

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

Rafael Di Tella  
HBS

Sebastian Galiani  
UdeSA

Ernesto Schargrodsky\*  
UTDT

This Draft: November 28, 2005.

## Abstract

Owing property 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 beliefs for squatters without property rights is 81% 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 large differences in the lives they lead.

JEL: P16, E62.

*Keywords:* beliefs, property rights, natural experiment, institutions.

---

\* Rafael Di Tella, Harvard Business School, Boston, MA 02163, (617) 495-5048, [rditella@hbs.edu](mailto:rditella@hbs.edu). Sebastian Galiani, Universidad de San Andres, Vito Dumas 284, (B1644BID) Victoria, Provincia de Buenos Aires, Argentina, Tel: (54-11) 4725-7000, [sgaliani@udesa.edu.ar](mailto:sgaliani@udesa.edu.ar). Ernesto Schargrodsky, Universidad Torcuato Di Tella, Saenz Valiente 1010, (C1428BIJ) Buenos Aires, Argentina, Tel: (54-11) 4783-3112, [eschargr@utdt.edu](mailto:eschargr@utdt.edu). We are grateful to Alberto Farias, Daniel Galizzi, Gestion Urbana -the NGO that performed the survey-, Eduardo Amadeo, Julio Aramayo, Rosalia Cortes, Maria de la Paz Dessy, Pedro Diaz, Alejandro Lastra, Hector Lucas, Graciela Montañez, Juan Sourrouille, and Ricardo Szelagowski for cooperation throughout this study. We also thank Matias Cattaneo and Sebastian Calonico for excellent research assistance, and Rawi Abdelal, Josh Lerner, Nitin Nohria, Julio Rotemberg, Claudia Senik, Thierry Verdier, and seminar participants at NBER, Harvard, Princeton, Delta, George Mason and LACEA for helpful comments.

## 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 (2005), *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.<sup>1</sup> Furthermore, they show that countries where few people hold this belief (as well as other beliefs that are compatible with the smooth workings of a free market) also have more government intervention.

Beliefs have also been linked to institutions (see Greif (1994), Denzau and North (1994), *inter alia*). 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 (2005) attributes a central role to belief systems 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 2005, 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. An important

---

<sup>1</sup> Hochschild (1981) provides an illuminating discussion. See also more recent work by Inglehart (1990), Ladd and Bowman (1998), Corneo and Gruner (2002), and Fong (2004).

challenge in studying this question, however, is that people who hold beliefs that are most in line with free market ideology may also tend to value the possession of wealth, and often spend considerable effort in accumulating it. Thus, causality between property rights and beliefs can also run in the opposite direction.

In this paper we study the effect of property rights on beliefs exploiting a natural experiment to address the problem of endogeneity.<sup>2</sup> More than 20 years ago, a large number of squatter families occupied an area of wasteland in the outskirts of Buenos Aires, Argentina. The area was made up of several large tracts of land, each with a different legal owner. A law was subsequently passed, establishing the expropriation of these tracts of land by the state (in exchange for a monetary compensation) in order 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 payment. Given the slow functioning of the Argentine courts, most of the disputes between the state and the owners who challenged the expropriation offer have not been resolved 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 of the original owners to challenge the expropriation was orthogonal to the characteristics of the squatters, the allocation of property rights is exogenous in equations describing the beliefs of the squatters. Moreover, our approach involves the comparison of individuals living in very close proximity rather than individuals that live far apart (e.g., in rich versus poor city areas or in different regions).

We find a significant difference in the beliefs that squatters with and without property rights declare to hold. The beliefs we study are obtained through survey questions designed to capture four beliefs that appear important to the workings of a capitalist society, namely individualism, materialism, the role of merit, and trust. As an example, materialism is captured by the answer to the question “Do you think having money is important to be happy?” The effect of property rights is large: the set of beliefs declared by squatters with

---

<sup>2</sup> Recent studies of institutions give a central role to the identification of causal relationships. See, for example, Engerman and Sokoloff (1997), La Porta *et al* (1998), Acemoglu *et al* (2001), Rodrik *et al* (2002), Easterly and Levine (2003), Glaeser *et al* (2004), Przeworski (2004), *inter alia*.

property rights are significantly different from those held by squatters without titles. The direction of the change in beliefs induced by property is consistently in the direction of what can be called “pro-market” (for example, in the sense that they are more individualist and materialist). This is interesting because of the broad similarities in the lives squatters with and without titles lead. The size of the effect is quite large. The causal effect of property rights is sufficiently large so as to make the beliefs of squatters with titles indistinguishable from those held by the general Buenos Aires population. This is interesting because of the remarkable differences in the lives led by people in these two groups. Throughout the paper, we describe this change in beliefs induced by property rights as “pro-market” although, given the comparison with the general population, we could have also described the effect of property as causing poor households to become more integrated with the rest of society.

