paper Series No. IND-109, 2001).

22. In developing countries, setting up registration systems involves a series of costs and benefits. See Tim Hanstad, *Designing Land Registration Systems for Developing Countries*, 13 AM. U. INT'L L. REV. 647, 650-51 (1998).

23. *Id.*

24. *Id.*

25. See *id.* at 665.

26. Reform efforts there have been championed by Hernando de Soto, who brought the problems of costly and bureaucratic land tenure systems to the attention of the wider world in his 1989 book *The Other Path*, and more recently in his 2000 book, *The Mystery of Capital*.

27. See HERNANDO DE SOTO, *THE OTHER PATH: THE INVISIBLE REVOLUTION IN THE THIRD WORLD* 12-15 (1989).

to work parallel to the existing registry.²⁸ This registry has since operated with simple and standardized procedures to register titled properties, which allows the time for the processing of transactions to be reduced to just one week.²⁹ The new registry neither requires the use of notaries, a change that substantially reduces the cost to property owners,³⁰ nor does it require proof of property tax payment as a prerequisite for registration—a feature that has encouraged greater participation by households.³¹

In 1996, the Peruvian government set up the *Comisión de Formalización de la Propiedad Informal* (COFOPRI), an independent organization under the Ministry of the Presidency charged with verifying the legality and physicality of informal settlements, issuing titles, and working with the *Registro Praedial* for the registration of those titles.³² The program targeted eight major cities and was supported by a \$38 million loan from the World Bank,³³ with an additional \$19 million to come from the Peruvian national budget.³⁴ The program claims to have issued over one million property titles by the end of 2000,³⁵ and thus the program has been effective in reaching many households relatively quickly,³⁶ although its success is due in part to the fact that it has avoided difficult areas with unclear tenure, conflicts, or invasion on private land.³⁷

28. See SUSANA LASTARRIA-CORNHIEL & GRENVILLE BARNES, *FORMALIZING INFORMALITY: THE PRAEDIAL REGISTRATION SYSTEM IN PERU 1-2* (Land Tenure Ctr. Research Paper No. 131, 1999).

29. *Id.* at 29.

30. *Id.* at 31.

31. *Id.* at 47.

32. Ayako Kagawa & Jan Turkstra, *The Process of Urban Land Tenure Formalization in Peru*, in *LAND, RIGHTS AND INNOVATION: IMPROVING TENURE SECURITY FOR THE URBAN POOR* 57, 63-64 (Geoffrey Payne ed., 2002) [hereinafter *LAND, RIGHTS AND INNOVATION*].

33. *Id.*

34. *Id.* at 64.

35. *Id.* at 65; see also POVERTY REDUCTION & ECON. MGMT. UNIT, WORLD BANK, *PROJECT APPRAISAL DOCUMENT ON A PROPOSED LOAN IN THE AMOUNT OF US \$38 MILLION EQUIVALENT TO THE REPUBLIC OF PERU FOR AN URBAN PROPERTY RIGHTS PROJECT*, No. 18245 PE, at 8 (1998), available at <http://www-wds.worldbank.org> (last visited Feb. 11, 2004) [hereinafter *PERU PROJECT APPRAISAL DOCUMENT*].

36. See Kagawa & Turkstra, *supra* note 32, at 65.

37. One of the unusual aspects of the COFOPRI program is that the properties have been transferred to beneficiaries with no charge for the land itself (although there may be some costs associated with the process, such as surveying).

The operational cost to the Peruvian government of its nationwide titling program is estimated to be \$66 per title, of which twenty percent is recovered from recipients in the form of tax revenue and user fees.³⁸

II. THEORETICAL: BENEFITS AND COSTS

At first blush, it might seem that the formalization of property ownership would be indisputably beneficial. Legal formalization would seem to confer upon the property holder the highest possible level of tenure security, which should be valuable to the owner.³⁹ Further, by removing uncertainty about the holder's claim to the property, formalization should allow the holder to engage in the full range of behaviors we associate with ownership, such as sale, rental, use as collateral, and upgrading investments. While these benefits may all pertain to formalization, this Part points to important subtleties, which should be considered when assessing the magnitude of the benefits and the associated costs of formalization.

A. Benefits of Formalizing Property Ownership

We begin with the most straightforward case. Consider a community in which all properties are owned by households having legal title, except for one irregular plot inhabited by a squatter household (Base Case). Let us also assume that the squatter's property is formally owned by the state, that other land-related markets function perfectly, and that the government is capable of committing that it will undertake enforcement actions in the future despite precedent to the contrary.⁴⁰ Would it be good public policy to grant title to the occupant of the untitled property? There are a number of potential benefits that we can enumerate. Because all other community members have formal title, it is unlikely that an

38. See PERU PROJECT APPRAISAL DOCUMENT, *supra* note 35, at 28-29.

39. Note that, throughout this section, unless otherwise specified, the "owner" means the current occupant of the property. In our cases of interest, this person is likely to be distinct from the person who holds formal legal rights to the property.

40. We return to the commitment point in dynamic considerations below. Briefly, the concern is that rewarding those who squat or invade land with formal title could encourage further squats and invasions in the future unless the government can commit to a policy of zero tolerance.

effective informal system of rights enforcement is available to the solitary extralegal squatter. Pieces of land or the entire property could be claimed by other family members, community members, a land invader, or the state, and the squatter would be vulnerable to these claims.⁴¹ It follows that the squatter household likely would experience substantially enhanced security if it were titled like its neighbors. The value of enhanced security is also likely to increase with property values in the community.⁴² Among the benefits of increased security, therefore, would be the release of time or money otherwise devoted to defending the property.⁴³

By allowing participation in the formal system, the formal title would also permit the occupant to sell the property more easily. Although there is considerable evidence that land transactions can occur in informal settings,⁴⁴ the formalization of property rights may improve the functioning of existing markets.⁴⁵ This is not because formal rights are stronger, but rather because formal rights are easily transferable.⁴⁶ In fact, elsewhere we have emphasized that having stronger rights that are nontransferable may make it more *difficult* for a household to engage in property transactions.⁴⁷ Because a household can neither convey such rights to a buyer, nor

41. See, e.g., Omar M. Razzaz, *Examining Property Rights and Investment in Informal Settlements: The Case of Jordan*, 69 LAND ECON. 341, 344 (1993). Razzaz relates how tribal peoples on the outskirts of Amman, Jordan sold untitled property on the basis of a document called a "*hujja* (proof)." *Id.* In these documents, the seller differentiates between various threats and agrees to protect the buyer from encroachments or invasions by other members of the community or tribe, but explicitly mentions that the seller is not responsible for any actions by the state. *Id.*

42. For an empirical study of the timing of the settlement of the Brazil frontier, see LEE J. ALSTON ET AL., TITLES, CONFLICT, AND LAND USE: THE DEVELOPMENT OF PROPERTY RIGHTS AND LAND REFORM ON THE BRAZILIAN AMAZON FRONTIER 109-10, 127 (1999). See also Gershon Feder, *Land Ownership Security and Farm Productivity: Evidence From Thailand*, 24 J. DEV. STUD. 16, 26-27 (1987) (discussing the increase in productivity caused by enhanced security in Thailand).

43. See ERICA FIELD, ENTITLED TO WORK: URBAN PROPERTY RIGHTS AND LABOR SUPPLY IN PERU 2 (Princeton Univ. Research Program in Dev. Studies, Working Paper No. 220, 2002) (unpublished manuscript, on file with authors). Field argues that titling could have important employment effects in Peru, since she finds squatters devoting significant amounts of labor to protecting their properties. For further discussion, see *infra* Part V.B.

44. See, e.g., PAYNE, URBAN LAND TENURE, *supra* note 11, at 3-10; Durand-Lasserve & Royston, *supra* note 7, at 4-5; Baharoglu, *supra* note 20, at 19.

45. See DE SOTO, *supra* note 5, at 47.

46. See Lanjouw & Levy, *supra* note 13, at 1004-08.

47. *Id.*

credibly commit that the household will not reassert its ownership after a "sale," potential buyers may face great contract uncertainty when transacting with households with strong nontransferable rights. Note, however, that the same feature has the converse effect in the rental market.⁴⁸ Having strong nontransferable rights may improve a household's ability to rent by lowering the likelihood that difficulties are encountered when trying to reclaim property from a renter. Whether renting or selling, however, uncertainty seems more of an impediment when transacting with strangers.

Formalizing property clarifies the boundaries of the property, validates ownership rights, and makes rights in the property transferable with the transfer of a title deed.⁴⁹ All of these features should facilitate transactions. For an owner, the higher price obtained through a formal sale (compared to an informal sale) would be one obvious benefit of titling, as would the mobility that comes with the ability to rent.⁵⁰

In assessing the benefit of improved sale and rental markets, one can draw from general economic ideas of allocative efficiency. Assuming that we can assess the value of each piece of property to each individual, let us consider one property and two individuals. If individual *A* values the property at \$11,000 and individual *B* values the property at \$9000, a sale of the property from *B* to *A* should benefit each because there is a \$2000 surplus that can be split between them.⁵¹ If something were to prevent the transaction—such as the informal nature of property rights—this forgone surplus would represent a cost of the informal system.

Even if the owner had no wish to leave the property so that, in this instance, there would be no benefit from reallocation, we might see an increase in investment activity, both for private benefit and

48. *Id.* at 1008.

49. In a survey of intermediaries, the double sale of the same piece of property by customary authorities was given as the most serious among ten problems in the urban land market of Accra, Ghana. ADARKWAH ANTWI, A STUDY OF INFORMAL LAND TRANSACTIONS IN ACCRA, GHANA 11 (RICS Found., Our Common Estate Paper Series, 2002), available at <http://www.rics-foundation.org> (last visited Feb. 11, 2004).

50. Here we are considering a single property as an example. To the extent that many properties are simultaneously able to transact, we would expect a thicker market to function more efficiently and provide the benefit of enhanced mobility to the broader community.

51. Of course, *B* would then need somewhere else to live. Presumably, this was factored into the \$9000 valuation.

for investment in the broader community. For both types of investment, greater security should increase the landholder's expected flow of benefits from activity undertaken because he anticipates controlling the property and being in the community long enough to enjoy those benefits.⁵²

The degree to which reaping the returns on investments relies upon ownership security depends, in part, on how investments are treated in situations of involuntary transfer. Espen Sjaastad and Daniel Bromley argue that the loss of investment and the loss of use or ownership are not necessarily linked.⁵³ In traditional systems, when land is taken away from a household, compensation is often given for investments made by the expropriated household.⁵⁴ Sjaastad and Bromley point out that this form of compensation is also common practice in ownership disputes in most Western countries.⁵⁵ For instance, Lee Alston and his colleagues explain that squatters in Brazil receive compensation for land improvements if they are evicted.⁵⁶ This sort of compensation would seem much more likely for private investments on the property than for investment of time and money in broader public works. Thus, we might expect the security of title to have a greater effect on social investment than on private investment. One offsetting consideration, however, concerns the extent to which investment in an informal property helps the occupant lay claim to a property. In this context, the formalization of a property could actually *decrease* the incentive to invest. It is not obvious that a decrease in investment with formalization is necessarily undesirable, however. To illustrate this, suppose there were a social convention that occupants with ugly lawn ornaments were the rightful holders of the property. One might see a great deal of time and effort put into the installation of such ornaments which had little other value to the property holder. In such a case, formalization could decrease investment (one would

52. Jean-Phillipe Platteau describes this as the "assurance effect"—an increased likelihood of seeing future gains. He distinguishes it from a "realisability effect"—the benefit of a broader market means investment values can be more fully captured in sale values. PLATTEAU, *supra* note 12, at 131-32.

53. Espen Sjaastad & Daniel W. Bromley, *Indigenous Land Rights in Sub-Saharan Africa: Appropriation, Security and Investment Demand*, 25 *WORLD DEV.* 549, 553 (1997).

