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Property Rights and Beliefs: Evidence from the Allocation of Land Titles to Squatters

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Property Rights and Beliefs: Evidence from the Allocation of Land Titles to Squatters

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Abstract

The possession of property rights may change the beliefs that people hold. We study this hypothesis using a natural experiment from a squatter settlement in the outskirts of Buenos Aires ensuring that the allocation of property rights is exogenous to the characteristics of the squatters. There are significant differences in the beliefs that squatters with and without property rights declare to hold. Property rights make beliefs closer to those that favor the workings of a free market. Examples include materialist and individualist beliefs (such as the belief that money is important for happiness or the belief that one can be successful without the support of a large group). The effects appear large. The value of a (generated) index of pro market beliefs for squatters without property rights is 78% of that of the general Buenos Aires population. The value for squatters that receive property rights is 98% of that of the general population. In other words, giving property rights to squatters causes a change in their beliefs that makes them indistinguishable from those of the general population, in spite of the dramatic differences in the lives they lead. Our experiment is less informative as to the precise way property rights change beliefs, although there is suggestive evidence of a behavioral channel.

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Keywords: beliefs, property rights, natural experiment, institutions, self-serving.

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I. Introduction

A growing literature in economics has stressed the role of beliefs in shaping economic outcomes. A prominent example is the literature seeking to explain why Europe and America are so different when it comes to giving government a role in the production and distribution of income. See, for example, Piketty (1995), Benabou and Ok (2001), Benabou and Tirole (2002), Rotemberg (2002), Alesina and Angeletos (2003), *inter alia*. One of the reasons why a focus on beliefs is appealing is the large empirical difference in beliefs across the Atlantic. For example, Alesina *et al* (2001) report that 60% of Americans –yet only 26% of Europeans- believe the poor are lazy.¹ Furthermore, they show that countries where few people hold this belief (as well as other beliefs that are compatible with the proper workings of a free market) also have more government intervention.

Beliefs have also been linked to institutions (see Greif (1994) and Denzau and North (1994)). Economists have long emphasized the role of institutions in development. But what are really those institutions? Greif (2003) defines them as a system of shared beliefs on the link between behavior and outcomes, as well as internalized norms, cognitive systems and formal and informal rules that together generate a regularity of behavior. North (2004) attributes a central role to the beliefs system in shaping institutional designs, stating

“There is an intimate relationship between belief systems and the institutional framework. Belief systems embody the internal representation of the human landscape. Institutions are the structure that humans impose on that landscape in order to produce the desired outcomes. Beliefs systems therefore are the internal representation and institutions the external manifestation of that representation. ... The key to building a foundation to understand the process of economic change is beliefs both those held by individuals and shared beliefs that form beliefs systems.” North 2004, pp. 77 and 119.

If beliefs are important in shaping outcomes, a natural task for economists is to study whether there are significant economic determinants of beliefs. In this paper we take up this question. Specifically, we focus on the role of property rights in affecting the kind of beliefs that are most conducive to the smooth working of a free market economy. Large-scale surveys of beliefs (such as the World Values Survey) are appealing given that we need to

¹ Hochschild (1981) provides an illuminating discussion. See also recent work by Ladd and Bowman (1998) and Fong (2004).

measure what are innately noisy concepts. Two problems emerge, however, when this approach is used to study the effect of property rights on beliefs. First, the hypothesis that property rights affect beliefs refers only to a sub-group in the total population, namely those that do not have full access to property rights, but would like to have them. Consider the case of an individual who chose to rent a house rather than buying it. A voluntary change in his ownership status is unlikely to change his beliefs. Beliefs may change when property rights are offered only if those individuals were constrained in their ability to choose prior to the treatment. Second, people who hold beliefs that are most in line with free market ideology also tend to value the possession of wealth, and often spend considerable effort in accumulating it. Thus, even if we could meaningfully isolate variability in property rights and beliefs, this variability cannot be easily exploited to disentangle the causal effect of property rights on beliefs, since causality runs in both directions. In other words, property rights and beliefs are most likely simultaneously determined in the population. More generally, recent studies of institutions give a central role to dealing with the problem of endogeneity, often taking a very long term view based on a detailed examination of the historical record (see, for example, Engerman and Sokoloff (1997), La Porta *et al* (1998), Acemoglu *et al* (2001), Banerjee and Iyer (2002), Rodrik *et al* (2002), Easterly and Levine (2003), Glaeser *et al* (2004), Przeworski (2004), *inter alia*).

In this paper we attempt to deal with these problems using a different approach based on a natural experiment. More than 20 years ago, a large number of squatter families occupied an area of wasteland in the outskirts of Buenos Aires, Argentina, thinking it was State property. In reality, the area was made up of different tracts of land, each with a different legal owner. An expropriation law was subsequently passed, ordering the transfer of land to the state (in exchange for a monetary compensation). The purpose of the law was to allow the state to later transfer ownership to the squatters. However, only some of the original legal owners surrendered the land, while others chose to contest the expropriation law. Given the slow functioning of the Argentine courts, the dispute between the state and the owners who challenged the expropriation law has not been settled to this date, resulting in weak property rights to the squatters who happened to settle on a parcel of land on these tracts. Thus, a group of squatters obtained full property rights, while others are currently living on similar parcels but without legal titles. Since the decision to challenge the occupation was

orthogonal to the characteristics of the squatters, the allocation of property rights amongst these squatters is exogenous in equations that describe individual beliefs. Moreover, our approach involves the comparison of individuals living in very close proximity rather than individuals that live far apart (e.g., in different cities, provinces or countries). More generally, our paper can be seen as a complement to work on the effects of property rights on investment and access to credit such as de Soto (2000), Do and Iyer (2002), Field (2003) and Galiani and Schargrodsky (2004).

Finally, there are a number of theories that predict an effect of property rights on beliefs. Two broad channels are emphasized. First, property rights may affect beliefs by changing the experience that individuals have, as in Piketty (1995). He argues that with costly learning an “accidental” initial belief may become accepted if further experimentation is not justified by early experience. Alternatively, property rights may also change the incentives that individuals have to engage in belief manipulation. Examples of this approach, which is more behavioral in nature, are belief manipulation as a device to correct self-control problems (as in Benabou and Tirole (2002)) and as a way to relax internal moral constraints (as in the self-serving model of Rabin (1995)). The Marxist tradition is a variant of this approach since it views beliefs as imposed by the prevailing social framework and it is possible to view property rights as a technological complement in giving the poor a false consciousness (as shaped by the capitalist class (e.g., through the media or the education system; see, for example, Bourdieu and Passeron (1970)). Although a full identification of the particular mechanism through which property rights affect beliefs is a daunting task (and is beyond the scope of the paper; but see Section IV below), these theories help in the interpretation of our results.

Section II describes the natural experiment, our data and presents the empirical strategy. The empirical results are reported in section III. Section IV discusses the interpretation of our results and Section V concludes.

II. Description of the Natural Experiment, Data and Empirical Strategy

II.a. A Natural Experiment to Evaluate the Effect of Property Rights

An investigation of the effect of property rights on beliefs has to address the problem of endogeneity: motivated individuals that hold beliefs most consistent with free market ideas are also more likely to make efforts geared towards obtaining property rights. Moreover, in most historical experiences the allocation of property rights across families is not random but depends on individual effort, political clientelism, family characteristics, or other selection criteria. In brief, the personal characteristics that determine the likelihood of owning land titles are likely to be correlated with beliefs. This potential selection bias interferes with the evaluation of the policy question that motivates our study: does treating people with property rights affect their beliefs?