A number of economists have studied the effects of protecting property rights on investment, access to credit, labor supply and household demographics. See, for example, Besley (1995), Alston *et al* (1996, 1999), de Soto (2000), Lanjouw and Levy (2002), Do and Iyer (2003), Field (2003), and Galiani and Scharfrodsky (2005). Closer to our paper is previous work on the social effects of owning property. Di Pasquale and Glaeser (1999), for example, find that homeowners are better citizens, measured by the involvement in local politics and nonprofit organizations. There may also be direct political effects of owning property. One often emphasized economic benefit of privatization is that the beneficiaries have an economic stake in maintaining the reforms. See, for example, Roland and Verdier (1994), Boycko, Shleifer and Vishny (1995), and Biais and Perotti (2002) for different arguments of how positive externalities can arise from increasing the size of the private sector through privatizations; and Jones *et al* (1999) for empirical evidence consistent with the idea that governments often attempt to widen the ownership of property by consistently underpricing privatization share issues. Empirical work on whether experience with a market system affects political attitudes is more limited. The classic references are Shiller *et al* (1991, 1992), who showed that Soviet and American attitudes do not appear dissimilar in spite of the large historical differences in the two countries. A different conclusion is reached by the detailed study of Earle *et al* (1997), who find that receiving property through voucher privatization and, in particular, retention of shares is strongly associated with support for

market reforms (see also Earle and Rose (1996)).<sup>3</sup> See also the pattern across the US and European countries and former communist countries presented in Corneo and Gruner (2002). Alesina and Glaeser (2004), on the other hand, present evidence that differences in electoral systems are correlated with differences in beliefs about luck determining income across countries.

Our experiment is less informative as to the precise way property rights change beliefs. The literature proposes two broad channels. 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 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 as it also considers beliefs as susceptible to manipulation, although this time they are imposed by the prevailing social framework (e.g., through the media or the education system; see, for example, Bourdieu and Passeron (1970)). Property rights could act as a technological complement in giving the poor a false consciousness shaped by the capitalist class. 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 are useful to help us interpret the empirical results.

---

<sup>3</sup> Politicians may be aware of similar effects. For example, Thatcherism in the UK has often emphasized that ownership has a broader role in fostering “popular capitalism”. As emphasized by Mrs Thatcher

“... we also pioneered two radical policies for wider ownership. The sale of public sector houses at large discounts to their tenants turned hundreds of thousands of families into property owners. Alongside this, the privatisation of industries with special preference for workers and for small buyers began to turn Britain into a nation of shareholders. Of course, ownership of assets brings risks as well as rewards. But the transformation it effects on a society is wholly positive, because it gives people a stake in prosperity and trains them to take control of their own lives” Thatcher (2000).

Increasing home ownership is often an explicit objective of government. In June 2002, for example, American president George W. Bush announced a plan to increase minority homeownership by 5.5 million families by 2010. In the 2000 US election, the proportion of home owners voting was 20 percentage points higher than the proportion of renters voting (see Jamieson *et al* (2002)).

Section II describes the natural experiment, our data and presents the empirical strategy. The 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*

As explained above, an investigation of the effect of property rights on beliefs has to address the problem of endogeneity. Motivated individuals, holding individualist and materialist beliefs, are more likely to make efforts geared towards obtaining property rights. This means that there is only limited value in showing that beliefs are correlated with owning property (for example, in a large scale survey such as the World Values Survey). Moreover, the possession of ownership rights over real estate property is a free portfolio choice for many individuals, who can, for example, choose to rent a house rather than own it. This decision may depend on preferences, access to credit markets, or other variables that can also be correlated with beliefs. In other words, in most historical experiences the allocation of property rights across families is not random but depends on individual effort, wealth, family characteristics, preferences, or other selection criteria. Thus, 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 question that motivates our study: does treating people with property rights affect their beliefs?