54. *Id.*

55. *Id.*

56. ALSTON ET AL., *supra* note 42, at 88.

no longer need the ornament) but increase the occupant's well-being.

Continuing with the simple Base Case, there are other benefits to consider. With formalization, the newly titled landholder could participate directly in the formal service markets associated with property, including basic utilities such as water and electricity. Such services are often denied to untitled landholders, forcing them to rely upon less efficient and unsafe modes of delivery. For example, irregular settlements often purchase water delivered by tanker trucks and illegally tap into the electricity grid. Once titled, the property could be included more easily in the tax system—a cost to the landholder, but a benefit to the state.

A final, potentially important benefit is that formalization of property may allow the occupant to obtain loans from formal credit institutions. An untitled property owner typically would have access to informal sources of credit (e.g., friends, family, and local money-lenders). However, having a titled property to offer as collateral might make him better able to obtain formal loans with lower interest rates.⁵⁷ Better access to credit and at lower cost could facilitate investments of all sorts. There is one important caveat to the benefit of credit access, however: If the government is subsidizing credit, the expansion of borrowing with formalization will increase the distortion associated with the subsidies.⁵⁸

B. Cost of Formalizing Property Ownership

Against these benefits would be the cost of granting formal title. In economic terms, the relevant costs are the additional labor and materials devoted to surveying the area, the production and recording of the title, and the legal adjudication of disputes over property. In the presence of an existing system, these would be

57. There is a large body of literature examining interest rates in informal and formal credit markets and the role of credit. See, e.g., *THE ECONOMICS OF RURAL ORGANIZATION: THEORY, PRACTICE, AND POLICY* pt. 1 (Karla Hoff et al. eds., 1993).

58. See, e.g., Baharoglu, *supra* note 20, at 18 box 7. Suppose, for example, that the government pays 25% of the interest cost of loans. This will expand the number of loan transactions beyond the socially efficient level. At the margin, borrowers will be undertaking projects that have a 7.5% rate of return, for example, when the true cost to lenders is 10%. In general, there is a societal loss on each transaction for which the benefit is less than the cost. If formalization expands the number of transactions, this societal loss increases.

minimal. Any costs would accrue to the individual or the state, depending on the amount the state would charge the landholder for acquiring the title.⁵⁹ Quantifying the magnitudes of these benefits and costs is challenging, but there seems little doubt that titling the single household in our Base Case would be beneficial.

The purpose of the Base Case is to contrast it with more complicated and realistic alternative situations. The complications can come through the relaxation of any of our assumptions. For instance, in an irregular settlement, many, if not all, properties may be untitled and the implementation of a formal system of property rights may well replace a preexisting and possibly well-functioning informal system; benefits may not accrue when accompanying markets do not function well; there may be multiple, preexisting, legal owners of the land that has been settled or developed informally, some of whom are private; the government may be unable to refrain from future titling, thereby encouraging additional squatting. We consider each of these possibilities.

1. Preexisting Informal Systems

We begin with the likelihood that the introduction of a formal system will replace an existing informal system of property rights. A recurring theme in the literature emphasizes that tenure security does not require individual freehold titles. It has further been noted that holding property titles may not be sufficient to deliver security. Lee Alston and his colleagues also emphasize the political aspect of property rights: Both the assignment of rights and their effective enforcement are critical to ensuring legal security of ownership.⁶⁰ They point to the Brazilian constitutional provision that land must be put to beneficial use as a source of insecurity even for those who have legal title.⁶¹ Knowing this provision, Brazilian squatters invade titled property in an attempt to expropriate land on the basis of underutilization, especially undeveloped forests.⁶²

Ann Varley discusses a variety of ways that tenure security may be enhanced that do not involve legalization, drawing from case

59. Efficiency would argue for charging the true marginal cost.

60. See ALSTON ET AL., *supra* note 42, at 17.

61. See *id.*

62. See *id.* at 17, 20.

studies from a variety of countries.⁶³ For example, contrary to what was suggested in our Base Case, connection to public infrastructure may not require a property to be titled.⁶⁴ Provision of infrastructure connections to properties in an irregular settlement by the government may also provide a strong signal that the authorities have accepted the settlement and the division of property therein.⁶⁵ This signal may give residents the perception that they have been regularized. Improvements in infrastructure provided by the government have often (although not always) been followed by substantial increases in housing investment.⁶⁶ Tax collection and the issuance of trading licenses have had a similar effect.⁶⁷ In general, what matters are people's convictions about government intentions, and these can be signaled by the availability of services, issuance of certificates, public statements of intent, and the passage of time.⁶⁸

Not only may there be other ways to increase tenure security besides formally titling residents of irregular settlements, but also the process of introducing a formal title system in an area may actually increase uncertainty.⁶⁹ In particular, if one takes an area with a long-standing and well-understood customary property rights system and overlays a formal state titling program, it can make residents less secure because they are unsure which system will apply in any given situation. There are other considerations that arise related to the process of change from one system to another. Violent conflict can result from uncertainty about how the government will view the claims of owners versus squatters.⁷⁰ In a study of property rights and indigenous groups, Roger Plant and Soren Hvalkof point out that a titling process that individualizes rights may damage both culture and governance in groups previously organized along more collective lines.⁷¹

63. See Ann Varley, *The Relationship Between Tenure Legalization and Housing Improvements: Evidence From Mexico City*, 18 DEV. & CHANGE 463, 465-69 (1987).

64. See *id.* at 466-67.

65. See *id.* at 466.

66. See, e.g., *id.*

67. See *id.* at 468.

68. See *id.*

69. See, e.g., PLATTEAU, *supra* note 12, at 121-82.

70. See ALSTON ET AL., *supra* note 42, at 17-18.

71. See PLANT & HVALKOF, *supra* note 21, at 4.

2. *Poorly Functioning Accompanying Markets*

Another class of complications involves other aspects of the functioning of markets. Deniz Baharoglu notes that titling may not improve the functioning of housing markets if other impediments remain.⁷² Construction codes, land development, taxes, and sales regulations can all limit land transactions.⁷³

Michael Carter and Pedro Olinto argue that if credit markets do not function well, then hoped-for investment benefits may not be realized.⁷⁴ Further, they argue that evidence of increased land-related investment may be deceptive.⁷⁵ If investment associated with a newly formalized property is merely a shift from other investments, total investment may not feature a corresponding increase.⁷⁶ Finally, Geoffrey Payne notes that a small-scale titling program raises the possibility of market distortions.⁷⁷ If there is a substantial unfulfilled demand for titled properties among the middle class, one could encourage a boom in land values.⁷⁸ This would seem desirable from the perspective of landholders, but others have argued that such speculation works to the disadvantage of the poor.⁷⁹ Further, distributional arguments along these lines would require a careful understanding of the wealth of existing landholders, newcomers to the booming market, and renters (who would certainly seem to lose from higher values and who were the poorest group in our Ecuador survey described below).

3. *Preexisting Ownership*

In our Base Case, we ignored the problem of preexisting ownership. In practice, the benefit to the occupant of increased security

72. See Baharoglu, *supra* note 20, at 26-27.

73. See *id.*

74. Michael R. Carter & Pedro Olinto, *Getting Institutions "Right" for Whom? Credit Constraints and the Impact of Property Rights on the Quantity and Composition of Investment*, 85 AM. J. AGRIC. ECON. 173, 174 (2003).

75. See *id.*

76. See *id.*

77. See PAYNE, URBAN LAND TENURE, *supra* note 11, at 24-25.

78. See *id.*

79. Baharoglu, *supra* note 20, at 27.

would be matched by the loss to the previous owner of the possibility of reclamation. Whether this nullifies the benefits of enhanced security depends on the relative weights one assigns to the well-being of past and present owners.⁸⁰ The question of whether the newly formalized occupant or a third party would need to offer compensation to the previous owner clearly affects the distribution of benefits. The calculus may become further complicated when third parties become involved and capture some of the benefits of a land invasion. The authors previously have presented evidence of payments to organizers in Ecuador.⁸¹ Such organizers may recruit invaders and may be allied with government officials who provide political cover.⁸² The extent to which the gains from formalization are captured by the land occupants or by the organizer would depend on the magnitude of the payments required and the extent to which any payments are for services provided.⁸³

4. *Insufficient Government Resources*

Our Base Case assumed a small-scale program. Costs may differ with a broader titling effort. On the one hand, there could be economies of scale—lower per-property costs—where surveyors take on whole neighborhoods and clerks develop the requisite skills for processing deeds. On the other hand, a larger program would require a sustained political commitment and a degree of administrative resources that may be difficult to commit. Most projects call for cost recovery through fees, but this is rarely achieved.⁸⁴

A final complication concerns the dynamic effects of a titling program. Our initial example considered a case in which the state would not repeat its actions. In fact, the willingness of a state to

80. A related issue of particular relevance in rural areas is the fact that formalization may bundle together rights previously spread across a number of individuals (e.g., rights to use, rights to sell). Thus, greater security for the title holder may mean greater insecurity for those who previously had some claims on the land under an informal system. See PLATTEAU, *supra* note 12, for examples.

81. See Lanjouw & Levy, *supra* note 13, at 992.

82. See *id.* at 992 n.8.

83. See *id.* at 1013.

84. See CITIES IN DEVELOPING COUNTRIES: INTEGRATION OF IRREGULAR SETTLEMENTS: CURRENT QUESTIONS IN ASIA AND LATIN AMERICA 18-22 (Valerie Clerc et al. eds., Simone Castro Alves et al. trans.) (Pratiques Urbaines No. 12, 1995) [hereinafter CITIES].

legitimize a land invasion will be considered when other individuals are deciding whether to invade land. Not only might faster and cheaper titling encourage repeat squatting or more migration from the countryside, it also signals to landowners that they may gain by illegally subdividing their land.⁸⁵ Thus, one must consider not only the costs and benefits of an existing land transfer, but also the encouragement of future invasions, which may lead to further transfers or even to conflict.

In general, we might think that such land invasions are a bad way to settle property. Often invasions occur in marginal areas where the provision of services may be more costly and where conditions are poor or even dangerous; and it is always more difficult to put in infrastructure after housing has been built.

A preference for a more organized disposition of land underlies most systems of zoning and housing regulation. It is not clear whether allowing urban land development through a process of irregular settlement or through a process of planned public housing is more beneficial for the poor. While public housing would seem to overcome the infrastructure issues and conflicts described above, in practice it often has been too expensive for the poorest members of society. An advantage of irregular settlements is that they are able to begin with the smallest of investments and build up over time.

In the next Part, we describe empirical research that quantifies some of these effects.

III. EMPIRICAL ISSUES

In this Part we consider some empirical studies that provide evidence regarding the various costs and benefits of title that were outlined in the previous Part. Before beginning, however, we briefly discuss some basic statistical problems and issues of interpretation that arise in this context.

An important statistical concern is the so-called "endogeneity" problem. Suppose, for example, that one is interested in the relationship between security and title status. An endogeneity problem arises when both a household's degree of security and its title status are related to some household or community characteristic that is

85. See LAND, RIGHTS AND INNOVATION, *supra* note 32, at 5-6.

not observed in the data. For instance, it may be that some households have a characteristic that makes them particularly vulnerable to being pushed off their property by neighbors—but we do not have the information that would tell us which households these are. It may also be that the more vulnerable households make an effort to obtain title because they stand to gain more from having legal support for their property claims. If so, a direct analysis of the data would underestimate the positive association between title and security because it is exactly the most insecure households that have chosen to obtain title. Thus, the quantitative effect of titling estimated from the data would not reflect the actual effect that title would have if a *randomly* selected group of households were to be given title.