We address this problem by exploiting a natural experiment in the allocation of property rights. In 1981, about 1,800 families occupied two (non-contiguous) areas of wasteland in San Francisco Solano, county of Quilmes in the greater Buenos Aires metropolitan area, Argentina. The occupants were groups of landless citizens organized through the Catholic Church, who explicitly wanted to avoid creating a shantytown and therefore immediately partitioned the occupied land into small urban-shaped parcels. At the time, the occupants thought the land belonged to the state, but they later found out that it was private property.²

The squatters resisted several eviction attempts during the military government. After 1983, with Argentina's return to democracy, the Congress of the Province of Buenos Aires passed Law N° 10.239 in October of 1984 expropriating these lands from the former owners. The objective was to allocate those lands to the squatters and to initiate the process of compensation to former owners.

The area occupied by the squatters turned out to include thirteen large tracts of land belonging to different owners. Each of the original owners had to decide whether to accept the expropriation compensation proposed by the government or to start a legal dispute to

² On the details of the land occupation process see the documentary movie “Por una tierra nuestra” by Cespedes (1984), and also CEUR (1984), Izaguirre and Aristizabal (1988), and Fara (1989).

retain ownership or gain a higher compensation. In 1986, eight former owners accepted the compensation offered by the government. The formal land titles that secured the property of the parcels were then gradually transferred by the state to the occupants during the period 1989-91. However, five former owners did not accept the compensation offered by the government and decided to dispute the expropriation in the slow Argentine courts. Thus, the process of expropriation was incomplete. One of the five trials (between the state and the original owners that defied the expropriation) ended first with the owner accepting the proposed compensation and surrendering the land. In this case the process was asynchronous resulting in title offers to the squatters in 1997-8. The other four lawsuits are still pending at the time of this writing.

An important feature of this episode is that the squatters were unaware of the fact that the land belonged to private interests, believing instead that it was owned by the state. Thus, squatters who occupied parcels of land belonging to the accepting owners (i.e., that accepted the expropriation) were ex-ante similar and arrived at the same time than individuals who occupied parcels of land belonging to challenging owners (i.e., that challenged the expropriation). There was simply no way for the occupants to know ex-ante, at the time of the occupation, which parcels of land had owners who would accept the compensation and which parcels had owners who would dispute the expropriation.

The result of this episode is that today we have a group of squatters living in very close proximity in the same neighborhood, some of which have property rights in the form of legal titles to the land they occupy and some who do not, although they had identical pre-treatment characteristics at the time of the occupation. Indeed, Galiani and Schargrodsky (2004) compare parcel and household characteristics for the group that was offered property rights with those for the group that was not, and show that the hypothesis of random assignment of land titles during this natural experiment is not statistically rejected. Comparing parcel and household characteristics for the group that was offered property rights with those for the group that was not, they do not find differences in distance to a nearby creek, distance to the nearest non-squattered area, an indicator for whether the parcel is in a corner of a block, age of the household head, gender of the household head, nationality of the household head, years of education of the household head, nationality of

the father of the household head, years of education of the father of the household head, nationality of the mother of the household head, and years of education of the mother of the household head. The only difference is in terms of the size of the parcel, where the control group has slightly bigger parcels, although this is statistically significant at the 10 percent level.

Given that property rights depended on the exogenous decision of the original owners to challenge the expropriation, we can study if outcomes are affected by the intervention "to give property rights" by comparing outcomes across groups that received and did not received land titles. In essence, the allocation of property rights involves a form of randomization that solves the potential selection problem.

II.b. Data Description

We obtained information on the legal status of each individual parcel from the files related to Expropriation Law N° 10.239 in the Land Undersecretary of the Province of Buenos Aires, the office of the General Attorney of the Province of Buenos Aires, the Quilmes County Government, the land registry, and the tax authority. The main squattered area covers a total of 1,082 parcels. The law also covered the San Martin neighborhood, a separate (i.e., non-contiguous but close) piece of land which comprises 757 parcels. This area is physically separated from the rest. An important aspect of our research question involves the comparison of individuals with similar life experience (with the exception of the treatment) and are thus expected to have similar beliefs. To make comparability as extreme as possible, we prefer to focus on the 1,082 contiguous parcels.

As explained above, land titles were awarded in two phases. Property titles were awarded to the occupants of 419 parcels in 1989-91, and to the occupants of 173 parcels in 1997-98. Property rights have not been offered to the families living in 410 parcels that were occupied under the same conditions and during the very same days of 1981. Finally, land titles were available for other 80 parcels, but the occupants did not receive them because they had moved or died at the time of the title offers, or had not fulfilled some of the required registration steps. For these potentially endogenous reasons, the inhabitants of these 80 parcels (out of the 672 parcels offered for titling) missed the opportunity to receive a title,

i.e. missed the opportunity to receive the treatment. Borrowing the terminology from clinical trials, this subgroup constitutes the “non-compliers” in our study, since they were “offered” the treatment (land title) but they did not “receive” it.

Table A summarizes the process of allocation of land titles for the main area.³

Table A – Allocation of Land Titles

Intention to treat (Property Right Offer = 1)				Control (Property Right Offer = 0)	Total
Year	Total	Treated (Property Right = 1)	Non-compliers (Property Right = 0)		
1989-91	442	419	23		
1997-98	230	173	57		
Total	672	592	80	410	1082

During January-March of 2003, we administered a survey designed to the heads of households (or their spouses) for 448 randomly selected parcels (out of the total of 1,082).⁴ We found that 467 households live in the 448 parcels of the sample (19 parcels host more than one family).⁵ In 313 of these households, we found that the first family member had arrived to the parcel before the end of 1985, i.e. before the original owners made the decisions of surrender the land or sue, while for 154 families the first member had arrived after 1985. We focus on the former group, as for them it was impossible to know the different expropriation status associated to each parcel at their time of arrival.

³ The 757 parcels of San Martin belonged to only one owner who surrendered the land and were offered titles. Of these, 712 were titled, while 45 correspond to non-compliers.

⁴ The survey was carried out by Gestion Urbana, an NGO that works in this area. The interviewers were not informed of the hypotheses of our study and were blind to the treatment status of each parcel. We distributed a food stamp of \$10 (about 3 US dollars at that time) for each answered survey as a gratitude to the families willing to participate in our study. In 10 percent of the cases, the survey could not be performed because there was nobody at home in the three visit attempts, the parcel was not used as a house, rejection or other reasons. These parcels were randomly replaced.

⁵ We also administered the survey to 150 households in the San Martin neighborhood. All our results remain unaltered when we include these parcels in our regressions.