We address this endogeneity 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 by a Catholic priest. They explicitly wanted to avoid creating a shantytown and therefore

immediately partitioned the occupied land into small urban-shaped parcels. At the time of the occupation, the squatters thought the land belonged to the state.<sup>4</sup>

The area occupied by the squatters turned out to be made up of thirteen tracts of land belonging to different private owners. The squatters resisted several eviction attempts during the military government. In 1983 Argentina returned to democracy. Approximately one year later, in October of 1984, the Congress of the Province of Buenos Aires passed Law N° 10.239 expropriating these lands from the former owners in exchange for a monetary compensation. This would allow the transferring of legal titles to the squatters.

The resulting titling process, however, was incomplete and asynchronous. In 1986 the government made a compensation offer to each owner (or group of owners as some tracts of land had more than one owner) calculated in proportion to the official tax valuation of each tract of land. These official valuations had been set before the land occupation by the fiscal authority with the purpose of calculating property taxes and were indexed by inflation. After the government made the expropriation offers, the owner/s of each tract had to decide whether to accept the expropriation compensation and surrender the land or to start a legal dispute in order to obtain a higher compensation. The owners of eight tracts of land decided to accept the compensation offered by the government. In 1989, the squatters that had occupied those tracts of land were offered formal land titles that secured the property of the parcels.<sup>5</sup> Five former owners, instead, did not accept the compensation offered by the government and sued with the aim of obtaining a higher compensation (the law was constitutionally approved by Congress and, thus, the expropriation itself could not be challenged, whereas the monetary offers made by the government could be disputed). One

---

<sup>4</sup> Cespedes (1984) is a documentary movie on this episode. See also CEUR (1984), Izaguirre and Aristizabal (1988), and Fara (1989). Institutional information was gathered through a series of interviews with key informants, including the Secretary of Land of the Province of Buenos Aires (Maria de la Paz Dessy), Undersecretary of Land of the Province of Buenos Aires (Alberto Farias), Directors of Land of Quilmes County (Daniel Galizzi and Alejandro Lastra), Secretary of Public Works and Land Registry of Quilmes County (Hector Lucas), General Attorney of the Province of Buenos Aires (Ricardo Szelagowski), attorney in expropriation offers' office (Claudio Alonso), lawyer on expropriation lawsuit (Horacio Castillo), former land owners (Hugo Spivak and Alejandro Bloise -heir-), squatters (Juan Carlos Sanchez and Jorge Valle, *inter alia*), and President of NGO Gestion Urbana (Estela Gutierrez).

<sup>5</sup> The new urban "design" traced by the squatters in 1981 differed from the previous land tract divisions. Thus, some "new" parcels overlapped over tracts of land that belonged to different owners. For regulatory reasons, parcels could not be titled if one portion of them was still under dispute.

of these five lawsuits ultimately ended with a final verdict, and squatters that had settled on this tract of land received titles in 1998. At the time of writing, the other four legal processes are still outstanding in the slow Argentine courts.

Accordingly, two types of squatters emerged: unlucky squatters that happened to occupy a piece of land which is still under legal dispute (the control group), and lucky squatters that obtained titles (the treatment group). Within this latter group, we can distinguish between those that occupied a piece of land that belonged to an accepting owner (the early treated) or where a final verdict was reached (the late treated). Lucky squatters could obtain the titles under some conditions. According to the law, they had to be living in the parcel of land that was being expropriated since at least one year before the sanctioning of the law. They also had to have no other property, and be using the parcel of land as their family home. The law also restricted the ability of squatters to transfer the property of the parcels of land for the first ten years after titling and established that they had to pay the government the (proportionally prorated) value of the official valuation of the occupied tract of land.<sup>6</sup> Unlucky squatters cannot obtain the titles until the former owner and the state settle their legal dispute.

An important feature of this episode is that lucky squatters who occupied parcels located on the tracts of land surrendered by the former owners were ex-ante similar and arrived at the same time than unlucky squatters who settled in the parcels of the former owners that are still disputing in court the expropriation compensation. At the time of the occupation the squatters thought all the land was state-owned and they could not possibly know that an expropriation law was going to be passed later on, nor what was going to be the future titling status of each piece of land. Indeed, the parcels of land in the treatment (titled) and control (untitled) groups are identical and next to each other. There are no differences in parcel observable characteristics (distance to a polluted creek, distance to the closest non-squatted area, parcel surface, location in a corner of a block) between the treatment and control

---

<sup>6</sup> The law, however, established that the payments should be made in monthly installments that could never surpass 10% of the (observable) household income and there was no indexation for inflation. Given the several hyperinflationary periods experienced by the Argentine economy during the period of analysis and the very high labor informality of this population, these two conditions constrained the real value of the squatters' payments. In practice, there are no records of the amounts paid by each squatter.

groups.<sup>7</sup> There are also no differences in pre-treatment observable household characteristics (age, gender, nationality and years of education of the household head at the time of the occupation, and nationality and years of education of her/his parents).