To give a concrete example, suppose that at some initial period there are two groups of households with untitled properties. One group has a security level of one and the other group has a higher security level of two. Because the first group feels particularly vulnerable they obtain title, which has the huge benefit of doubling their security level to two. If at this point one were to analyze, on the basis of these two groups, whether having title to property enhanced security, one would mistakenly conclude that title had exactly no effect because both the titled and untitled households had the same *ex post* security level of two.

Endogeneity is a particular concern in this context because often households influence whether they have title, even if they do not have complete control of the titling process. This makes it likely that title status is at least partially related to important, and unobserved, characteristics of the household, its property or the larger community. Endogeneity can be a concern in the analysis of many of the roles of property rights, beyond their role in improving security. For example, households with better investment opportunities may be more likely to obtain title because stronger property rights complement their investment activities. If so, an analysis of household investment and title would tend to overstate the benefit of title, since higher investment among the titled group could result not just from the fact that being titled has increased the returns on investment, but also from the fact that the group of titled households had more productive investment opportunities initially.

Endogeneity also may be a concern with other variables used in the analysis that are related to claims over property. For example, the length of time that an untitled resident has lived in a neighborhood is a variable that one might expect to be related to unobserved characteristics of that neighborhood (e.g., social cohesiveness) that are, in turn, related to security and investment.

As is clear from the examples, if one fails to deal with this statistical issue, estimates of the effects of formalization could be quite misleading with biases going in positive or negative directions. In the studies discussed below, the authors have taken a variety of approaches to avoid endogeneity problems. We note these as the evidence is presented.

A second empirical issue—one that is often raised in studies of property rights and investment—is termed “reverse causation.” The basic observation is that when a household invests in a property, it often serves to bolster the household’s ownership claims in the eyes of the community or government. This recognition then makes it easier for the household to obtain formal rights over the property. Thus, one might find a strong positive relationship between investment and legal rights, but it would be investment “causing” the rights rather than the fact of more secure rights encouraging investment. Again, authors have dealt with this issue in various ways and we note them below.

A third issue is raised by the use of hypothetical or perception-based questions. We use such questions, for example, as a way to avoid endogeneity. Ideally one would like to avoid endogeneity by observing households where one randomly selected group has been allocated formal property rights and another group has not (i.e., where there is no choice element on the part of either the households or the government). However, this is not usually possible given the way in which titling proceeds. The alternative approach used in our study of Ecuador is to ask the same households hypothetical questions about their property with or without title. This raises the question of how to interpret the responses to questions about perceptions and expectations. Several of the studies discussed below, in addition to ours in Ecuador, use responses to this form of questioning to obtain insights about the use of property. Such responses are admittedly subjective, which raises a concern about noise in the data (i.e., that the responses are not very

accurate) and the potential for bias as compared to other recorded information. A drawback of having noise in the data is that it may make it difficult to detect relationships that are actually there. If, in spite of this, statistically significant relationships are found, then the fact that there may be noise is of less concern.

Potential biases introduced by asking perception questions may or may not be an issue. On the one hand, there may be a problem if respondents intentionally misrepresent their views. This might be a concern, for example, if the surveying organization looks to respondents as a potential source of funding or other advantage. It should be acknowledged, however, that misrepresentation is also a problem confronted when collecting any sensitive "objective" data (e.g., income).

If respondents are not being deceptive, the potential for bias must be considered in the light of what one wants to know. It is not at all obvious that information about households' perceptions should be considered weaker than more objective data. When analyzing the effect of different types of ownership claims on security, for example, if perceived security differs systematically from actual security, it is perceptions that give the better variable for understanding households' sense of well-being—their "utility."⁸⁶ The true ability of a household to transact in the market will be influenced by that household's perceptions, in that a pessimistic household may not even enter the market. Expectations regarding property values may give a better indication of the utility that households obtain from their properties than actual property values, particularly for the many survey households that have no intention of entering the market.

86. Others have raised this point in the particular context of household security. William Doebele argued that tenure security is a matter of perception rather than a legal category. See William Doebele, *Concepts of Urban Land Tenure*, in URBAN LAND POLICY: ISSUES AND OPPORTUNITIES 63 (H. B. Dunkerly ed., 1978). Following this line of argument, Leland Burns and Donald Shoup use residents' stated feelings of security, rather than objective criteria, to examine the effect of tenure security on housing investment. Leland S. Burns & Donald C. Shoup, *Effects of Resident Control and Ownership in Self-Help Housing*, 57 LAND ECON. 106, 108-09 (1981).

IV. OUR ECUADOR CASE STUDY

With the aim of estimating some of the effects of different sources of land ownership claims, including legal title, we designed and fielded household and community surveys in Guayaquil and Quito, Ecuador's two largest urban centers. In 1993, just a few years before our survey, a property titling program had been initiated in Guayaquil by the Department of Legalization and the Department of Land and Parochial Services. According to the Mayor's Office, the number of titled properties that had been measured and surveyed five years later was over 180,000, although only a third were "in process" or titled.⁸⁷ After interviewing a range of participants in the city, Blake Rawdin ascribed the delay in issuing titles on the surveyed properties to the fact that various interest groups, in particular community bosses but also city politicians, lose power and patronage as households are titled.⁸⁸

We conducted our Guayaquil survey in 1996 and included 1921 individuals in 400 households resident in twenty communities. Our interest was in both the effects of title and how the role of legal title depends on other sources of property rights. We thus selected the communities on the basis of their age and on the basis of the share of households possessing formal title in order to ensure that we would encounter variety in property rights arrangements in our data.⁸⁹ The communities selected were poorer than the Guayaquil average, with monthly per capita consumption of \$75 in 1995 as compared to \$143 city-wide.⁹⁰ Within the communities, households were selected randomly.

Households in Guayaquil obtained their property in a number of ways, as shown in Table 1. Only twenty-two of the households surveyed purchased their properties with title at the time that they first occupied the land ("purchasers"). Far more commonly, lower-income households began their occupancy of public or private land

87. Blake J. Rawdin, *Urban Land Invasions and Social Welfare: Guayaquil, Ecuador* 57 n.61 (1999) (unpublished Senior Essay, Yale University) (on file with authors).

88. *Id.* at 58-59.

89. The survey made no distinction as to whether a title was registered.

90. Figures are in 1996 U.S. dollars. The population statistic was based on *Encuesta de Condiciones de Vida*, ECV (1995), available at <http://www.worldbank.org/lsm/country/ecuador/dox/metodox.pdf> (last visited Feb. 4, 2004).

as squatters without title (92% in our sample). Over time, many proceeded to obtain title. Our designation of a squatter household as "owning" a property does not imply that it holds title; it simply reflects the respondents' claim to be the owner. Similarly, our designation of a household as a squatter household does not imply that the property remained untitled.

Table 1
Guayaquil: Types of Survey Households

<u>Household Type</u>	<u>Title Status</u>			
	<u>Total</u>	<u>Titled</u>	<u>Untitled</u>	<u>Unknown</u>
Purchasers	23	23	--	--
Squatters	254	112	142	--
Non-owners	123	73	33	17
All Households	400	208	175	17

The survey in Quito was fielded in the spring of 1998. We had less information from the municipality to use in choosing the communities, so they were selected on the basis of distance from the city center and income level. Questionnaires were completed by 402 randomly chosen households in twenty communities. There were some important differences from Guayaquil. First, in this survey the sampling frame was restricted to owner households. When a household was found to be renting, it was replaced by a new, randomly chosen household until an owner was found. Second, the Quito respondents were, on average, somewhat wealthier, with a monthly per capita consumption of \$134 (1996 U.S. dollars). Third, only two of the twenty communities were originally settled via a land invasion and only one of these was settled with the assistance of an organizer (versus sixteen invaded and nine with an organizer for Guayaquil). Not surprisingly, given that we had far fewer invaded areas in the Quito data, a larger percentage (45%) of

the owners were found to have purchased titled properties directly. Of the 223 squatting households, 113 were titled at the time of our survey. Finally, our Quito communities were considerably older than those in the Guayaquil sample: thirty-eight years versus twenty-three years.⁹¹ Because of the different methods of selecting communities in Guayaquil and Quito, we are unable to say whether these differences are representative of the full populations of the two cities.

The surveys in both cities consisted of several sections. One section of the household survey was devoted to questions regarding respondents' tenure security, their ability to make property transactions, and property values. Another section gathered detailed information about characteristics of properties and communities. Other sections were adopted directly from the World Bank's 1995 Ecuadorian Living Standards Measurement Survey.⁹² These provided information on household demographics, wage and home business income, and household consumption and assets. Each household was asked to designate a person particularly knowledgeable about the community. The most frequently identified person was then given a community questionnaire in order to obtain information about the origin of each community and details about current characteristics.

Because the survey was purposefully designed, we were able to address different aspects of property rights in some novel ways. First, we were able to construct a variety of variables to capture different sources of informal rights over property. Some of the variables were at the level of the household. The number of years that a household had been resident on a property, whether the household had any adult male members, and whether the household had paid a local boss for its property were variables found to be particularly important in the subsequent analysis.⁹³ Other variables designed to capture sources of informal rights were at the

91. It may be that some of the older communities in Quito were actually settled by invasions initially. It was so long ago, however, that the community respondent did not know it, and so long ago that most current residents were purchasers of properties for which the original squatters or their descendants had obtained title successfully.

92. For a description of the data, see <http://www.worldbank.org/lsms> (last visited Feb. 4, 2004).

93. See discussion *infra* Parts V, VI, and VIII.

community level. Whether the community was founded with the involvement of an organizer, the percentage of households that paid a boss for their properties, and the age of the community were variables found to be empirically important.⁹⁴

In addition to developing variables that captured some elements of informal rights, we also were able to develop some very specific variables to measure the breadth of the property market available to different types of owners and the influence of rights on security and property values. For example, we distinguished between households' ability to rent or to sell property to different types of buyers—whether a family member, someone from inside the community, or someone from outside the community. We were also able to ask households to assess the value of their property under a counterfactual title status (e.g., untitled households estimated the value of the land with title). This allowed us to address the statistical problem of endogeneity. These variables are discussed in more detail in the following Parts.

V. TENURE SECURITY

In this Part we consider evidence regarding the benefit of title in enhancing households' sense of tenure security.

A. *Evidence from Ecuador*

The role of title in enhancing ownership claims and the fact that physical possession can provide an alternative are supported by two findings in our data from Guayaquil. First, we found titled properties were more than twice as likely as untitled properties to be occupied by someone other than the owner. If the physical presence of the owner is an important alternative to title in ensuring ownership rights, then this is precisely what one would expect. Second, only 24% of the non-owners who paid rent occupied untitled properties, while 37.5% of those who did not pay rent, who were likely to be relatives or friends of the owner, occupied untitled properties. Although not statistically significant, this difference also suggests that owners without title were reluctant to be absent

94. Definitions of variables are found in the Appendix Table A.1, *infra*.

from their properties.⁹⁵ If they were going to be absent, they preferred to "lend" their properties to relatives and friends rather than to rent them to strangers.

Most of the untitled owners in our survey in Guayaquil claimed to be making some effort to obtain a title, with all but two giving improved tenure security as the primary or secondary reason.⁹⁶ To the extent that these households felt insecure, however, it did not seem to be due to fears of eviction, at least in the short term. When those same households were asked their views of the likelihood of receiving an eviction notice in the coming year, only 22.5% allowed for any chance of eviction. It thus appears that insecurity must come from longer-term concerns about eviction or fears of losing their properties through informal pressure. Poor households also may be very risk averse, making even a low probability of eviction a disturbing situation.⁹⁷

While the short-term threat of eviction was judged to be low, households differed in their willingness to state that eviction was "impossible." In particular, untitled squatters in a community founded with an organizer were considerably more likely to view eviction as "impossible" (83%) than those in a community founded without an organizer (58%).⁹⁸ This suggests that organizers are able to protect squatter communities from government threats. The benefit of a boss was particularly strong in communities where he had been paid by a large percentage of the squatters. Untitled households residing on a property for many years reported more confidence that eviction was impossible, as did those in communities far from the city center or where the invasion occurred on publicly owned land.