Besides standard demographic and economic information, the survey included a small set of questions designed to capture the squatter's values and beliefs in a manner that follows as closely as possible the way political scientists (e.g., Inglehart (1990)) and economists (e.g., Alesina, Glaeser and Sacerdote (2001)) have approached the issue. During a pilot study, however, it became apparent that the standard approach followed by these authors had to be modified to tackle a serious limitation in our approach: the relatively limited educational attainment of the individuals in our sample only allowed for very broad ideological categories to be studied.⁶ Thus, we settled on a set of questions designed to study general pro-market attitudes rather than attempt to identify the relevance of particular categories (e.g., study the relative importance of materialist versus individualist beliefs) or the precise channels through which property rights may affect beliefs. To do this, we selected from previous surveys of this type (mainly the World Values Survey, the GSS and the Eurobarometer) the set of questions that more closely captures beliefs and values consistent with the functioning of free markets. In some cases we introduced small alterations (e.g., making reference to a recent event such as a flood) to make them easier to be interpreted by our subjects.

At least since Adam Smith, a large body of work in history and economics has argued that individualism, materialism and meritocratic inclinations are conducive to the functioning of markets. More recent work has insisted that also trust and social capital belong to this category. Arrow, for example, writes

“In the absence of trust ... opportunities for mutually beneficial co-operation would have to be foregone ... norms of social behaviour, including ethical and moral codes (may be) ... reactions of society to compensate for market failures. Arrow (1971, p. 22)⁷

Accordingly we included a question designed to capture aspects of social capital. We finally settled on the following four questions:

⁶ During the pilot study we also observed that the limited education of our subjects also prevented us from re-phrasing some of the belief questions from the World Values Survey into questions involving weights, as suggested by Durlauf (2002) following an approach developed in Dominitz and Manski (1997).

⁷ Cited in Durlauf (2002). See his and other contributions to the symposium on social capital in *The Economic Journal* in November 2002, as well as Coleman (1988) and Putnam (1993). Schotter (1998) presents experimental evidence on cooperation and shirking in a setting akin to a labor market after a trust-inducing game is played.

1. *“Do you believe that it is possible to be successful on your own or a large group that supports each other is necessary?”*

The two possible answers were *“It is possible to be successful on your own”* and *“A large group is necessary to be successful”*.

2. *“Do you believe that having money is important to be happy?”*

The possible answers were *“Indispensable to be happy”*, *“Very important to be happy”*, *“Important to be happy”*, and *“Not important to be happy”*.

3. *“In general, people who put effort working end up much better, better, worst or much worst than those that do not put an effort?”*

The possible answers were *“Much better than those that do not put an effort”*, *“Better than those that do not put an effort”*, *“Worst than those that do not put an effort”* and *“Much worst than those that do not put an effort”*.

4. *“In general, in our country, would you say that one can trust other people or that people cannot be trusted?”*

The possible answers were *“You can trust others”* and *“You cannot trust others”*.

We also selected from surveys previously used in the literature, the set of questions concerning values (i.e., long standing normative attitudes) related to aspects of what we are calling, rather simplistically, free-market ideology. One way of distinguishing between values and beliefs is to note that beliefs are positive statements, about the functioning of the economy or the characteristics of other people. In contrast, values are normative statements about the way the economy ought to be organized.

II.c. Estimation Strategy

Operationally, we will analyze the effects of land titling on variable Y by estimating the following regression model:

$$Y_i = \alpha + \beta X_i + \gamma \text{Property Right}_i + \varepsilon_i \quad (1)$$

where Y is the variable under study, X is a vector of controls, ε is the error term, and γ is the parameter of interest, which captures the effect of *Property Right* (a dummy variable indicating the possession of land title) on the outcome under study. Controls for household characteristics include the age of the household head (three dummies: fewer than 36, between 36 and 49, and over 49), gender of the household head, nationality of the household head, nationality of the father of the household head, years of education of the father of the household head, nationality of the mother of the household head and years of education of the mother of the household head. Controls for the parcel characteristics include surface of the parcel (in square meters), distance to creek (in blocks), distance to nearest non-squattered area, and a dummy which equals 1 if the parcel is at the corner of the block.⁸

A potential concern with regression (1) is that a number of families that were offered the possibility of obtaining land titles did not receive them for reasons that originate in the presence of unobservable factors that could also affect the variable under study. However, our natural experiment can easily address this issue of non-compliance (besides the problem of selection mentioned above), since we can instrument *Property Right*, a dummy variable that indicates whether the parcel occupied by household i is titled or not, using the “intention to treat” variable *Property Right Offer*, a dummy variable indicating whether the original owner surrender the parcel occupied by household i to the State or not (see Angrist *et al*, 1996). Thus, we report estimates of the effect of land titling on beliefs by two-stage least squares (2SLS).⁹

⁸ See the appendix for definition of the control variables.

⁹ The variables under study are Limited Dependent Variables. Angrist (2001) argues that the problem of causal inference with Limited Dependent Variables is not fundamentally different from causal inference with continuous outcomes. If there are no covariates or the covariates are sparse and discrete, linear models and associated estimation techniques like 2SLS are no less appropriate for LDV's than for other types of dependent variables. Certainly, this is the case in a natural experiment where controls are only included to improve the efficiency of the estimates but their omission would not bias the estimate of the parameter of interest.

III. Results

III.a. Beliefs and Property Rights

Table I presents our basic set of results concerning the effect of property rights on beliefs. Column (1) focuses on what can be termed individualist beliefs. We attempt to capture them with *Success-Alone*, the answer to the question “Do you believe that it is possible to be successful on your own or a large group that supports each other is necessary?” The dependent variable is a dummy that equals 1 when the answer is “It is possible to be successful on your own”, and equals 0 when the answer is “A large group is necessary to be successful” (see the appendix for a definition of variables). The *Property Right* variable is statistically significant at the 2.5-percent level (t-statistic equal to 2.25). Column (1-b) repeats the exercise but controlling for parcel and household characteristics with similar results. The results suggest that individuals who received property rights are more likely to respond that one can be successful on his/her own than those that do not have property rights. To get a sense of the size of the effect, note that the proportion of squatters answering the individualist option in the group that does not have property rights is 0.322 (standard error 0.042) while that for the group that has titles is 0.439 (standard error 0.028). In other words, giving property rights increases the proportion of people giving what we call the “pro-market” response by 12 percentage points. This is an increase of almost 37% relative to the level for the squatters without titles.

Column (2) moves to materialist beliefs as captured by *Money-Important*, the answer to the question “Do you believe that having money is important to be happy?” The four possible answers have been collapsed to two categories. The dependent variable is a dummy that equals 1 for those answering “Indispensable to be happy”, “Very important to be happy”, or “Important to be happy”; and equals 0 for those answering “Not important to be happy”. The correlation between this variable (*Money-Important*) and our measure of individualist beliefs (*Success-Alone*) is only 0.07. The positive coefficient in column (2) in Table I indicates that respondents that have property rights are more likely to hold the materialist view. The use of only two categories for the answers (versus four) does not change the results. When the answers are separated into the four possible categories, it is observed that the sample with property rights has more weights in all three of the top categories and less in the lowest category (“Not important to be

happy”).¹⁰ To get a sense of the size of the effect, note that the proportion of people choosing the materialist answer in the group without property rights is 0.487 (s.e. 0.045) while that for the group that has titles is 0.670 (s.e. 0.034). In other words, giving property rights increases the proportion of people giving what we call the "pro-market" response by 18 percentage points, which represents an increase of almost 38%.