The government offers were very similar (in per-square-meter terms) for the accepting and contesting owners.<sup>8</sup> Given the similarity in land quality and compensation offers, the different responses could instead reflect heterogeneity of the former owners regarding subjective land value, litigation costs, and decision making.<sup>9</sup> Importantly, the squatters had no direct contact with the former owners to influence their decisions, they had no participation in the legal processes (the lawsuits were between the former owners and the provincial government), and the value of the dwellings they constructed was explicitly ignored for the calculation of the expropriation compensation.<sup>10</sup> Finally, note that if some owners challenged because the quality of their land was higher, this would imply that squatters with no titles are standing on land of better quality.

Note that one of the 5 lawsuits ended with a final verdict, and the squatters on this tract of land received titles in 1998, whereas the other four lawsuits are still pending. This is also helpful in addressing the concern that the former owners' decision of surrendering the land or challenging could be correlated with land quality. Squatters in this tract of land and the

---

<sup>7</sup> The Buenos Aires area is flat so there are no differences in altitude (all parcels are within the same 5-meter topographical range). This is urban land, so agricultural productivity is not an issue.

<sup>8</sup> The accepted offers had a mean of 0.424 Argentine pesos (of January 1986) per square meter, and a median of 0.391. The contested offers had a mean of 0.453 and a median of 0.397. Indeed, the similitude of the offers is repeatedly used as an argument by the government attorneys in the lawsuits to show that the offers were fair, as they were similar to the ones accepted by the other owners. The same argument is utilized in a low-court judge's verdict in one of these cases citing Supreme Court jurisprudence (*Kraayenbrink de Beurts et al v. Province of Buenos Aires*).

<sup>9</sup> The number of occupied tracts of land (13) is insufficient for a statistical analysis of the decision of challenging. There is, however, anecdotal evidence consistent with the hypothesis that tracts owned by larger groups of owners and more owners of the same family were more likely to challenge. The average number of owners in the groups of accepting owners is 1.25, while the average number of owners for the contested tracts is 2.2. When we define a dummy equal to 1 each time there are two owners that share the same surname (i.e. same family), and 0 otherwise, the average for the accepting owners is 0.125 while the average for the challenging owners is 0.6. Thus, it appears that having many owners and several in the same family made it more difficult for the owners to agree in surrendering the land. Within the challenging owners, we also found one case in which an owner was a lawyer and he was representing himself in the case (which may indicate lower litigation costs), while in another case, one of the original owners had deceased before the sanctioning of the law (in 1983) and her inheritance process was still under way at the time the family had to make a decision.

<sup>10</sup> This is explicit, for example, in the low-court judge's verdict of *Cordar SRL v. Province of Buenos Aires*.

control group are homogenous regarding their respective former owners' decisions of challenging the compensation payment.<sup>11</sup>

Given that property rights depended on the decision of the original owners of accepting or challenging the expropriation payment and on the resolution of the expropriation lawsuits, and that these factors were exogenous to the squatters' characteristics, we can study the effect of the intervention "to give property rights" by comparing outcomes between the groups that received and did not received land titles. In essence, the allocation of property rights in our natural experiment 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 Secretary 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 judicial cases. The main squatted 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 that 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), who can therefore be expected to have similar beliefs. To make comparability as extreme as possible, we 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, and to the occupants of 173 parcels in 1998. 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

---

<sup>11</sup> Within this group of challengers there are clearly exogenous reasons why the remaining four trials are still going on. In one case, the legal process was delayed by a mistake made in the description of the parcels in a low-court judge's verdict. In two other cases, the expropriation lawsuit was delayed by the death of one of the former owners, which required an inheritance process. In the fourth case (mentioned in footnote 9), one of the

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 did not “receive” it. Table I summarizes the process of allocation of land titles for the main area. The intention-to-treat variable *Property Right Availability* equals 1 for the families occupying parcels that were surrendered by the original owners and 0 otherwise; while the treatment variable *Property Right* equals 1 for the squatters that received property titles, and 0 otherwise.<sup>12</sup>

During 2003, we administered a survey to the heads of households (or their spouses) for 448 randomly selected parcels (out of the total of 1,082).<sup>13</sup> We found that 467 households live in the 448 parcels of the sample (19 parcels host more than one family).<sup>14</sup> 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 surrendering the land or suing, while for 154 families the first member had arrived after 1985. In order to guarantee exogeneity, 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.