95. The importance of maintaining a physical presence is particularly important in the early days of a settlement. Rawdin explains how organizers in Guayaquil sold plots conditional on a limit on the time it could be left vacant. Rawdin, *supra* note 87, at 35. If a household failed to occupy the property within the stipulated time it would revert to the organizer for resale. *Id.*

96. This was an open question allowing multiple responses. The most common were to increase security, to prolong the stay on the property, to avoid being forcibly removed, and to avoid land being taken by the municipality.

97. This point is formalized in GERSHON FEDER ET AL., LAND POLICIES AND FARM PRODUCTIVITY IN THAILAND 31, 37, 75-79 (1988).

98. See *infra* Table 2.

Table 2
Contributions to the Security of Untitled Squatter

<u>The Likelihood of Eviction</u> <u>in the Next Year is:</u>	<u>In Community</u> <u>with an Organizer</u>	<u>Without</u>
Impossible	83.0	58.0
Not Very Probable	13.5	39.0
Other	<u>3.5</u>	<u>3.0</u>
	100.0 %	100.0 %
Respondents	111	31

A household's length of residence is a good candidate for being endogenous in this estimation and therefore the importance of the variable has two interpretations. It may be that length of tenure has a direct effect on security as others in the community increasingly view the household as the legitimate owner of the property and legal claims are strengthened.⁹⁹ It also may be, however, that length of tenure is associated with an unobserved characteristic of the community. For example, if the government does not care about squatters in some parts of the municipality, then it will not evict them and they will also feel secure.¹⁰⁰

99. A household may obtain legal rights through adverse possession if it resides on a parcel of land for a sufficient period of time. For a discussion of this legal doctrine, see JOHN P. DWYER & PETER S. MENELL, *PROPERTY LAW AND POLICY: A COMPARATIVE INSTITUTIONAL PERSPECTIVE* 76-93 (1998).

100. For further discussion of other characteristics affecting tenure security and econometric results see Lanjouw & Levy, *supra* note 13, at 999-1011.

B. Evidence from Elsewhere

The results for Ecuador suggest that, while untitled squatters feel somewhat vulnerable to eviction or other pressures, they do have access to some sources of tenure security. These may come at a high cost, however. For example, untitled squatters were less willing to rent their homes, suggesting that it might be important for family members to maintain a physical presence on or near the property. If using informal means to identify and enforce property claims requires the investment of time and other resources, formalizing ownership rights may lower the cost of achieving security of tenure.¹⁰¹ One would then expect to see titled households expending fewer resources to maintain ownership and, at the same time, enjoying a heightened sense of security.

A recent study by Erica Field explored this aspect of formalization in detail.¹⁰² Field's hypothesis was that untitled households will keep some of their adult members at home during the day in order to protect their ownership claims against eviction or invaders. This, in turn, will cut back on the households' labor income, an outcome which should be recognized as a cost of enforcing ownership rights when those rights are informal.¹⁰³

Field's study used a 2000 survey of 2750 urban households resident in the eight target cities of the COFOPRI titling program in Peru.¹⁰⁴ This titling program reached different areas only over time, so Field was able to compare the labor market behavior of eligible households in neighborhoods with the program to that of eligible households in neighborhoods where the program had not yet arrived at the time of the survey.¹⁰⁵ Other differences between the two groups of neighborhoods—differences not due to the titling program—are accounted for using households in each group that one would not expect to be affected by the program because they

101. Of course, it may also be costly for a titled household to take advantage of formal enforcement mechanisms. We found in Guayaquil that even in our formally settled and titled communities 15% of respondents named the mediation of a community leader as the primary mode of dispute resolution.

102. See FIELD, *supra* note 43.

103. *Id.* at 2-3.

104. See *supra* notes 32-38 and accompanying text.

105. FIELD, *supra* note 43, at 14-21.

were titled before it began.¹⁰⁶ This variation in timing and across pre-program title status makes it possible to isolate the change in labor market behavior that is due to titling rather than other characteristics.¹⁰⁷ In other words, this method avoids endogeneity problems.

The survey suggests that the titling program did succeed in increasing the perceived security of households.¹⁰⁸ When asked the question, "Do you consider your dwelling currently at risk of eviction/invasion?" households untitled at the start of COFOPRI were 25 percentage points more likely to say that they were at risk than the titled households if they were in neighborhoods that the program had not yet reached.¹⁰⁹ In neighborhoods with the program, however, the difference dropped to just six percentage points.¹¹⁰ It should be noted, however, that, just as in Ecuador, there was a high level of security even among untitled households in Peru. For example, a baseline survey of residents in 2000 found that 47% of those with no documents rated themselves as "secure," rising to 78% of households with a sales document.¹¹¹ This confirms other studies that have found high levels of security among untitled households. For example, in rural Thailand, where evictions by the government were rare, untitled squatters on government land did not view security as the most important reason for obtaining a title.¹¹² Rather, access to formal credit was viewed as the main advantage.¹¹³

Field considered three ways in which a desire to protect their dwellings might limit the labor market activity of untitled households.¹¹⁴ The first was a cutback in the total number of labor hours as members stayed home to guard the property. Field estimated that soon after titling, a household increased its total labor, on average, by 16.2 hours per week.¹¹⁵ Taking into account a number

106. *Id.* at 16-18.

107. *Id.*

108. *Id.* at 22-23.

109. *Id.* at 22, 43, tbl.3b.

110. *Id.*

111. Baharoglu, *supra* note 20, at 20 box 9.

112. FEDER ET AL., *supra* note 97, at 37.

113. *Id.*

114. FIELD, *supra* note 43, at 3.

115. *Id.*

of ways in which this direct estimate might be understating the effect of titling, Field gave an adjusted estimate of the longer-term effect of closer to forty hours per week.¹¹⁶ She also found that it was smaller households that increased their labor hours the most as a result of having a title and that the biggest change was in male employment.¹¹⁷ Male household members, being better able to protect the home against potential invaders, were freed for work when protection was no longer necessary.¹¹⁸

One way to earn income and watch a house simultaneously is to have a home business. Thus, Field considered whether, once titled, households take advantage of the greater freedom by moving to employment in better jobs outside the home.¹¹⁹ Indeed this is what she found: The probability of owning a home business was almost 50% lower in the program neighborhoods after some time is allowed for adjustment.¹²⁰

Finally, Field noted that if untitled households feel constrained to keep one or more adults at home, they may also feel compelled to send children out as income-earners in place of the adults.¹²¹ If this were so, then one would expect to see a decrease in child labor among titled households. The data supports this suggestion. The estimated results suggest that in smaller households, the probability of sending a child out to work is about 28% lower in neighborhoods reached by the titling program.¹²²

The need to increase informal security may directly engage labor—that is, beyond maintaining a physical presence. In a survey on the Brazilian frontier, Lee Alston and his colleagues found that seventy-one of eighty-eight responding households indicated that keeping clear the boundaries of their claims was the most important activity in maintaining property claims. Respondents said that, on average, this activity took about one week per year of labor.¹²³

116. *Id.* at 24.

117. *Id.* at 27.

118. *Id.*

119. *Id.* at 36.

120. *Id.* at 29.

121. *Id.* at 28.

122. *Id.*

123. ALSTON ET AL., *supra* note 42, at 111-12.

Omar Razzaz gives another example of households investing labor and other resources to secure informal property rights. He describes a situation in Amman, Jordan, where tribal people who were longtime residents of state land located on the outskirts of the city were denied title because they never had cultivated the land.¹²⁴ Given a surge in demand for the land coming from the growing urban population, the tribal people began to subdivide and sell the property informally. The process led to periods of violent confrontation between the government and the arriving settlers and tribal inhabitants. During one period when the state was actively demolishing homes, the criterion used by the government was to leave intact houses that had a permanent roof.¹²⁵ Thus, frantic construction occurred during the government workers' off days so that new homes could be built of solid materials to the point of having a roof in a day or two.¹²⁶ This is also a good example of housing investment leading to security of tenure rather than the other way around (i.e., "reverse causation"). Households were able to reduce their probability of eviction, but at the cost of investing greater time and resources in their initial home than they may have chosen to invest otherwise.

While considerable evidence suggests that investment in housing and an active physical presence help to maintain informal property claims, their importance varies. For example, Allyson Thirkell, in a study of informal settlements in Cebu City, the Philippines, found that 23% of the households acquiring properties in the study areas waited at least six months before building on and occupying their sites.¹²⁷ Six percent waited over two years.¹²⁸

VI. THE ABILITY TO TRANSACT

In this Part we consider how title status affects the ease with which property may be bought and sold or rented. As discussed in Part II, potential buyers face greater contract uncertainty when

124. Razzaz, *supra* note 41, at 343-46.

125. *Id.* at 346-48.

126. *Id.* at 348.

127. Allyson J. Thirkell, *Players in Urban Informal Land Markets: Who Wins? Who Loses? A Case Study of Cebu City*, 8 ENV'T & URBANIZATION 71, 81 (1996).

128. *Id.*

transacting with households that have strong but nontransferable rights, thus making sales to strangers more difficult. On the other hand, having strong nontransferable rights may make it easier to rent by reducing the likelihood that difficulties will be encountered when trying to reclaim property from a renter. Thus, a differential effect of nontransferable rights in sale and rental markets can provide evidence of transaction uncertainty impeding the operation of property markets in the absence of legal title.

A. Evidence from Ecuador

To investigate this aspect of title, our surveys asked each property owner several sets of questions regarding his ability to sell the property or rent the entire house. For example, we asked whether the household would be able to sell its property to a stranger and, if not, whether it would be able to sell to a relative or friend.¹²⁹

We first investigate whether transfer uncertainty is important in this context by looking at two simple relationships in the data from Guayaquil. If there is no transactions uncertainty, it is as though every buyer is a friend or family member. In this case, stronger rights have a symmetric effect on the ability to sell and rent. In such a setting, one would expect households to respond that they are either able both to sell and rent, do neither, or if they can do only one, state consistently the type of transaction that is easiest in this environment. By contrast, if transactions uncertainty is an issue, stronger nontransferable rights have opposite effects in sale and rental markets. On this account, one might expect some households to respond that they are able to sell but not rent, and others to state the opposite. We see in Table 3 below that almost a quarter of our sample households stated that they were able to transact in only one market, with a statistically significant percentage on each of the off-diagonals. This pattern is consistent with strong but nontransferable rights creating transfer uncertainty.

129. The questions distinguished between strangers inside versus outside the community. Households rarely indicated any difference between the two, however, so we reclassified the responses as either being able to transact with an outsider, family or friends, or no one.

Table 3			
Ability to Contract with an Outsider			
Percentage of Sample			
		Can Sell:	
		Yes	No
Can Rent:	Yes	17%	5%
	No	16%	62%

We next begin by assuming that the twenty-six households with no adult males are less able to assert their ownership claims in the absence of other authority (i.e., they have relatively low non-transferable rights). If this assumption is correct, and transfer uncertainty is a concern, we make the following predictions: Households with no males should find it easier to sell; they are less secure and as such obtain less benefit from the property themselves and therefore will sell for a lower price. These households should have a particularly strong advantage in sales to outside buyers because, in addition to being less demanding about price, they also engender less transfer uncertainty. In our sample, 52% of households without males reported that they would be able to sell their property to a friend or family member, versus 35% of households with an adult male. The difference grows to 52% versus 29% when asked about sales to outsiders. As with sales, households with no males should find it easier to rent to friends and family, but they may have more difficulty renting to outsiders. When asked about rental of the whole house, 38% of households without males said that they could rent to a friend or family member versus only 30% among households with males. When asked about rental to outsiders, however, the advantage of female-only households almost disappears: 21% of female-only households say that it is possible, versus 19% for households with males. Thus, the pattern of household responses is consistent with the suggestion that

transactions uncertainty is a real impediment to households engaging in land transactions.