Column (3) focuses on meritocratic beliefs by studying *Effort-Better*. This is a dummy that takes the value 1 if the answer to the question "*In general, people who put effort working end up much better, better, worst or much worst than those who do not put an effort?*" is "*Much better than those that do not put an effort*" or "*Better than those that do not put an effort*". It is 0 if the selected answer was "*Worst than those that do not put an effort*" or "*Much worst than those that do not put an effort*". In contrast to columns (1) and (2), the sample with property rights does not tend to report a different answer as compared to those with no legal titles. The proportion of people choosing the meritocratic answer in the group without property rights is 0.737 (s.e. 0.039) while that for the group that has titles is 0.785 (s.e. 0.029). This result holds true even when we repeat the regression allowing different aggregations of the four different categories (although there seems to be a mild compression of the distribution in the sample with property rights).¹¹ In absolute terms, the proportion of squatters (with and without titles) that report to hold meritocratic beliefs is almost two thirds, which seems large (see section III.c. below for comparisons with the general population).

Column (4) in Table I studies social capital by focusing on *Trust-Others*, a dummy taking the value 1 if the answer to the question "*In general, in our country, would you say that one can trust other people or that people cannot be trusted?*" is "*You can trust others*" and equals 0 if the answer is "*You cannot trust them*". Individuals with property rights tend to report that they believe that one can trust other people. To get a sense of the size of the estimated effects, note that the proportion of people choosing the answer that is most conducive to high levels of social capital in the group without property rights is 0.295 (s.e. 0.041) while that proportion for the group that has titles is 0.413 (s.e. 0.035). In other words, giving property rights increases the

¹⁰ Similar results obtain if we run ordered Probit regressions with four categories.

¹¹ Again, similar results obtain if we run an ordered Probit.

proportion of people giving what we call the "pro-market" response by almost 12 percentage points, which represents an increase of 40% for the squatters without titles.

In summary, there is evidence that individuals tend to report different beliefs when they exogenously receive property rights in three of the four categories studied. The sign of the effect in these three variables is always in the direction of making the beliefs more compatible with free markets. This is so because a person that believes that one can be successful without the support of a large group, and that money is quite important for happiness are more likely to be successful in a free market. It has also been argued that trusting behavior (when it is not *naive*) fosters cooperation, something that is valuable in a market when contracts are difficult to write. We summarize these findings in column (5) where we create an index of pro market beliefs (*Pro Market Beliefs*) as the sum of the dummies for the four previous questions. Thus, an individual that ticks (what we are calling) the pro market answer on all four questions gets a 4, while one that always ticks the non market answer gets a 0. The effect of property rights on *Pro Market Beliefs* is positive and significant. The average answer for squatters that do not have formal titles is 1.842 (s.e. 0.088), while that for squatters that do have formal property rights is 2.298 (s.e. 0.072).

III.b. Direct versus Indirect Effects

Beliefs may depend on variables that are, in turn, affected by property rights. It is then of interest to see if the estimates presented in Table I represent a direct effect of property rights, or if they represent an indirect effect of property rights through other variables. Of primary interest is the role of education, income and wealth (Alesina *et al*, 2001). Galiani and Schargrodsky (2004) show significant effects of land titling on housing investments and child education in this population.¹² As these variables are potentially endogenous, they were excluded as controls from Table I b, but these exclusions led us to wonder if there is still variation in beliefs that is explained by property rights after the effect of education, income and wealth is taken into account.

¹² Field (2003) finds effects on labor supply in a sample of urban squatters in Peru. Work on the value of titles includes Jimenez (1984) and Lanjouw and Levy (2002).

Table II presents the results after including *Income* (the total income of the household divided by the number of members of the household), *Education* (years of education of the household head) and *House Value* (total square meters of the construction). The last variable is included to capture the wealth of the household, as the house is the primary asset of the families in the sample and value is closely captured by size. The effect of property rights is largely unaffected by the inclusion of these variables, leading us to conclude that the estimated effect of property rights is direct.¹³ Indeed, the equality of the coefficients on Property Rights in these regressions and those in the corresponding regressions in Table I b cannot be rejected at standard significance levels. The results in Tables I and II are robust to clustering of the standard errors by block, side of a block, or former owner. Moreover, if we include two different dummies for the early treated (1989-91) and the late treated (1997-98) parcels, we cannot reject the equality of the coefficients on these dummies.

III.c. Size

In order to provide some background to our study and to better understand the size of the effects, we also hired an opinion poll firm to conduct a short survey amongst residents of the Buenos Aires metropolitan area using the same questions on beliefs employed in our study of the Solano squatter settlement. The results are reported in the first row of Table III. Of those asked, “*Do you believe that it is possible to be successful on your own or a large group that supports each other is necessary?*”, 44% of the respondents in the general population of Buenos Aires answered “*It is possible to be successful on your own*” (while the remaining 56% preferred the answer “*A large group is necessary to be successful*”). Now compare this with our results from the Solano experiment, summarized in the second and third rows of Table III. Amongst squatters without titles in Solano, only 32% answered “*It is possible to be successful on your own*”. Giving them property rights takes this proportion to 44%, which is statistically indistinguishable from the proportions in the general population. In this respect, property rights appear remarkably powerful in making the beliefs of the people in this very poor neighborhood resemble those of the general population.

¹³ The sample drops to 243 due to limited data on income. The results do not change if *Income* is excluded and these regressions are run on the full sample with only *Wealth* and *Education* as controls.

With respect to the second question on materialist beliefs, 0.671 (s.e. 0.019) of the general Buenos Aires population answers that money is important (*“Indispensable to be happy”*, *“Very important to be happy”*, or *“Important to be happy”*) while just over 32% answered *“Not very important to be happy”*. In contrast, almost 49% of the Solano squatters without property rights answered that money was important for happiness. The third row of column (2) suggests that giving property rights would increase the proportion of respondents who think that money is important to 67%. This number is statistically similar to that in the general population. Again, this suggests a large role for property rights in closing the belief gap between a group of very poor squatters and the general population.

The proportion of people with meritocratic beliefs in the general population (i.e., those based on the question *“In general, people who put effort working end up much better, better, worst or much worst than those who do not put an effort?”*) is 0.726 (s.e.0.019). The proportion with meritocratic beliefs amongst Solano squatters without property rights is 73%. Giving these individuals titles has no effect statistically (the proportion with meritocratic beliefs in the sample with property rights is 78%). Given that untitled squatters start out with beliefs that are already similar to those of the general population on this dimension, it is perhaps unsurprising that the “treatment” has little effect.

Finally, the fourth question on trust reveals that 0.476 (s.e. 0.021) of the general Buenos Aires population answers that one can trust other people. In contrast, only 29% of the Solano squatters without property rights answered that one can trust other people, while this proportion increases to 41% for the squatters that received property rights. Again this number is statistically similar to that in the general population and suggests a large role for property rights in closing the belief gap between a group of very poor squatters and the general population.

We can summarize our results using an index of pro market beliefs. The average of *Pro Market Beliefs* for squatters without property rights in the Solano neighborhood is 1.842. The same average for the squatters that received property rights is 2.298, which is indistinguishable from the average of 2.342 (s.e. 0.046) exhibited by the Buenos Aires general population. Thus, the provision of property rights completely closes the belief gap between

the average population and the squatters, as there are no significant differences in the beliefs that the two groups hold. In spite of the remarkable differences in the life that squatters and the general public experience, their beliefs appear similar when the squatters are given property rights.