We can also provide some statistical tests in support of the arguments offered in the previous section concerning the exogeneity of the allocation of land title offers among the squatters. In Table II we show the similarity of pre-treatment characteristics of the family member who was the household head at the time of the occupation between the non-intention-to-treat and intention-to-treat groups (i.e., *Property Right Availability* = 0 and *Property*

---

original owners had died just before the sanctioning of the expropriation law and her inheritance process was still under way at the time the family had to make a decision.

<sup>12</sup> The 757 parcels of San Martin belonged to only one owner who surrendered the land and were offered for titling in 1991. Of these, 712 were titled, while 45 correspond to non-compliers.

<sup>13</sup> 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. Non-response rates were similar for titled and untitled parcels.

<sup>14</sup>We also administered the survey to 150 households in the San Martin neighborhood.

*Right Availability* = 1, respectively) for the families that arrived before treatment. We cannot reject the hypotheses of equality in age, gender, nationality and years of education of the original household head, suggesting a strong similarity between these groups at the time of their arrival to this area. Moreover, we do not reject the hypotheses of equality in nationality and years of education of the mother and father of the original squatter across the groups, suggesting that these groups had been showing similar trends in their socio-economic development before their arrival to this area.<sup>15</sup> In Table III, we compare parcel characteristics for the non-intention-to-treat and intention-to-treat groups (i.e., *Property Right Availability* = 0 and *Property Right Availability* = 1, respectively). The variables under comparison are distance to a nearby (polluted and floodable) creek, distance to the closest non-squatted area, parcel surface, and a dummy for whether the parcel is located in a corner of a block. We only reject the hypotheses of equality for parcel surface (at the 8.9% level of significance). Nevertheless, the difference in average parcel surfaces between these two groups is relatively small –parcels are only 3% larger in the non-intention-to-treat group– and if something, it is the group without titles that has slightly larger parcels. The similarity across household and parcel pre-treatment characteristics is consistent with the exogeneity in the allocation of property rights described above.

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 survey ran in late 2002, however, it became apparent that the standard approach followed by these authors had to be modified to tackle a 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.<sup>16</sup> Thus, we settled on a set of questions designed to study general pro-market attitudes rather than attempt to identify the relevance of particular

---

<sup>15</sup> In 23 percent of the cases, the current household head does not coincide with the household head at the time of the occupation, either because she/he arrived later than the first member of her/his family that occupied the parcel, or because she/he arrived at the same time but was not the household head at the arrival time. This percentage is similar for the treatment and control groups. We obtain similar results when we compare the pre-treatment characteristics of the current household head between the two groups.

categories 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. We therefore included questions that attempt to measure beliefs on these issues. More recent work has insisted that also trust belongs in 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)<sup>17</sup>

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

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”*.

---

<sup>16</sup> 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).

<sup>17</sup> Cited in Durlauf (2002). See also Coleman (1990), Putnam (1993), Schotter (1998) and Glaeser *et al* (2002).

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, a set of questions concerning values (i.e., long standing normative attitudes) related to aspects of what we are calling, rather simplistically, free-market ideology (see Section IV.c below). 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:

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

where Y is the variable under study, X is a vector of controls,  $\varepsilon$  is the error term, and  $\gamma$  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 characteristics of the original household head include age, gender, nationality, nationality and years of education of her/his father, and nationality and years of education of her/his mother. Controls for parcel characteristics include surface of the parcel, distance to creek,

distance to nearest non-squatted area, and a dummy that equals 1 if the parcel is at the corner of the block.<sup>18</sup>

A potential concern with this regression is that a number of families that were offered the possibility of obtaining land titles did not receive them for reasons that could originate in unobservable factors that may 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*<sub>*i*</sub>, a dummy variable that indicates whether the parcel occupied by household *i* is titled or not, using the intention-to-treat variable *Property Right Availability*<sub>*i*</sub>, a dummy variable indicating whether the original owner surrendered the parcel occupied by household *i* to the State or not. Thus, we report estimates of the effect of land titling on beliefs by two-stage least squares (2SLS).