In an environment with transactions uncertainty, we expect that a household with stronger transferable rights over its property will find it easier both to sell and rent to outsiders. To examine this hypothesis, we construct a dependent variable that has a value of one if the household can transfer its rights in any form, either by renting out the entire house or by selling it, and a value of zero otherwise. In all, only 38% of the sampled property owners reported that they would be able to contract with an outside buyer, with an additional 14% able to contract with a relative or friend.

A probit analysis allows us to control for many features simultaneously.¹³⁰ We examine the possible endogeneity of a household's title status using a two-stage procedure (instrumental variables). In the first stage, a model of title status is estimated using variables that are not endogenous, and the title status of each household is predicted using this model. In the second stage, the probit model for the ability to transact is estimated using predicted rather than actual title status.¹³¹ The results indicate a number of variables that have a significant influence on the ability to transact. In particular, the estimates show that the age of the community in which a household resides, the involvement of a community organizer when the community was established, and the possession of a property title are very effective substitutes for one another. In recently settled communities without an organizer, for example, having title increases the probability of being able to transfer by 82 percentage points. Thus, in the absence of title there appears to be considerable uncertainty about ownership claims in very new and disorganized neighborhoods. The benefit of title falls substantially on communities founded through organized invasions: The involvement of a community organizer lessens the positive effect of title by 32 percentage points. The benefit of title also falls

130. Standard regression analysis assumes that the dependent variable is continuous. If it takes on discrete levels, this implies a different distribution of the error term. A probit analysis controls for this different distribution in the case of a binary dependent variable. One difference from standard regression analysis is that with a probit, the predicted effects of a change in an independent variable depend on the values of other independent variables.

131. See Lanjouw & Levy, *supra* note 13, at 1004-08, 1015, for the full set of probit results and details. Tests show that endogeneity is not an issue, so the reported results are for the uninstrumented equation.

as communities become better established: Title contributes only half as much (40 percentage points) to a household's ability to transact once its community is eighteen years old. In sum, it appears very important to have some source of transferable rights, but it is not necessary that they be formal.

When investigating nontransferable claims, it becomes important to distinguish between the ability to sell and the ability to rent, so we also consider the two types of transactions separately. Consistent with the simpler findings reported above, in probit estimations that control for many characteristics we find that, among *untitled* households, having adult males *decreases* the likelihood that a household will be able to sell its property by 45 percentage points. For these households, having a title is very important in improving their ability to sell. On the other hand, households with adult males are more likely to state that they are able to rent. Having title makes renting even easier for those households, but with rental it is the female-only households that gain most from having title. None of the fourteen female-only households without title felt able to rent its property.

In our controlled estimations we also find that when a titling program is underway in a community, households are less likely to say that they can sell their properties (down 10 percentage points) and far less likely to say that they can rent (down 18 percentage points). It seems that households do not want to be absent from their properties when the government is about to allocate formal claims, a finding that again supports the idea that physical possession of a property is an important contributor to ownership rights.

B. Evidence from Elsewhere

A number of other studies point to the problem of transactions uncertainty. Farmers in Kenya, for example, sometimes "sell their land to several (stranger) buyers at once or agree to sell" expecting that after receiving their money the sales will be voided by the government and they will evade repaying the buyer or buyers.¹³²

132. PLATTEAU, *supra* note 12, at 155. For a detailed discussion of Kenyan transactions uncertainty, see Parker Shipton, *The Kenyan Land Tenure Reform: Misunderstandings in the*

Solomon Benjamin notes that developers of unauthorized colonies in Delhi often sell plots to more than one family.¹³³ In informal urban settlements in Cebu City, the Philippines, Allyson Thirkell finds land payment patterns that are consistent both with the idea that physical occupation is a strong symbol of ownership, and that these informal rights can create uncertainty regarding transactions in land.¹³⁴ From interviews with 128 households that had purchased land, Thirkell finds that 83% had been required to pay the full price in cash when the property was transferred from the plot seller. Only 9% had been allowed to make multiple payments.¹³⁵ This, she suggests, is due to concerns about enforcing payment once the buyer is in place.¹³⁶

On the other hand, a study of payment terms in 149 settlements in Bogotá, Colombia, found a standard payment pattern of one-third down with the balance paid in monthly installments over three years.¹³⁷ The data indicates that 30% of purchasers of plots in so-called "pirate subdivisions" fall behind in their payments, but this is often a purposeful response to delay by subdividers in providing promised services rather than a refusal to pay.¹³⁸

Many studies of land markets in irregular settlements find that plots are bought, sold, and rented, irrespective of their legal status.¹³⁹ Roger Plant and Soren Hvalkof noted that when indigenous land tenure systems are recognized by the state, the recognition typically includes restrictions on the sale and transfer of land to outsiders, precluding the use of land as collateral.¹⁴⁰ Nevertheless, studies find active informal markets for land bound by these

Public Creation of Private Property, in LAND AND SOCIETY IN CONTEMPORARY AFRICA 111 (R.E. Downs & S.P. Reyna eds., 1988).

133. BENJAMIN, *supra* note 10, at 19-20.

134. See Thirkell, *supra* note 127, at 79.

135. *Id.* tbl.3.

136. *Id.* at 79.

137. ALAN CARROLL, THE WORLD BANK, PIRATE SUBDIVISIONS AND THE MARKET FOR RESIDENTIAL LOTS IN BOGOTA 11 (Urb. & Reg'l Econ. Div., Working Paper No. 435, 1980).

138. *Id.* at 41-43.

139. See, e.g., FARVACQUE & MCAUSLAN, *supra* note 11; GILBERT & WARD, *supra* note 12; PAYNE, URBAN LAND TENURE, *supra* note 11, at 30-34; PLATTEAU, *supra* note 12.

140. PLANT & HVALKOF, *supra* note 21, at 19. But see Stephen E. Hendrix, *Property Law Innovation in Latin America with Recommendations*, 18 B.C. INT'L & COMP. L. REV. 1, 15-24 (1995) (discussing legislation in Nicaragua and Peru that removed restrictions on the sale and transfer of land).

restrictions, including rentals to outsiders.¹⁴¹ That said, Plant and Hvalkof also find indigenous communities reluctant to rent their land for fear of losing their rights, with the result that land is left to very unproductive uses.¹⁴² The tension between wanting to protect the integrity of communal areas and to avoid land consolidation by preventing transfers on the one hand, and productivity concerns on the other hand, is a major cause of policy debate over indigenous land rights.¹⁴³

Contrary to our results from urban Ecuador, in a summary of findings from studies of rural areas, Jean-Phillipe Platteau states that greater security of tenure, including titling, does not tend to facilitate transactions in rural land.¹⁴⁴ The studies he examines also suggest that where transactions do increase, the greater market activity does not enhance efficiency, but is largely driven by land speculation.¹⁴⁵

VII. PRIVATE INVESTMENT

Legally secure ownership rights are expected to encourage investment by increasing the demand and supply. On the demand side, households are more willing to invest when they have greater confidence that they will enjoy the fruits of that investment, either directly or capitalized in greater sale or rental values. On the supply side, investment is less costly if property can be mortgaged and serve as collateral for formal loans. This Part considers evidence regarding the aggregate effect of stronger rights on investment and, when available, its source.

Lee Alston and his colleagues found a positive relationship between whether a settler has title and investments in pasture and permanent crops, taking account of the fact that title might be endogenous.¹⁴⁶ Gershon Feder provided evidence from four provinces in Thailand, where he compared titled and untitled farmers in each region. In his survey context, whether a household

141. See PLANT & HVALKOF, *supra* note 21, at 19.

142. *Id.* at 29.

143. *Id.* at 73.

144. See PLATTEAU, *supra* note 12, at 151-57.

145. *Id.* at 151.

146. See ALSTON ET AL., *supra* note 42, at 121-23, tbl.17.

is titled depends on the allocation of land to forest reserves—land within the reserves cannot be titled—and thus is not a choice that is made by households.¹⁴⁷ Further, although in principle farmers could choose whether to locate in a titled or untitled area, in fact, almost all land acquisition is through inheritance or marriage.¹⁴⁸ Thus, in the study region, title status is not endogenous. Controlling for many household and land characteristics, Feder found that in three of the four provinces, titled farmers invest in higher levels of inputs, including labor, and have higher yields per unit of land than untitled farmers.¹⁴⁹ He suggested that credit access is the main explanation.¹⁵⁰ The one region where being titled did not have a significant effect on farm productivity was also a region with ample credit available from traders without the need for collateral.¹⁵¹ Thus, in this region there was less advantage to be gained from having title.¹⁵²

Timothy Besley formally modeled the three different reasons why investment in land might be higher with stronger rights: the longer-term opportunity to benefit from investments, the ability to transfer and thus profit from investments via higher transactions values, and greater access to credit.¹⁵³ In the empirical analysis he took account of the fact that rights over land may be endogenous because households may choose to invest in order to strengthen their property claims (these are usage and transfer rights not necessarily related to title).¹⁵⁴ Using the technique described above, he also used “instruments” to predict the rights variables as a method to avoid statistical bias in the estimates.¹⁵⁵ Besley used various details in the data, which came from a survey of farmers in Ghana, to try to tease out which of the three reasons explain higher investment by rural households with greater rights.¹⁵⁶ In particu-

147. See Feder, *supra* note 42, at 22.

148. *Id.*

149. *Id.* at 25.

150. See *id.*

151. See *id.*

152. See *id.*

153. Timothy Besley, *Property Rights and Investment Incentives: Theory and Evidence from Ghana*, 103 J. POL. ECON. 903, 906-07 (1995).

154. *Id.* at 912-19.

155. *Id.* at 907-19.

156. *Id.* at 906.

lar, he noted that if rights matter to investment because they allow better access to credit, then rights on a particular plot should not matter if households have other land available that could be used for collateral.¹⁵⁷ Overall there is evidence that a broader portfolio of rights over land is associated with greater private investment.¹⁵⁸ Further, there is some evidence that individual plot rights matter, controlling for the holdings of the household, which suggests that it is not improved credit access alone that explains the greater incentive to invest.¹⁵⁹

Anne-Sophie Brasselle and her colleagues also used econometric techniques to allow for the "simultaneous" nature of property rights and investment (each causes the other) when estimating models of the effect of rights on investment.¹⁶⁰ Like Besley, they also found that tenure security is strongly influenced by previous investments in land.¹⁶¹ However, once this is taken into account, they did not find evidence that stronger land rights stimulate further investment.¹⁶²

A study by Michael Carter and Pedro Olinto used another approach to distinguish between demand (security) and supply (credit) effects of property rights when examining investment behavior by farmers in Paraguay. They showed in their sample that titled properties receive more investment, and are associated with greater credit, but also that they are larger properties.¹⁶³ Thus, they asked whether the higher levels of investment and credit are due to the legal status of the properties, or rather their size (or another factor such as farming zeal).¹⁶⁴ The study used a survey of households at two points in time, 1991 and 1994. Because they had two pieces of information for the same household, they could measure changes in investment resulting from changes in tenure status for the *same* group of properties. In this way, the results controlled for

157. *Id.* at 916-17.

158. *Id.* at 926-27.

159. *Id.* at 927.

160. ANNE-SOPHIE BRASSELLE ET AL., LAND TENURE SECURITY AND INVESTMENT INCENTIVES: FURTHER PUZZLING EVIDENCE FROM BURKINA FASO 8-11, 17-21 (Centre de Recherche en Economie de Développement, Working Paper No. 21, 1998).

161. *Id.* at 26-27, tbl.3.

162. *Id.* at 30.