IV. Interpretation

Our paper identifies a large, causal effect of property rights on beliefs. It is not, however, designed to identify the mechanisms through which the effect takes place. Several possibilities have been discussed in previous work. For a full discussion see Bowles (1998) and the references cited therein. To complement the results above we now summarize very broadly previous work into two categories and discuss our results through these lenses.

IV.a. Theories of Belief Formation

Exogenous Beliefs: In this view beliefs are formed as a by-product or consequence of an agent's activities and interaction with others in society. It includes the case of people who would actively desire to know the value of some parameter in society (e.g., how much can you trust others or how important is money for happiness), and come round to their beliefs through their own experience and the observation of other people's experience. A prominent example of this view is Piketty (1995), where learning is costly so in some cases a series of good (or bad) realizations of a shock lead individuals to settle on a particular belief.¹⁴ Di Tella and MacCulloch (2002) present an alternative approach to belief formation where the observation of corruption offends citizens and informs them about how fair or efficient other people are. The common theme in this approach is that individuals are not actively seeking to change their beliefs, but instead end up with a set of beliefs as a product of their

¹⁴ This view includes models with radically different implications for government intervention, such as the theory of self-fulfilling beliefs on status of Piketty (1998). In it, agents care about other people's opinion about them. Thus, if upwardly mobile agents are viewed as lucky (rather than deserving), they may get limited social recognition and have few incentives to engage in social climbing. Then the public's belief on the low informativeness of social mobility may be validated and multiple equilibria may emerge. Also, as he points out, the models of statistical discrimination can be considered related to this approach. In these models employers offer low paying jobs to low class agents because they expect them to be unprepared, and, given this, low class agents adopt a behavior that validates the employer's expectation. These papers, as well as the Marxist

social and market interactions. A factor that complicates identification (of *Exogenous* versus *Endogenous Beliefs* theories, see below) is that agents may give a large weight to their own experience, so that even a small difference in their personal circumstances may give rise to large differences in their reported beliefs.

Endogenous Beliefs: A large research in sociology and psychology suggests that individuals engage in belief manipulation to improve their expected utility when the costs, for example in terms of the mistakes that this induces, are not too high and when there are enough benefits, for example in terms of the effort they induce. Related work includes Akerlof and Dickens (1982), Carrillo and Mariotti (2002), *inter alia*.¹⁵ Recently, Benabou and Tirole (2002) develop a model of this type to explain the correlation of beliefs and government intervention across Europe and America. The mechanism emphasized involves individuals who lack will power and benefit from distorting their beliefs in a way that makes them exert more effort. A similar strand of research originates in the idea that beliefs can be self-serving. In Rabin (1995), individuals self-servingly gather, avoid and interpret the relevant evidence in order to relax moral internal constraints. Babcock *et al* (1996) cite the evidence gathered in Hastorf and Cantril (1954), where students from Dartmouth and Princeton are asked to watch a football match between the two universities. It appears that Princeton students saw the Dartmouth team commit between two and three times as many penalties as Princeton whereas Dartmouth students saw the two teams commit an equal number of offenses. Roth and Murningham (1982) and Babcock *et al* (1996) show that these effects may interfere with reaching agreement in bargaining settings. The latter reports that teacher contract negotiators in the US select "comparable" districts in a biased fashion and that this is correlated with strike activity (see also Loewenstein *et al* (1993)). In brief, the common theme in this approach is that individuals choose the more convenient set of beliefs, given the prevailing objectives and constraints.

approach (see Endogenous Beliefs below) rely on external forces to shape beliefs rather than on the internal purposeful choice of a strategic actor.

¹⁵ Coleman (1990) describes the related phenomenon of *identification* (see Bettelheim (1953)). He states "If outcomes of events are benevolent to another actor, then one might find it possible to increase one's satisfaction by identification with that other." He then describes fan clubs (which are always for successful people, such as movie stars) as evidence of this. For this to be relevant one would expect identification to involve convergence of beliefs, and property rights to help with such identification.

Also in this category of endogenous beliefs are Marxist explanations where beliefs are purposefully shaped by the “social framework”. It is argued that the capitalist class imposes on the poor a “false consciousness”, full of unrealistic ideas of social mobility, to reduce their demands and incentives to organize (and revolt). It is possible that property rights are the mental “key” which allows the poor to connect (perhaps emotionally) with the capitalist fictions pushed through the educational system and the media. See, for example, Bourdieu and Passeron (1970). On symbols of meanings and cultural objects, see Geertz (1973).¹⁶

IV.b. Interpretation

As mentioned above and in Section II.b., our empirical exercise involves individuals with low to very low levels of education. Thus, the survey questions that we use are relatively simple, and the kind of identification of theories of belief formation that we can aspire to involves categories that are accordingly broad. With this in mind, the evidence we present can be seen as strong evidence in favor of the hypothesis that the treatment (giving property rights) changes people’s beliefs; and that these changes are in the direction of making people more pro-market.

The evidence is less informative as to the precise channel through which beliefs are affected. In terms of the two broad classes of theories outlined, it seems, however, that the evidence is less consistent with theories of exogenous individual beliefs. The fundamental reason goes back to the empirical design: we compare individuals with access to similar sets of information. Specifically, our natural experiment involves a comparison of two groups of individuals of very similar pre-treatment characteristics. Both groups live in very close proximity to each other and can communicate often. We complemented this with specific tests to see if there were differences across the two groups in their ability to communicate with others and in the frequency with which they did so. We found no statistical differences in access to telephone (fixed line), cellular telephones, possession of TV sets and access to cable TV services. There are also no statistical differences in the frequency of their interactions with their neighbors or in their participation in neighborhood activities. More importantly, both groups seem practically indistinguishable during interactions they may have with people from outside the neighborhood, for example, in the labor and credit

¹⁶ See also Kertzer (1996) and Johnson (2002).

markets. To most potential employers, for example concerned about punctuality and attendance of their future employees, they are simply mindful of the distance of the Solano neighborhood (without distinguishing between those with and those without property rights). Given that the two groups have access to similar information, our evidence could be consistent with the hypothesis of exogenous beliefs only if information does not travel to people that live very close by and people only give weight to their own individual experiences (and not to the experiences of the inhabitants of their same neighborhood).¹⁷ Although this seems implausible, our approach does not allow us to make more informed statements on this.

The economic interpretation of the evidence on the first two questions does provide further clues on why property rights status may affect belief manipulation. With respect to the first question, concerning individualist beliefs (see *Success-Alone*, column (1) of Table I), beliefs should change after the occupation if they respond to a self-serving mechanism. Indeed, the occupation was clearly a cooperative enterprise, as the strength of the squatters originated in their collective and coordinated action. It is well understood in these neighborhoods that they would have failed if there had only been a couple of individual squatters. After property rights are obtained, it is possible that there are fewer gains to group action and that a person acting individually would be able to undertake the future challenges they face (improving their houses, savings, etc.) on their own. This means that it may be the case that the convenience of believing that groups are not necessary for success is higher for those that have property rights than for those that still are in the process of obtaining them. Interestingly, this question also allows us to be skeptical of interpretations that see experience (exogenous beliefs) driving the results. If experience (and not self serving attitudes) were behind these results, it would be those *with* property rights that should remember the benefits of group action more vividly in their minds as they were the ones that benefited the most. Accordingly, people with property rights should say that a group is needed to be successful. Yet, those with property rights are more likely to say that one can be successful on his/her own rather than in a group. A similar interpretation is possible with the second question (see *Money-Important*, column (2) in Table I). People who did not receive

¹⁷ Galiani and Schargrodsy (2004) report no differences across the two groups in their performance in the labor and credit markets.

property rights would gain more from discounting the importance of material status for happiness, as reducing the enjoyment from material possessions gives less salience to their misfortune (with respect to property-rights).