### III. Results

#### *III.a. Beliefs and Property Rights*

Table IV 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 her/his 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 0.330 (standard error 0.040) while that for the group that has titles is 0.433 (standard error 0.037). In other words, giving property rights increases the

---

<sup>18</sup> See the appendix for definition of the control variables.

proportion of people giving what we call the “pro-market” response by 10 percentage points. This is an increase of 31% 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 into 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 positive coefficient in column (2) in Table IV 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 weight in all three of the top categories and less in the lowest category (“*Not important to be happy*”).<sup>19</sup> 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 0.503 (s.e. 0.042) while that for the group that has titles is 0.676 (s.e. 0.035). In other words, giving property rights increases the proportion of people giving what we call the “pro-market” response by 17 percentage points, which represents an increase of 34%.

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 0.735 (s.e. 0.037) while that for the group that has titles is 0.791 (s.e. 0.030). 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

---

<sup>19</sup> Similar results obtain if we run an ordered Probit regression with four categories. (i.e., the effect of property rights is positive and statistically significant at the 1% level).

property rights).<sup>20</sup> In absolute terms, the proportion of squatters (with and without titles) that report to hold meritocratic beliefs is about three quarters, which seems large (see section III.c. below for comparisons with the general population).

Column (4) in Table IV studies trust 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 trust in the group without property rights is 0.335 (s.e. 0.040) while that proportion for the group that has titles is 0.393 (s.e. 0.037). In other words, giving property rights increases the proportion of people giving what we call the “pro-market” response by almost 6 percentage points, which represents an increase of 17% for the squatters without titles.

In summary, for three of the four categories studied there is evidence that individuals tend to report different beliefs when they exogenously receive property rights. 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 in individualistic achievement, 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 *naïve*) 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 1.906 (s.e. 0.086), while that for squatters that do have formal property rights is 2.294 (s.e. 0.074).<sup>21</sup>

---

<sup>20</sup> Again, similar results obtain if we estimate an ordered Probit (i.e., the effect of property rights is not statistically significant at conventional levels).

<sup>21</sup> The results in Table IV are robust to clustering of the standard errors by block, side of a block, or former owner, and to including the data from the non-contiguous San Martin neighborhood. They also remain similar

### *III.b. Attrition*

As explained before, our survey found that some families arrived to the parcel they are currently occupying after the time the former owners made the decision to sue or surrender the land during 1986. As it is possible that families arriving after the former owners' decisions could have known the different legal status of the parcels (i.e., the different probabilities of receiving titles), in order to guarantee the exogeneity of the treatment we exclude from the analysis the families that arrived after 1985 to the parcel they are currently occupying. However, this raises a problem of attrition. If some families arrived after 1985, they could have replaced some original squatters in our treatment and control parcels that had left before we ran our survey in 2003. Moreover, the migration decision could be potentially correlated with the outcomes under study.

The attrition rate for parcels not offered the treatment (titles) is higher than the attrition rate for those offered titles in 1989. The percentage of those surveyed in 2003 that had arrived before 1986 was 0.624 (s.e. 0.036) for the non-intention-to-treat group and 0.729 (s.e. 0.051) for those in the early intention-to-treat group. The survival rates for these two groups are statistically different at the 10% level. Fortunately, we have a group of lucky squatters who were offered treatment at a later date, receiving titles in 1998. These squatters were under the same conditions as those in the control group for 17 out of the 22 years elapsed from the occupation until the time of our survey (77% of the relevant period), so we can expect them to have a broadly similar experience, for example in terms of shocks that affect attrition and their incentives to respond to them. Indeed, the attrition rate for the late treated group (0.689, with s.e. 0.033) is not statistically different than for the controls. More importantly, if the estimated treatment effects for the whole sample were simply the result of attrition bias, whereby motivated squatters without titles left and motivated squatters with titles stayed, it would then be unlikely that we observe significant differences in beliefs between the late treated and the control groups. Additionally, the comparison of the estimated effect of property rights for the late treated group with that corresponding to the early treated group leads to an indirect test of whether attrition in the latter group is also ignorable.

---

if we include as controls the characteristics of the current household head, instead of those of the original household head.