163. See Carter & Olinto, *supra* note 74, at 183.

164. *Id.*

all other household and property characteristics that might otherwise have created an endogeneity problem. They found that when households obtain formal rights, there is a strong and significant positive effect on investment in the property.¹⁶⁵ However, for households that are estimated to remain credit-constrained, this is offset by a substantial decrease in other forms of investment.¹⁶⁶ Thus, for credit-constrained households it is the composition of investment that changes with title rather than the amount of investment.

Another study made use of different types of land tenure in Chinese villages to explore the effects of expropriation risk—lack of tenure security—on private investment.¹⁶⁷ In this setting, local leaders have the flexibility to reallocate public lands across households periodically to promote both equity and efficiency.¹⁶⁸ This process is not closely related to choices made by households and therefore an endogeneity concern in the study setting is unlikely.¹⁶⁹ Security of tenure on some private plots is very high, while other plots are rented on short contracts of uncertain duration.¹⁷⁰ Like the study by Besley in Ghana, the variation across plots in the same area and cultivated by the same household, together with the detail information in the survey data, allowed the study to control well for differences that are not associated with rights.

Using a 1995 World Bank household survey of 727 rural households from 31 villages, the study examined farmers' application of organic fertilizer and chemical fertilizers.¹⁷¹ The first was long-lasting and therefore a form of investment in the land. Chemical fertilizers, on the other hand, last only one season. Using information on actual lengths of tenure, the researchers first estimated a model of expropriation risk and used the results to predict risk for each plot. They then examined whether farmers use different levels of fertilizer on plots depending on the predicted risk of expropria-

165. *Id.*

166. *Id.*

167. Hanan G. Jacoby et al., *Hazards of Expropriation: Tenure Insecurity and Investment in Rural China*, 92 AM. ECON. REV. 1420, 1420-21 (2002).

168. *See id.* at 1422.

169. *See id.*

170. *See id.*

171. *Id.* at 1423.

tion.¹⁷² As hypothesized, they found that farmers use significantly more organic fertilizer when security of tenure is higher, but that their use of chemicals was the same on all plots.¹⁷³ Further, for any level of predicted tenure security, they found that households reporting that they had been specifically assured by the village leadership that they would be allowed to continue cultivation of a plot invested a higher level of organic fertilizer.¹⁷⁴

The last result confirms the importance of signals of government intentions in lowering tenure insecurity, above and beyond any change in legal status. In another example, residents in Cairo rejected title as too expensive, but considered the offer as a signal of positive government intentions. This, with the provision of services, led to a big increase in investment activity.¹⁷⁵

VIII. SOCIAL INVESTMENT

The idea that some communities are able to undertake collective action more effectively than others has received a great deal of attention in the development literature. The attribute of being able to work cooperatively has been referred to as "social capital."¹⁷⁶ One of the central disputes in the social capital literature is where social capital resides—whether it is inherent in a people or a culture or whether it is the result of institutions. A key failing of the literature has been its inability to identify clearly exogenous factors that bring about the enhanced cooperation.¹⁷⁷

There is a budding empirical literature on the determinants of social investment, though it is not as extensive as that on private investment. Jeff Dayton-Johnson, for example, explored the determinants of communal participation in Mexican irrigation projects. He found that social heterogeneity and landholding

172. *Id.*

173. *Id.* at 1424.

174. *Id.* at 1438-39.

175. See Baharoglu, *supra* note 20, at 25 (citing Geoffrey Payne, *Urban Land Tenure Policy Options: Titles or Rights?*, 25 HABITAT INT'L 415 (2001)).

176. There are a number of definitions of this term and serious arguments about whether it is a useful concept. See Joel Sobel, *Can We Trust Social Capital?*, 40 J. ECON. LITERATURE 139 (2002) for a useful survey and review essay.

177. For a critique of empirical work on social capital, see generally Steven N. Durlauf, *On the Empirics of Social Capital*, 112 ECON. J. 459 (2002).

inequality significantly decrease maintenance work.¹⁷⁸ Asim Ijaz Khwaja studied the maintenance of public projects in Northern Pakistan. He considered a range of community attributes, such as the inequality of land distribution, the role of leadership, and social homogeneity, and found that they have significant effects on involvement in public work.¹⁷⁹ Neither work analyzes the effects of property rights regimes.

The legal system governing property rights certainly suggests itself as one candidate for a policy that could enhance cooperation within a community and social investment. As with private investment, residents who feel their membership in the community to be more secure may be more willing to undertake communal activities, since they are more likely to reap the gains.¹⁸⁰ On the other hand, the alternative systems that can substitute for a formal property rights regime may themselves foster cooperation. As indicated in Table 4, there is a substantial amount of communal activity in our surveyed neighborhoods, particularly in Quito. The need for cooperation may diminish as a community is formalized. One of the reasons for cooperative lobbying efforts by informal residents, for example, is precisely to obtain recognition and infrastructure services.¹⁸¹ The relationship between this activity and the structure of property rights promises to be a fruitful area of future research.

178. Jeff Dayton-Johnson, *Determinants of Collective Action on the Local Commons: A Model with Evidence from Mexico*, 62 J. DEV. ECON. 181, 182 (2000).

179. See Asim Ijaz Khwaja, *Can Good Projects Succeed in Bad Communities? Collective Action in Public Good Provision* (2002) (mimeograph, Harvard, Kennedy School of Government) (copy on file with authors). His principal finding is that project attributes can successfully substitute for community attributes. For example, a less complex project design could compensate for community heterogeneity.

180. See Kevin R. Cox, *Housing Tenure and Neighborhood Activism*, 18 URB. AFF. Q. 107 (1982) (presenting evidence from the United States that owners are more likely to engage in neighborhood activism than renters, controlling for a variety of characteristics).

181. See BENJAMIN, *supra* note 10, at 40, for an interesting account of the political activities of members of irregular settlements in Delhi.

Table 4
The Creation and Maintenance of Local Public Goods
Surveyed Households' Contribution of Time and Money (%)

Activity	Guayaquil		Quito	
	Time	Money	Time	Money
Lobbying Government	3.2		29.0	
Road Work	5.8	6.0	28.1	7.0
Cleaning Meeting Area	0.5	0.5	7.5	12.4
Cleaning Park	1.0	2.8	13.3	6.5
Collecting Rubbish	38.8		54.0	
Any Activity	42.0	8.8	72.2	16.2

Note: Other activities include building security walls on slopes, filling in land under houses built over water, and maintaining community water taps.

IX. ACCESS TO FORMAL CREDIT

Erica Field noted that four separate studies of urban households titled under the COFOPRI program in Peru failed to find a significant effect on residents' access to business credit.¹⁸² Further, when interviewed, small business owners expressed an unwillingness to mortgage their properties, particularly for sizable loans,

182. See Field, *supra* note 43, at 21.

because of the risk of loss.¹⁸³ Formal financial institutions are rarely found to use or even accept small titled plots as collateral.¹⁸⁴ The costs and difficulties of foreclosing on such properties are high relative to the low profitability of the loans.¹⁸⁵ The only bank willing to give credit to newly formalized settlements titled by COFOPRI was the *Banco de Materiales*, which is also under the Ministry of the Presidency.¹⁸⁶ A quarter of these loans were said to have defaulted, with the suggestion that since the land under COFOPRI was free, residents consider that the building loan should also be free.¹⁸⁷

Jean-Phillipe Platteau highlighted the same two reasons why credit effects may be muted in his survey of studies in rural Africa.¹⁸⁸ Smallholders are reluctant to put their land at risk as collateral, and land is often not viewed as desirable collateral by credit institutions because it is difficult to foreclose and dispose of in the market.¹⁸⁹ The judicial system may not support foreclosure and the community may make it impossible.¹⁹⁰ Parker Shipton says of Kenya, "the presence of many kin around mortgaged land makes it politically infeasible to auction the holdings of defaulters."¹⁹¹

In Egypt, banks have not accepted occupied residential property as collateral on loans because the eviction of inhabitants was illegal.¹⁹² However, the evidence is clearly mixed and there is some indication that lenders can become interested in titling as a way to create better collateral. In Lima, for example, KARPA S.A., a construction company that sells housing supplies on credit to titled households in invaded areas, has donated material, computers, and salaries to government agencies involved in the titling and registration of squatter communities in order to accelerate the process for would-be customers.¹⁹³

183. *Id.* at 22-23.

184. See Baharoglu, *supra* note 20, at 18 box 7.

185. *Id.*

186. *Id.* at 18-19.

187. See Kagawa & Turkstra, *supra* note 32, at 68.

188. See PLATTEAU, *supra* note 12, at 144-45.

189. *Id.*

190. *Id.* at 145.

191. See Shipton, *supra* note 132, at 120.

192. See David Sims, *What is Secure Tenure in Urban Egypt?*, in LAND, RIGHTS AND INNOVATION, *supra* note 32, at 77, 97.

193. See LASTARRIA-CORNHIEL & BARNES, *supra* note 28, at 21.

In the study of Thai farmers described above, Gershon Feder and his colleagues also found that titled farmers obtain significantly more formal credit than untitled farmers.¹⁹⁴ The authors, however, make the important point that, to the extent that interest rates are lower from formal credit institutions because of government subsidies, the benefit of title in increasing access to formal credit is overvalued by property holders relative to its social benefit.¹⁹⁵ This is because the private beneficiary does not take into account the cost of the subsidy.¹⁹⁶ Using a number of assumptions about risk aversion, the divergence between the opportunity cost of capital and the formal interest rate, credit supply, and probabilities of eviction in their four Thai provinces, the authors calculated that the gross social benefit of titling is at most half of the private value.¹⁹⁷

X. PROPERTY TAX TO FINANCE INFRASTRUCTURE

One benefit to the government of formalizing land ownership is the expansion of the property tax base. This should either allow for lower tax rates or for new provision of public services, financed by the new revenue.

A World Bank completion report for a title registration project in Thailand during the mid-1980s found that the net increase in tax and fee collections was 14% to 278% higher in areas with the project.¹⁹⁸ Although a higher incidence of taxation may seem disadvantageous to property holders, it may well be to their advantage if the property taxes are actually used to improve services. Jesko Hentschel and Peter Lanjouw, for example, indicate that in the Costa region of Ecuador, the location of Guayaquil, only 62% of households in urban areas had access to the public water supply, with an estimated 17% reliant on tankers.¹⁹⁹ They emphasize that

194. See FEDER ET AL., *supra* note 97, at 44-45.

195. *Id.*

196. *Id.*

197. *Id.* at 67.

198. See Baharoglu, *supra* note 20, at 16. It is not clear from the reference what the baseline is.

199. JESKO HENTSCHEL & PETER LANJOUW, HOUSEHOLD WELFARE MEASUREMENT AND THE PRICING OF BASIC SERVICES 1, 7 & tbl.1 (World Bank Working Paper No. 2006, 1998), at <http://econ.worldbank.org/docs/233.pdf> (last visited Feb. 6, 2004).

expenditures on tanker water, primarily by the poor, far exceeded expenditures by households drawing water from the municipal system.²⁰⁰

Just as construction companies have an interest in formalization as a way to develop collateral for home improvement loans, utilities have an interest in formalization if it helps them to provide services that are otherwise tapped illegally. It was pressure from the electricity company in Rio de Janeiro that pushed the local authorities to give street and unit numbers to properties in the informal *favelas* (a process called "addressage").²⁰¹

XI. TITLING COSTS: EVIDENCE FROM ECUADOR

In our survey, we asked each household that had obtained title how long it had taken to obtain title and the cost of doing so. Squatter households without title were asked to provide estimates of what these values would be, as were respondents for the community questionnaire. We restricted our attention to Guayaquil and to the sample of 142 households providing estimates, so as not to combine inconsistent data.²⁰² Summary statistics of the responses are in Panel A of Table 5.