The logic behind potential differences in the third question (column (3) in Table I) could be that property rights would increase the marginal utility of earned income (maybe because they allow savings to be protected) so that individuals in the treated group would gain more from the extra motivation provided by a distorted belief regarding how effort is important for success. We found no differences, however, on the answers to this question. In the case of the fourth question (column (4) in Table I), the differential response could be attributed to an induced emotional disposition following the unsuccessful efforts to obtain the titles. In these two cases, the rejection of the “experience” interpretation is only based on the design and not the economic interpretation of the results (in contrast to what we did for the first two columns).

IV.c. Limits

The estimated effect of property rights on people’s beliefs is large. A natural question concerns the limits of the mechanism under analysis. Indeed, it is conceivable that the treatment affects other aspects of the individual’s mindset, besides beliefs. An extreme possibility from the point of view of an economist is that it affects preferences. We do not have direct data on preferences. However, our survey of the Solano neighborhood includes some questions concerning values. These are normative statements as to how things should be, whereas beliefs can be regarded as positive statements as to how things actually are. For an excellent discussion, as well as a review of some available evidence, see Bowles (1998). Under the assumption that a person that declares to think that there should be more of policy x , actually enjoys higher happiness if x is increased, normative statements can be seen to proxy for a person’s preferences. For the purposes of this section, it is sufficient to assume that such normative statements are closer to a person’s preferences than beliefs.¹⁸

¹⁸ By and large, the economics literature has not focused on the distinction between values and beliefs, which we argue can be empirically fruitful. See, however, the contributions to Ben-Ner and Putterman (1998). More generally, one can view values as a term in the objective function and a belief as the value adopted by the parameters or variables in the constraints.

Table IV presents results using questions designed to elicit the economic values of the squatters. The first question in column (1), for example, focuses on *Fair-Efficient*, the answer to the question "*Imagine two construction workers, of the same age, who work laying bricks in the same site. One of them is faster, more efficient and punctual, but the other has to support a larger family. The more efficient one is paid more than the one supporting the larger family. Do you think this is fair?*" The results show that there are no differences across answers from individuals with and without property titles. The rest of the table repeats the exercise with other measures of economic values with largely similar results. Holding property rights to the land they occupy do not affect the answers given to questions concerning economic values. Results in column (4) in Table IV are particularly interesting as a potential concern is that these economic values may be too abstract to be grasped by respondents with low level of education. The variable *Occupy-wrong*, deals with an issue on which they have direct experience as it is the answer to the question "*If a family owns a piece of land that is not using, do you think it is right that another family occupies it?*" Again, having received property rights does not lead to different answers on this question.

In summary these results suggest that the treatment has no effect on a person's values. Although the effect of property rights on beliefs is large, the effects on measures of values (that we see as being closer to the person's preferences) are small and insignificant.

Note that the observed pattern (no effect on values, large effect on beliefs) does not help us identify the theories of belief formation outlined in section *IV.a*. Under the theory of exogenous beliefs, authors have emphasized that values are affected early in life and that there is a large component of intergenerational transmission of values within families. See, for example, the arguments and evidence of similar voting patterns within families discussed in Piketty (1995). Under the theory of endogenous beliefs one expects a similar pattern. Introspection, for example, suggests that it is easier to manipulate one's beliefs than to manipulate one's values. Consider, for example, a person who thinks materialism is wrong and that people should not be motivated by money alone. Imagine that they also hold the belief that money is not crucial for happiness. If this person has self-control problems (e.g., in the context of the Benabou and Tirole (2003) model), this person can preserve the non-materialist value and achieve a substantial boost in his/her internal motivation for hard work

by just modifying their belief. For example, and rather trivially, a belief that everybody else is looking out for themselves (or that the neighbor is always working and never around), may give one the motivation to work long hours while at the same time allowing the notion that this is an undesirable overall social arrangement.¹⁹

V. Conclusion

A number of economists have argued that the protection of property rights brings about significant benefits. Some of these include a higher level of investment, better matching through higher levels of trading, more labor supply and better access to credit. The influential work of de Soto (2000) has proved the appeal of these ideas in the policy world. We argue that having property rights may have another effect: they may change the beliefs that people hold. In particular, giving individuals property rights may change their beliefs in the direction that is most conducive to the workings of a market economy. Since beliefs are an important component of institutions in the work of authors such as North, Greif and others, this hypothesis suggests a channel through which policies and economic experience affect institutional development.

We study this hypothesis using a natural experiment from a squatter settlement in the outskirts of Buenos Aires, Argentina. More than 20 years ago squatter families occupied a tract of land made up of different parcels, each with a different legal owner. When an expropriation law was passed, some of the legal owners surrendered the land while others are still contesting the expropriation in the slow Argentine courts. Thus, only one group of squatters obtained property rights. Since the decision to challenge the occupation (by the original owners) was orthogonal to the characteristics of the squatters, the allocation of property rights amongst these squatters can be considered exogenous in equations describing their beliefs. A considerable advantage of the study's design is that it involves the comparison of individuals living in very close proximity, with largely similar life experiences.

¹⁹ The distinction between values and beliefs is certainly made in the sociology and psychology literatures, and is closely connected to the distinction made in the social norms literature. See, for example, the introductory chapter and the contributions in Hechter and Opp (2001).

We find evidence that squatters who obtained property rights report beliefs that are more conducive to the workings of a free market. Of the four beliefs considered, there are significant differences between the two groups (those with and those without property rights) in three of them. Individuals with property rights are more likely to hold beliefs that we describe as individualist, materialist and beliefs consistent with social capital accumulation. There are no differences in terms of meritocratic beliefs. A possible explanation is that squatters without titles already start with meritocratic beliefs that are no different from those of the general population. The size of the effects appear large: almost all of the difference in beliefs between squatters without titles and the general population of Buenos Aires (about 20 percentage points) is eliminated by giving property rights to the squatters. In spite of the remarkable differences in their life circumstances, squatters have similar beliefs to the overall population as long as they are given property rights.

Our empirical approach does not allow us to provide a sharp test of the different theories that can explain why property rights affect beliefs. There are, however, some suggestive patterns. First, since individuals that are treated (i.e., that were given property rights) live in the same area, have very similar life experiences, are viewed similarly by outsiders, and have access to similar information sets than the control group (i.e., individuals that were not given titles), it is hard to argue that what has caused these differences is that they have truly observed different realities. Second, the interpretation of some of the evidence directly contradicts the “experience” interpretation. For example, squatters with property rights declare to believe that one can be successful on your own (rather than in a large group), when in fact the occupation of the land would have never succeeded if it had been done by squatters acting individually. A behavioral explanation, where subjects invest in “useful” beliefs is somewhat more appealing if one assumes that property rights makes the holding of free market beliefs more advantageous. Finally, there is no evidence of differences in the values that squatters with and without property rights declare to hold.