In Table V, we repeat our basic set of regressions estimating a separate effect for the late and early treated groups. We still find strong effects of property rights on beliefs for the late treated group. This contradicts the hypothesis that our results are driven by selection bias. The results show that, if anything, the point estimates for the late treated are stronger –not weaker- than for the early treated. Moreover, the F-statistics show that we cannot reject the null hypotheses that the effects for the early-treated group and late-treated group are similar at conventional levels of significance.<sup>22</sup>

### *III.c. 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 IV 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 income and wealth (Alesina *et al*, 2001). As these variables are potentially endogenous to treatment, they were excluded as controls from the b panel in Table IV, but these exclusions lead us to wonder if there is still variation in beliefs that is explained by property rights after the effect of income and wealth is taken into account. A similar concern could apply to the education of the household head.<sup>23</sup> The previous tables include the years of education of the original household head as a control, but the survey was answered by the current household head (or his/her spouse) and, when the original and the current household head differ, the education of the current household head could also be potentially endogenous to the treatment.<sup>24</sup>

---

<sup>22</sup> Alternatively, we address the problem of attrition by implementing a matching estimator proposed by Ahn and Powell (1993). They suggest a way of eliminating the potential selection bias induced by attrition by differencing observations with similar probabilities of selection. We estimate a Logit model of the likelihood of survival since 1985 on the four parcel characteristics in Table III, and find that a further distance to the nearby polluted and floodable creek significantly increases this likelihood. When we exploit the variability in attrition induced by this pre-treatment characteristic to control for the potential bias induced by attrition, we find that none of the results reported in Table IV change significantly.

<sup>23</sup> Galiani and Schargrodsky (2005) show significant effects of land titling on housing investment and child education in this population, but no differences in their performance in the labor market.

<sup>24</sup> As explained in footnote 15, the original household head and the current household head coincide for 23 percent of the sample. The original household head's education should not be endogenous to treatment as they were already adults at the time of the occupation.

Table VI presents the results after including *Income* (the total household income divided by the number of household members), *House Value* (total square meters of the construction) and *Education* (years of education of the household head). *House Value* 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 correlated with constructed surface.<sup>25</sup> 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.<sup>26</sup> Indeed, the equality of the coefficients on *Property Rights* in these regressions and those in the corresponding regressions in Table IV.b cannot be rejected at standard significance levels.

Property rights could also have improved the access of the squatters to the media or to communications with citizens from outside this area. We then wonder if the estimates presented in Table IV represent a direct effect of property rights, or if they represent an indirect effect of property rights through this potentially improved access.<sup>27</sup> Table VII presents the results after controlling for the access to media (open-air TV, and cable TV), as well as the access to easy communication outside the area (fixed and cellular telephone). The coefficients on *Property Rights* in these regressions are not significantly different to those in the corresponding regressions in Table IV.b.

#### *III.d. Size*

One way of evaluating the quantitative size of the effect of property rights on beliefs is to compare it to the effect of other variables. For example, in the regression presented in column 5b of Table IV, the years of education of the original household head had a positive and significant effect on the index of *Pro-Market Beliefs*. The coefficient indicates that one additional year of education increases the belief index by 0.117 (s.e. 0.032). Given that the estimated effect of the *Property Right* dummy is 0.520, this suggests that the effect of property rights is comparable to 4.4 additional years of education. In other words, assuming that the

---

<sup>25</sup> For areas of this level of development in the Buenos Aires outskirts, Zavalía Lagos (2005) estimates that the values of the constructed houses exceed the parcel values by five times. As we introduce the years of education of the current household head, we exclude the years of education of the current household head as a control in this table. The *Property Right* coefficients remain unaltered if the latter is also included.

<sup>26</sup> The sample drops to 254 due to limited income reporting. 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.

relationship between education and beliefs reflects a causal link, we would need to give untitled squatters 4.4 additional years of education to have them declare this set of beliefs. Note that this would imply a very large change in the education of these household heads, who have an average of six years of education (see Table II).

In order to provide additional 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 a random sample of residents of the Buenos Aires metropolitan area using the same questions on beliefs employed in our study of the Solano squatter settlement.<sup>28</sup> The results are reported in the first row of Table VIII. 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 546 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 VIII. Amongst squatters without titles in Solano, only 33% answered “*It is possible to be successful on your own*”. Giving them property rights takes this proportion to 43%, almost the same proportion than 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.