The first two columns in Panel A give sample statistics for the number of months it was expected to take to obtain title. Although anecdotal evidence suggests that titling may take a very long time, the median values given by the households and thirteen community respondents are similar and quite short: six and four months, respectively.²⁰³ There is, however, considerable variation in views among the household respondents, ranging from zero to almost

200. *Id.*

201. See Baharoglu, *supra* note 20, at 20.

202. The actual, historical figures are substantially larger than those estimated by untitled households. There are two reasons for thinking that this is an artifact of our incorrect adjustment for inflation. First, the timing of payments was not known precisely and had to be estimated. Second, some of the respondents may have converted to current values in giving their responses, making our conversion to 1996 an overadjustment. Durations over fifteen years and costs over \$500 were treated as outliers and deleted from the data presented here. This removed one household for each question.

203. Obtaining title requires that the property be surveyed, that title be approved by the Directorate of Properties and Parroquial Services, signed by the Director of Properties, the Chief of Legalization of Parcels, the Municipal Secretary, and the Mayor, and then registered in the cadastre by the Department of Urbanization, Valuation and Registry.

fifteen years. The bottom two rows of Panel A indicate how many of the respondents answered zero, and give the mean after dropping these respondents.

The third and fourth columns of Panel A give the same information, but for estimates of the cost of titling. Including the twenty-nine households who expect titling to be costless, the mean value is \$44 with a median of \$29. Again, there is considerable variation, from zero to \$286. The community respondents demonstrate a similar variation in estimates, although they tend to be more sanguine about costs overall with a mean estimate of \$29 and a median of \$11. In this case, dropping the zeros has a noticeable effect on the mean, and is probably appropriate since the municipality does charge households for the land when it is titled, as well as a small (\$0.71) administrative fee. The official cost of an average plot, not including payments to lawyers, and other expenses, ranges from \$1.30 to \$29.30, depending on the community.²⁰⁴ Our figures are consistent with the fees reported by the municipality. They are also close to titling costs reported in 1995 by Lee Alston and his colleagues for a small sample of seven squatters in rural Pará, Brazil.²⁰⁵ Estimates of the total costs of obtaining title, including the opportunity cost of time, ranged from \$12 to \$60, with a median value of \$24 (1992 U.S. dollars).

204. Interview with Ab. Jose Javier Varas Calvo, M.I. Municipalidad de Guayaquil, in Guayaquil, Ecuador (Mar. 1996).

205. Lee J. Alston et al., *Property Rights and the Preconditions for Markets: The Case of the Amazon Frontier*, 151 J. INSTITUTIONAL & THEORETICAL ECON. 89, 101-02 (1995).

Table 5
The Expected Costs of Obtaining Title: Time and Money

Panel A: Summary Statistics		Number of Months		Cost of Tiling (1996 U.S. Dollars)	
		Household	Community	Household	Community
mean		20.3	4.8	\$43.8	28.9
standard deviation		32.3	2.9	53.3	26.5
25th percentile		2	3	3.4	1.4
median		6	4	38.6	11.4
75th percentile		24	6	57.1	42.9
number of zero		7	0	29	3
mean w/o zeros		21.4	4.8	55.1	34.7
Panel B: Probit Results		Number of Months		Ln Cost (1996 U.S. Dollars)	
Variable		Coefficient	S.E. ^a	Coefficient	S.E.
distance		-0.27	0.78	-0.30	0.04
invasion resisted		12.23	8.16	-0.61	0.30
private land		-21.64	7.98	0.97	0.32
ownership document		-5.35	6.51	-0.11	0.20
government titling program		-20.39	7.05	-0.20	0.29
ln (lot size)		16.4	8.33	0.47	0.25
Number of observations					
Adjusted R ²					
					110
					0.39

Note: ^aS.E. are estimated robust standard errors. Bold typeface indicates a 0.10 significance level.

Panel B of Table 5 presents regression results that help explain some of the large variation in the estimates of the duration and cost of titling reported by households (although the R^2 's indicate that much of the variation remains unexplained). Squatters in more distant communities expect to face dramatically lower costs of titling. A one standard deviation increase in the distance from the city center lowers expected costs by 90%. A striking finding is the importance in the titling process of whether the land invaded was originally privately or publicly owned. Squatters on private land expect titling to be both much faster (by almost two years), and much more expensive (a 100% increase in price). Contrary to what one might expect, the fact that there was resistance during an invasion does not suggest to squatters that titling will take more time, and further, it *lowers* their estimate of costs. When the municipality is running a titling program in a community, this naturally lowers the residents' expectations about how long it will take to get a title, although it does not lower the costs. Finally, we see from the coefficient on the size of the property that the costs of titling increase with lot size. A 10% increase in square meters, however, increases expected costs by just 5%, indicating that there are large economies of scale with relatively higher costs faced by the smaller property owners. None of the variables related to the activities of community organizers, or to household characteristics, were significant determinants of the expected duration, or costs, of titling.

XII. DYNAMIC AND DISTRIBUTIONAL

Whatever the final net benefits of having urban households reside on legally titled properties rather than in irregular settlements, the process of moving from one situation to the other can be costly. While the position of some groups is improved when a tenure system changes, others often lose out. As a result, the process can be corrupt and the source of violent class and ethnic conflict.²⁰⁶

206. See Donald A. Krueckeberg & Kurt G. Paulsen, *Evaluating the Experience of Brazilian, South African and Indian Urban Tenure Programmes*, in *HOLDING THEIR GROUND*, *supra* note 7, at 233, 241. *CITIES*, *supra* note 84, at 19-21, summarizes the multiple sources of conflict found to impede efforts to regularize settlements in a series of case studies. These include disputes between: landowners and occupants, occupants and developers and

In 1985, Brazil initiated land reform through the expropriation of private farms and settlement of households.²⁰⁷ Lee Alston and his colleagues investigated the relationships over time between the activities of the implementing agency and the level of violent conflict between settlers and landowners.²⁰⁸ They argue that violence increases the political pressure on the agency to find a solution by expropriating the land and officially settling the squatters, and that this response is recognized by all parties involved.²⁰⁹ They then point to the fact that there can be a counter-productive dynamic effect whereby the success of previous violence in conveying rights to squatters increases the likelihood of more violence.²¹⁰ This dynamic is supported by data for *municípios* over time: the number of settlements is positively related to past conflicts, and the level of current conflicts is related to past settlements.²¹¹ Thus, they conclude that while political pressure for land reform has been motivated by a desire to decrease violence, the demonstration effect of expropriation in favor of violent invaders has had the opposite effect.²¹²

In their discussion of indigenous peoples and land titling experience in Latin America, Roger Plant and Soren Hvalkof emphasize that one of the hurdles confronting the clarification of land rights to increase security has been the fact that, historically, different groups often have been given claims over the same areas.²¹³ In particular, conflict and difficult political pressures arise in situations with overlapping claims by indigenous groups and non-indigenous settlers (e.g., mineral extraction companies).²¹⁴ They note that, without support, the indigenous people tend to lose out and that titling programs thus should make a point to survey

municipal authorities, local leaders and elected officials, and occupants and those running the formalization program.

207. See ALSTON ET AL., *supra* note 42, at 90-95, 153-58.

208. *Id.* at 92-95.

209. *Id.* at 155, 166.

210. *Id.* at 155-58.

211. *Id.* at 166-67 tbl.26.

212. *Id.* at 176-77.

213. See PLANT & HVALKOF, *supra* note 21, at 8, 41.

214. *Id.* at 42.

and title first the lands held by indigenous groups before moving on.²¹⁵

Jean-Phillipe Platteau also highlights situations in African countries where weaker members of society have lost rights during changes in the system of rules governing rural land ownership.²¹⁶ He concludes from his survey that "clever, well-informed or powerful (and usually educated) individuals often successfully jockey to have parcels not previously theirs registered in their own name while the mass of rural people are generally unaware of the new land provisions or do not grasp the implications of registration."²¹⁷

The experience of women has received some attention. Susana Lastarria-Cornhiel gives an overview of women's rights over land under customary tenure systems in Africa, and how these change as rights are individualized and privatized (which may or may not be due to a land titling program).²¹⁸ In surveying the literature, she notes several important problems. First, under customary systems several individuals and community members might have rights over a plot.²¹⁹ Women typically would not have ownership rights but might have rights to cultivate and claim parts of the output from certain plots.²²⁰ With privatization, all rights tend to be pulled together under the control of one person.²²¹ Typically, it is the male household head that receives title for the land occupied by the family.²²² Women's rights in land tend to be derived from their relationships with male relatives and therefore are not well suited to serve as the basis for a legal claim over a parcel.²²³ In addition, she notes that it is not uncommon for weaker households to lose out to powerful men during the process of formalization, as the latter put newly formalized land in their own names.²²⁴ Finally, she gives

215. *Id.* In Colombia, indigenous lands were specifically excluded from land titling programs to ensure that individualized titling would not affect recognized communal land area. *Id.* at 54-55.

216. See PLATTEAU, *supra* note 12, at 166.

217. *Id.*

218. Susana Lastarria-Cornhiel, *Impact of Privatization on Gender and Property Rights in Africa*, 25 WORLD DEV. 1317, 1319 (1997).

219. See *id.*

220. See *id.* at 1320.

221. See *id.* at 1319.

222. See *id.* at 1326; see also PLATTEAU, *supra* note 12 (discussing examples in rural Africa).

223. See Lastarria-Cornhiel, *supra* note 218, at 1323.

224. See *id.* at 1325.

examples of how the bias against giving women legal control over formalized property may manifest itself in practice even when there is no bias in the law.²²⁵ Discrimination in favor of men may not be overt but may arise from other requirements of land ownership, such as the need to show regular employment.²²⁶

With forethought, titling programs can be designed to avoid negative distributional outcomes. For example, in a slum upgrading project in New Delhi, India, the government offered residents title in 1989 after a decade of having their homes regularly demolished.²²⁷ Most of the men demanded title in their names but the government refused, fearing that the men would sell out and move their families on to another slum. Instead, they titled the women in the community. This seems to have been successful because few of the households left the community after receiving title. The state of Andhra Pradesh in India had an extensive program to grant housing sites (*pattas*) to urban households.²²⁸ Households became eligible after living five years on government land.²²⁹ The rights can be inherited but cannot be alienated, the lots can be used for housing mortgages, and the government can grant title in the name of women.²³⁰

Donald Krueckeberg and Kurt Paulsen indicate, without giving details, that in organized communities where women dominate the local committees, there are lower turnover rates.²³¹ The authors ascribe this to women being more likely to value building a long-term and secure home and less inclined to sell out as property prices rise with formalization.²³² Those concerned about its impact on the availability of housing for the poor call this process "downward raiding."²³³

225. *See id.* at 1326.

226. *See, e.g.,* Saad S. Yahya, *The Certificate of Rights Story in Botswana*, in LAND, RIGHTS AND INNOVATION, *supra* note 32, at 193, 200-02 (discussing gender discrimination in land ownership in Botswana).

227. *See* John Stackhouse, *Women Key to India's Urban Slum Renewal*, TORONTO GLOBE & MAIL, Sept. 9, 1996, at A1.

228. *See* Banashree Banerjee, *Security of Tenure in Indian Cities*, in HOLDING THEIR GROUND, *supra* note 7, at 37, 47.

229. *Id.*

230. *Id.* at 47.

231. Krueckeberg & Paulsen, *supra* note 206, at 241.

232. *Id.*

233. *See id.* at 240-41.

Similarly, Platteau notes that in order to avoid disputes over the loss of land, public authorities in Kenya have required the agreement of family members, including women, prior to any titleholder using land as collateral.²³⁴ He refers to a proposal in Zimbabwe to give farmers rights to their land, but the proposal required the traditional village council's approval for transactions.²³⁵ He concludes that to prevent conflicts, "the state has decided to retreat from the most radical interpretation of freehold tenure and to revert to some customary principles of land allocation."²³⁶

XIII. PROPERTY PRICE REGRESSIONS

A. Evidence from Ecuador

The standard approach to quantifying the value conferred to owners by a particular property right is to compare the sale value of a property with a similar property that does not have that right associated with it. We have emphasized that the market price of a property reflects both the value of owning the property as well as the buyer's confidence that the seller will honor the purchase.²³⁷ When title formalizes ownership, this confidence increases and the expected value of purchasing the property increases. For homeowners with no plans to sell, the increased confidence in transactions conferred by formalization has little value, and thus, this component of the price increase does not correspond to an increase in their well-being. Because formalization changes the value of property ownership and the degree of transactions uncertainty, both must be considered when interpreting price changes as a measure of the welfare gain associated with formal property rights.