De Soto (2000) has argued forcefully that property rights may allow the poor to access large amounts of capital and generate new wealth. This paper suggests that giving the poor property rights may also change their beliefs in a pro-market direction.

Table I: Beliefs and Property Rights in the Solano Settlement

	(1) Success-Alone	(2) Money- Important	(3) Effort-Better	(4) Trust-Others	(5) Pro-Market Beliefs
<i>Property Right</i>	0.144** (0.064)	0.202*** (0.063)	0.072 (0.056)	0.108* (0.063)	0.527*** (0.131)
Controls	No	No	No	No	No
Observations	312	312	313	313	312

	(1b)	(2b)	(3b)	(4b)	(5b)
<i>Property Right</i>	0.149** (0.068)	0.181*** (0.068)	0.001 (0.057)	0.123* (0.067)	0.455*** (0.139)
Controls	Yes	Yes	Yes	Yes	Yes
Observations	309	309	310	310	309

Notes: [1] All columns present IV regressions where *Property Right* is instrumented with *Property Right Availability*. Regressions in the b panel are similar but control for household and parcel characteristics. The former include the age of the household head (three dummies: fewer than 36, between 36 and 49, and over 49), gender of the household head, nationality of the household head, nationality of the father of the household head, years of education of the father of the household head, nationality of the mother of the household head and years of education of the mother of the household head. The latter include surface of the parcel (in square meters), distance to creek (in blocks), distance to nearest non-squattered area, and a dummy which equals 1 if the parcel is at the corner of the block.

[2] Standard errors in parentheses. Single-starred bold-face significant at 10 percent level; Double-starred bold face significant at 5 percent level; Triple-starred bold face significant at 1 percent level.

[3] *Property Right* equals 1 if the household has formal titles to the parcel.

[4] *Property Right Availability* equals 1 if land titles were available for the parcel, i.e. if the former owner surrendered the land to the State.

[5] Dependent variables are the answers to the questions:

Column (1) Success-Alone: Dummy equals 1 if answer to question, “Do you believe that it is possible to be successful on your own or do you need a large group that supports each other?” is “It is possible to be successful on your own”, and equals 0 if answer is “You need a large group to be successful”.

Column (2) Money-Important: Dummy equals 1 if answer to question, “Do you believe that having money is important to be happy?” is “Indispensable to be happy”, “Very important to be happy” or “Important to be happy” and equals 0 if answer is “Not important to be happy”.

Column (3) Effort-Better: Dummy equals 1 if answer to question, “In general, people who put effort working end up much better, better, worst or much worst than those who do not put an effort?” is “Much better than those that do not put an effort” or “Better than those that do not put an effort” and equals 0 if answer is “Much worst than those that do not put an effort” or “Worst than those that do not put an effort”.

Column (4) Trust-Others: Dummy equals 1 if answer to question “In general, in our country, Would you say that one can trust other people or that people cannot be trusted?” is “You can trust others” and equals 0 if answer is “You cannot trust them”.

Column (5) Pro-Market Beliefs: The individual’s sum of the dummies used in columns (1-4).

Table II: Direct vs. Indirect Effects

	(1) Success-Alone	(2) Money- Important	(3) Effort-Better	(4) Trust-Others	(5) Pro-Market Beliefs
<i>Property Right</i>	0.168** (0.076)	0.152** (0.078)	0.013 (0.067)	0.135* (0.077)	0.470*** (0.151)
Education	0.048*** (0.016)	0.033** (0.017)	-0.006 (0.014)	0.015 (0.017)	0.091*** (0.033)
Income	0.0001 (0.0005)	-0.0003 (0.0005)	0.0004 (0.0004)	-0.0000 (0.0005)	0.0001 (0.001)
Wealth	0.0002 (0.001)	0.001 (0.001)	-0.001* (0.0009)	-0.0001 (0.001)	-0.0002 (0.002)
Controls	Yes	Yes	Yes	Yes	Yes
Observations	243	243	243	243	243

Notes: [1] All columns present IV regressions where *Property Right* is instrumented with *Property Right Availability*, and include controls for household and parcel characteristics. The former include the age of the household head (three dummies: fewer than 36, between 36 and 49, and over 49), gender of the household head, nationality of the household head, nationality of the father of the household head, years of education of the father of the household head, nationality of the mother of the household head and years of education of the mother of the household head. The latter include surface of the parcel (in square meters), distance to creek (in blocks), distance to nearest non-squattered area, and a dummy which equals 1 if the parcel is at the corner of the block.

[2] Standard errors in parentheses. Single-starred bold-face significant at 10 percent level; Double-starred bold face significant at 5 percent level; Triple-starred bold face significant at 1 percent level.

[3] *Property Right* equals 1 if the household has formal titles to the parcel.

[4] *Property Right Availability* equals 1 if land titles were available for the parcel, i.e. if the former owner surrendered the land to the State.

[5] *Education* equals the years of education of the household head.

[6] *Income* equals the total household income divided by the number of household members.

[7] *House Value* equals the total number of constructed square meters.

[8] Dependent variables are the answers to the questions:

Column (1) Success-Alone: Dummy equals 1 if answer to question, “Do you believe that it is possible to be successful on your own or do you need a large group that supports each other?” is “It is possible to be successful on your own”, and equals 0 if answer is “You need a large group to be successful”.

Column (2) Money-Important: Dummy equals 1 if answer to question, “Do you believe that having money is important to be happy?” is “Indispensable to be happy”, “Very important to be happy” or “Important to be happy” and equals 0 if answer is “Not important to be happy”.

Column (3) Effort-Better: Dummy equals 1 if answer to question, “In general, people who put effort working end up much better, better, worst or much worst than those who do not put an effort?” is “Much better than those that do not put an effort” or “Better than those that do not put an effort” and equals 0 if answer is “Much worst than those that do not put an effort” or “Worst than those that do not put an effort”.

Column (4) Trust-Others: Dummy equals 1 if answer to the question “In general, in our country, Would you say that one can trust other people or that people cannot be trusted?” is “You can trust others” and equals 0 if answer is “You cannot trust them”.

Column (5) Pro-Market Beliefs: The individual’s sum of the dummies used in columns (1-4).

Table III: Beliefs amongst Squatters in Solano and in the General Population

	(1) Success- Alone	(2) Money- Important	(3) Effort- Better	(4) Trust-Others	(5) Pro-Market Beliefs
<i>Average for:</i>					
Buenos Aires General Population (n=546)	0.440 (0.021)	0.671 (0.019)	0.726 (0.019)	0.476 (0.021)	2.342 (0.046)
Sample without Property Rights (n=122)	0.322 (0.042)	0.487 (0.045)	0.737 (0.039)	0.295 (0.041)	1.842 (0.088)
Sample with Property Rights (n=191)	0.439 (0.028)	0.670 (0.034)	0.785 (0.029)	0.413 (0.035)	2.298 (0.072)

Notes: *Property Right* means that the household has formal titles to the parcel.

Variables are the answers to the questions:

Column (1) Success-Alone: Dummy equals 1 if answer to question, “Do you believe that it is possible to be successful on your own or do you need a large group that supports each other?” is “It is possible to be successful on your own”, and equals 0 if answer is “You need a large group to be successful”.

Column (2) Money-Important: Dummy equals 1 if answer to question, “Do you believe that having money is important to be happy?” is “Indispensable to be happy”, “Very important to be happy” or “Important to be happy” and equals 0 if answer is “Not important to be happy”.