There are also statistical difficulties associated with valuing rights in this way. These difficulties arise from the problem of identifying groups of titled and untitled properties that are similar in all respects besides title status. Some qualities of a property that affect its value are not captured in data, and household decisions

234. See PLATTEAU, *supra* note 12, at 153 (citing Shipton, *supra* note 132).

235. *Id.*

236. *Id.*

237. See Lanjouw & Levy, *supra* note 13, for a theoretical model of these relationships and further discussion.

about whether to obtain a title may be systematically related to some of these unobservable characteristics. That is, we have the now familiar problem of endogeneity leading to biased estimates of the value of title.

To avoid this problem, we designed our survey to adopt an alternative approach. For each household that claimed it was able to sell its property, we asked the respondent to give an estimated sale value. Among this group, the owners of untitled properties were then asked the price they thought they could obtain in a sale of their property if it were in a *titled* state, and vice versa for the titled property owners. Thus, each property enters the analysis in both a titled and untitled state and we can estimate "within respondent" changes in expected sale prices with title. The analysis includes only the fifty-one households that said that they would be able to sell in both titled and untitled states.

The unconditional expected mean effect of titling a property in Guayaquil is to raise its expected sale price by an estimated 23.5%. Part of this increase simply reflects the buyers' willingness to pay more when a transaction takes place with the added certainty of formalization. The increase should thus be seen as an upper bound on the gain in utility derived from ownership of the property.

In our more restricted data for Quito, we do not have data on hypothetical states and therefore cannot follow this approach. However, we do estimate conventional hedonic price regressions which capture the value of title while controlling for a wide range of property characteristics. Remarkably, the overall estimated effect of going from an untitled to titled state is to raise the price by a very similar 21.3%. The regression coefficients in Table 6 indicate the extent to which the indicated variable enhances or diminishes the effect of title on sale value.

In the first group of variables, we again see the substitution between different sources of property claims. Both community age and the fact that many households paid a boss make title significantly less important. The age of the community is particularly influential. The impact of title is 45% lower in a community which has been in existence for fourteen years (the mean) than it is in a community just after its establishment. The impact of title is 9% lower in communities where one-third of the households paid a boss (again, the mean) than in a community where none of the squatters

paid a boss. The fact that official institutions such as courts and judges are resolving disputes in the community (formal enforcement) strongly reduces the importance of title in raising property values. This could be an indicator of the extent to which property boundaries are settled and recognized.²³⁸

Turning to the second group of variables, which are indicators of nontransferable ownership claims, we see that all of them dampen the effect of title on price (in point estimate).

238. This is also inconsistent with evidence from the Amazon region of Brazil presented in ALSTON ET AL., *supra* note 42, at 116. In estimates of the extent to which formal title increases land values, they find a sharply diminishing effect as one moves away from market centers. *Id.*

Table 6
Effect of Title on Property Value^a

<u>Variable</u>	<u>Coefficient</u>	<u>S.E.^b</u>
constant	1.86	0.55
ln(age)	-0.17	0.07
distance	0.04	0.01
percent paid boss (community)	-0.26	0.12
formal enforcement	-0.28	0.08
paid boss (household)	0.00	0.06
ln(years resident)	-0.16	0.09
ln(assets)	-0.05	0.04
education > primary	-0.04	0.07
adult males	-0.63	0.21
males*ln(yrs resident)	0.24	0.08
R ²	0.67	
Sample Mean Expected Change (s.d.)	23.5% (5.0)	
<u>Predicted Change in Value from Title</u>	<u>Adult Males</u>	<u>Years of Residence</u>
40.9 %	No	5
24.5	No	14 (mean)
16.0	Yes	5
24.1	Yes	14

Notes: ^a The dependent variable is the value (in logs) that a household believes it could obtain for its property if it is titled minus the value (in logs) if it is untitled. The inverse Mills ratio is included to allow for the restriction of the sample to households who indicate that they can sell in both states. Weighted least squares estimates allow for heteroscedasticity across communities.

^b S.E. are estimated robust standard errors. Bold typeface indicates a 0.10 significance level.

In particular, the coefficients on years of residence and the presence of a male are statistically significant. Households with only women and children gain a vastly greater price increase from title than households with adult males. Figures given at the bottom of the table indicate that, at sample means, the expected sale value of a property owned by a female-only household in a newly established neighborhood increases 41% with title.

B. Evidence from Elsewhere

In our study from Ecuador, we controlled for the characteristics of properties by asking households to answer hypothetical questions about value in different states. A survey of households in Peru obtained similarly controlled and perception-based estimates of the effect of title by asking households whether their properties had increased in value over a specified period. Of those households with a title from the COFOPRI program, 75% indicated that their property had increased in value, whereas about 70% of those households with another form of title indicated an increase in value. Only 39% of untitled owners indicated that their property had increased in value.²³⁹

Our estimates for Ecuador are comparable to the effect of title found in hedonic price equations using urban data from Manila and Davao, Philippines. In these cities, being titled was estimated to raise the value of property by 18% and 58%, respectively.²⁴⁰ Acknowledging that the value of title may vary with the strength of informal rights, the authors interacted title with the age of the dwelling to allow for the fact that older units might be "de facto" secure from eviction. Their results, like ours, support this contention. They do not, however, explore any other features of communities that might affect property rights. As in our study of Ecuador, they find that household characteristics affect the price premium associated with title, but their rationale for this finding is different from ours. Using a model in which households chose their location, they showed that household characteristics are endogenous because

239. See Baharoglu, *supra* note 20, at 17 box 6.

240. See Joseph Friedman et al., *The Demand for Tenure Security in Developing Countries*, 29 J. DEV. ECON. 185, 197-98 (1988); Emmanuel Jimenez, *Tenure Security and Urban Squatting*, 66 REV. ECON. & STAT. 556, 565-66 (1984).

they may become associated with unobservable variation in community-level risk of eviction as a result of these location choices. By contrast, in our model, a change in household characteristics alters informal rights and therefore *changes* the risk of eviction. Rather than richer households choosing areas where title is less important, title is less important because they are rich households and can assert their rights without having title. It is not possible to distinguish between these two interpretations of the effect of household characteristics on value with only the results of hedonic price regressions. The more detailed look at households' abilities to transact in different markets discussed in the preceding Parts demonstrates that household characteristics may, in fact, be determinants of informal rights and thus the risk associated with property ownership. In a study done in Jakarta, Indonesia, parcels with registered title had more than a 50% price premium in the central business district and, even in more distant areas, the premium remained over 20%.²⁴¹

Terry Anderson and Dean Lueck examined the effect of differences in the form of legal ownership on the productive value of land on Indian reservations in the United States.²⁴² Reservation land is held in three main tenures: fee simple, individual trust, and tribal trust.²⁴³ A variety of important constraints are associated with leasing and transferring trust lands or with using them as collateral—problems that are particularly acute under the tribal form.²⁴⁴ They estimate the 1987 gross agricultural output per acre of land on thirty-nine Indian reservations separately for each of the three forms of tenure.²⁴⁵ Differences can be due to differences in investment, for either demand or supply reasons, or differences in usage.²⁴⁶ In particular, constraints on rental and sale of trust lands may cause land to be left fallow.²⁴⁷ Econometric estimates find

241. See Baharoglu, *supra* note 20, at 16. There is no discussion of endogeneity, so these figures may be biased by a relationship between value and a characteristic affecting the decision to title property.

242. See Terry L. Anderson & Dean Lueck, *Land Tenure and Agricultural Productivity on Indian Reservations*, 35 J.L. & ECON. 427, 427-28 (1992).

243. See *id.* at 428-29.

244. *Id.* at 430-31.

245. *Id.* at 439-40, 442-43.

246. *Id.* at 443-44.

247. *Id.* at 448.

strong effects of tenure with tribal trusts and individual trusts reducing the value of output per acre by 85-90% and 30-40%, respectively, relative to output on fee simple land.²⁴⁸

CONCLUSION

We cannot conclude this paper with a blanket statement that titling programs are beneficial or harmful. There is substantial variation in the likely benefits of replacing an informal property rights regime with a formal one. There is also likely to be substantial variation across households and communities in the distributional consequences of a program, depending on issues such as the gender of land occupants and the amount of time they have occupied the property.

Instead, this paper offers a framework for addressing these issues. Through household survey data, it is possible to quantify the potential effects of titling on the ability to transact, the ability to obtain credit, and the propensity to invest in one's property and in one's community. Such empirical estimations must be undertaken with care, since disregard for statistical problems such as endogeneity may result in misleading estimates. The studies described above, however, offer examples of how such hurdles can be overcome.

There is still substantial work to be done if we are to get a more general picture of the costs and benefits of titling. Certain countries have been well studied—Brazil, Mexico, Ecuador, and Ghana, for example—but given the diversity of practices in each country, one must exercise caution in imputing findings from these cases to the rest of the developing world. Further, even in these countries, there are some critical components that are not well understood. The cost to the government of implementing a titling system is one prominent example.

248. *Id.* at 448. The authors consider whether land tenure arrangements might be endogenous, that is, fee simple land might be better quality land in ways that are not controlled in the estimations. They argue on the basis of historical allocation, and other considerations, that the current status of a particular piece of land is unlikely to be related to current productivity. Further, data available on land quality indicates that if there is a difference it is the trust land that is of higher quality. *Id.* at 443-46.

Finally, even after a careful empirical study provides good estimates of various costs and benefits, the decision of whether to undertake a titling program ultimately may depend on value judgments. If the program benefits the poor occupants, but hurts a wealthy landholder, how are these effects weighed against one another?²⁴⁹

There is good reason to believe that a formal system of property rights can spur economic growth. The question that policy analysis must address on a case-by-case basis is whether the potential net benefits are such that titling takes priority over the many other needs of developing countries.

249. One common approach is to weigh all such effects equally and assume that if the sum is positive, then beneficiaries could compensate those who lose. The likelihood that such compensation would ever be paid is a serious question, however.

Appendix Table A.1
Selected Variables: Survey of Property Rights in Guayaquil

Invasion resisted	If community settled with an invasion, 1 if resisted; 0 if not
Private land	If community settled with an invasion, 1 if squatted on privately owned property; 0 if on public land
Ownership document	1 if household has some type of ownership document other than a formal title; 0 else
Paid boss (household)	1 if household reports making payments to a boss; 0 else
Percent paid boss (community)	Percent of respondent households who are squatters and who also report making payments to a boss that were not for the property itself
Adult males	1 if household has a male from 18-65; 0 else
Ln(assets)	Log of household wealth – 24 household assets valued at estimated current condition replacement value. Here and following: \$1=3500 sucres at time of survey
Per-capita consumption	Per-capita consumption calculated from LSMS-style detailed listing of components
Age of household head	Age of household head
Education > primary	1 if education of household head is greater than primary; 0 else
Formal enforcement	1 if household indicates that courts, judges or the municipality settle land disputes; 0 else
Distance	Estimated distance of the community from the telephone company (located in central Guayaquil)
Ln(years resident)	Log of years that household has been resident on current property
Ln(lot size)	Log of square meters of property
Title	1 if household has a title to property; 0 else
Ln(age)	Log of years since the first settlement of community
Community boss	If community settled with an invasion, 1 if there was an organizer involved; 0 else
Government titling program	1 if government actively promoting titling in community in past 2 years; 0 else