Column (3) Effort-Better: Dummy equals 1 if answer to question, “In general, people who put effort working end up much better, better, worst or much worst than those who do not put an effort?” is “Much better than those that do not put an effort” or “Better than those that do not put an effort” and equals 0 if answer is “Much worst than those that do not put an effort” or “Worst than those that do not put an effort”.

Column (4) Trust-Others: Dummy equals 1 if answer to question “In general, in our country, Would you say that one can trust other people or that people cannot be trusted?” is “You can trust others” and equals 0 if answer is “You cannot trust them”.

Column (5) Pro-Market Beliefs: The individual’s sum of the dummies used in columns (1-4).

Table IV: Values and Property Rights in the Solano Settlement

	(1) Fair-Efficient	(2) Flood-Help	(3) Rich-Poor	(4) Occupy- Wrong	(5) Pro-Market Values
<i>Property Right</i>	0.012 (0.064)	0.012 (0.064)	-0.009 (0.065)	-0.034 (0.066)	-0.008 (0.143)
Controls	No	No	No	No	No
Observations	310	304	311	312	301

	(1b)	(2b)	(3b)	(4b)	(5b)
<i>Property Right</i>	0.016 (0.065)	-0.021 (0.066)	-0.021 (0.068)	0.030 (0.070)	0.020 (0.147)
Controls	Yes	Yes	Yes	Yes	Yes
Observations	307	301	308	309	298

Notes: [1] All columns present IV regressions where *Property Right* is instrumented with *Property Right Availability*. Regressions in the b panel are similar but control for household and parcel characteristics. The former include the age of the household head (three dummies: fewer than 36, between 36 and 49, and over 49), gender of the household head, nationality of the household head, nationality of the father of the household head, years of education of the father of the household head, nationality of the mother of the household head, and years of education of the mother of the household head. The latter include surface of the parcel (in square meters), distance to creek (in blocks), distance to nearest non-squattered area, and a dummy which equals 1 if the parcel is at the corner of the block.

[2] Standard errors in parentheses.

[3] *Property Right* equals 1 if the household has formal titles to the parcel.

[4] *Property Right Availability* equals 1 if land titles were available for the parcel, i.e. if the former owner surrendered the land to the State.

[5] Dependent variables are the answers to the questions:

Column (1) Fair-Efficient: Dummy equals 1 if answer to question: “Imagine two construction workers, of the same age, who work laying bricks in the same site. One of them is faster, more efficient and punctual, but the other has to support a larger family. The more efficient one is paid more than the one supporting the larger family. Do you think this is fair?” is “Yes, this is Fair” and 0 if answer is “No, it is unfair”.

Column (2) Flood-Help: Dummy equals 1 if answer to question: “A short time ago there where floods in the North and people there suffered a lot. When these things happen, you would like the national government to help these people a lot, even if this means reducing a lot the quality of public education or to help these people somewhat, even if this means reducing somewhat the quality of public education?” is “Help these people somewhat, even if this means reducing somewhat the quality of public education” and 0 if answer is “Help these people a lot, even if this means reducing the quality of public education a lot”.

Column (3) Rich-Poor: Dummy equals 1 if answer to question: “Some people believe that the government should reduce the differences between rich and poor. Do you agree?” is “No, the government should only worry about improving education” and 0 if answer is “Yes, and the best way is to tax the rich and give that money to the poor”.

Column (4) Occupy-Wrong: Dummy equals 1 if answer to question: “If a family owns a piece of land that is not using, do you think it is right that another family occupies it?” is “I think it is wrong for others to occupy it” and 0 if answer is “I think it is ok for others to occupy it”.

Column (5) Pro-Market Values: The individual’s sum of the dummies used in columns (1-4).

Appendix: Data Definitions

Success-Along: A dummy variable taking the value 1 if the answer to the question "Do you believe that it is possible to be successful on your own or a large group that supports each other is necessary?" is "It is possible to be successful on your own"; and 0 if the answer is "A large group is necessary to be successful".

Money-Important: A dummy variable taking the value 1 if the answer to the question "Do you believe that having money is important to be happy?" was either "Indispensable to be happy", "Very important to be happy" or "Important to be happy"; and 0 if the answer is "Not important to be happy".

Effort-Better: A dummy variable taking the value 1 if the answer to the question "In general, people who put effort working end up much better, better, worst or much worst than those who do not put an effort?" was "Much better than those that do not put an effort" or "Better than those that do not put an effort"; and 0 if the answer is "Worst than those that do not put an effort" or "Much worst than those that do not put an effort".

Trust-Others: A dummy variable taking the value 1 if the answer to the question "In general, in our country, Would you say that one can trust other people or that people cannot be trusted?" was "You can trust others" and 0 if the answer is "You cannot trust others".

Fair-Efficient: A dummy variable taking the value 1 if the answer to the question "Imagine two construction workers, of the same age, who work laying bricks in the same site. One of them is faster, more efficient and punctual, but the other has to support a larger family. The more efficient one is paid more than the one supporting the larger family. Do you think this is fair?" was "Yes, this is fair" and 0 if the answer is "No, it is unfair".

Flood-Help: A dummy variable taking the value 1 if the answer to the question "A short time ago there were floods in the North and people there suffered a lot. When these things happen, would you like the national government to help these people somewhat, even if this means reducing somewhat the quality of public education, or to help these people a lot, even if this means reducing a lot the quality of public education?" was "Help these people somewhat, even if this means reducing somewhat the quality of public education" and 0 if the answer is "Help these people a lot, even if this means reducing the quality of public education a lot".

Rich-poor: A dummy variable taking the value 1 if the answer to the question "Some people believe that the government should reduce the differences between rich and poor. Do you agree?" was "No, the government should only worry about improving education" and 0 if the answer is "Yes, and the best way is to tax the rich and give that money to the poor".

Occupy-wrong: A dummy variable taking the value 1 if the answer to the question "If a family owns a piece of land that is not using, do you think it is right that another family occupies it?" was "I think it is wrong for others to occupy it" and 0 if the answer is "I think it is ok for others to occupy it".

Property Right: A dummy variable taking the value 1 if the household has formal titles to the parcel, and 0 otherwise

Property Right Availability: A dummy variable taking the value 1 if land titles were available for the parcel, i.e. if the former owner surrendered the land to the State, and 0 otherwise.

Education measures the years of education of the household head and equals: 4 if the maximum educational level of the household head is *Primary School-Incomplete*, 7 if *Primary School-Complete*, 9 if *High School-Incomplete*, 12 if *High School-Complete*; 13 if *Vocational School-Incomplete*; and 15 if *Vocational School-Complete*.

Income equals the total household income divided by the number of household members.

House Value equals the total number of constructed square meters.

Other household data from the survey used as controls in Tables I, II, and IV includes: age of the household head (three dummies: fewer than 36, between 36 and 49, and over 49), gender of the household head, nationality of the household head, nationality of the father of the household head, years of education of the father of the household head, nationality of the mother of the household head and years of education of the mother of the household head.

Data on parcels used as controls in Tables I, II, and IV includes: Surface of the parcel (in square meters), Distance to creek (in blocks), Distance to nearest non-squattered area, and a dummy which equals 1 if the parcel is at the corner of the block and 0 otherwise.

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