With respect to the second question on materialist beliefs, 67% 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 almost 33% answered “*Not very important to be happy*”. In contrast, 50% 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 similar to that in the general population. Again, this suggests a large role for

---

<sup>27</sup> There are actually no statistical differences in access to telephone (fixed line), cellular telephones, possession of TV sets, and access to cable TV services between the treatment and the control groups.

<sup>28</sup> Relative to the Buenos Aires general population, the squatters in our sample show significantly low levels of income and education. Their average household income level is in the centile 25 of the income distribution in the official household survey (EPH of May 2003), while their average per capita income is in the centile 14 of the distribution. According to the average years of education of the household head, they are in the centile 14 of the distribution of the official household survey.

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 who answered “*Much better*” or “*Better*” 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 73%. The proportion with meritocratic beliefs amongst Solano squatters without property rights is 73%. Giving titles to these individuals has no effect statistically (the proportion with meritocratic beliefs in the sample with property rights is 79%). 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 48% of the general Buenos Aires population answers that one can trust other people. In contrast, only 33% of the Solano squatters without property rights answered that one can trust other people, while this proportion increases to 39% for the squatters that received property rights. Again, this number is closer to that in the general population and suggests a large role for property rights in reducing the belief gap between a group of very poor squatters and the general population.

We summarize our results using the index of pro-market beliefs. The average of *Pro-Market Beliefs* for squatters without property rights in the Solano neighborhood is 1.906. The same average for the squatters that received property rights is 2.294, which is indistinguishable from the average of 2.342 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 around 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. Di Tella and MacCulloch (2002) present a related approach to belief formation where the observation of corruption offends citizens and informs them about how fair (or efficient) business people are before voting on a policy. 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 social and market interactions.<sup>29</sup>

*Endogenous Beliefs:* Research in sociology and psychology suggests that individuals sometimes 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*. 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. Roth and Murningham (1982) and

---

<sup>29</sup> Weber traced beliefs to religious tradition and emphasized their role in the rise of capitalism. More generally, the distinction we are emphasizing is that sometimes beliefs are shaped by external forces rather than by the purposeful choice of a strategic actor. In Piketty's (1998) self-fulfilling theory of status, agents care about other people's opinion about them, so the external force is other people's beliefs.

Babcock *et al* (1996) show how self-serving 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.<sup>30</sup>

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).<sup>31</sup>

#### *IV.b. Interpretation*

As mentioned above, our empirical exercise involves individuals with low levels of education. Thus, the survey questions that we used 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-

---

<sup>30</sup> A factor that complicates identification (of *Exogenous* versus *Endogenous Beliefs* theories) 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. Note that such identification involves separating a number of related effects. For example, Coleman (1990) describes the 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 typically 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. A related effect, but amongst peers, is discussed in aspects of the literature on neighborhood effects that address selection. See Jenks and Mayer (1990), Katz *et al* (2000), Sacerdote (2000), *inter alia*.

<sup>31</sup> See also Kertzer (1996) and Johnson (2002). More generally, sociologists after Durkheim have emphasized that the process of making sense of the world (which they term cognition) varies across different settings. Goffman (1974) argues that cognitive frameworks are shared by people exposed to similar institutions. See also Dobbin (2004).

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. There are no differences across the two groups in their ability to access the media and to communicate outside the area. More importantly, both groups look practically indistinguishable during interactions they may have with people from outside the neighborhood, for example, in the labor and credit 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). 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 IV), beliefs could 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 (see Fara (1989) and, in particular, Cespedes (1984)). 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 be more likely to 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 her/his own rather than in a group. A similar interpretation is possible with the second question (see *Money-Important*, column (2) in Table IV). People who did not receive 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 their access to property rights).

Columns (3) and (4) do not help identification of theories of belief formation as the answers to the questions could admit interpretations consistent with both broad theories described. In these two cases, the rejection of the “experience” interpretation could only be based on the design (i.e., the fact that our experiment compares people with similar life experiences) and not on potential economic advantages from belief manipulation (as we were able to interpret 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.<sup>32</sup>

Table IX 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, such as the desired level of government intervention to reduce income inequality (*Rich-Poor*) and to help flood victims (*Flood-Help*). Results in column (4) in Table IX 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

---

<sup>32</sup> 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 in Ben-Ner and Putterman (1998). More generally, one can view values as part of an individual's preferences and beliefs as statements about the constraints the individual faces.

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 her/his 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.<sup>33</sup>

## V. Conclusion

We hypothesize that having property rights 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 piece of land made up of different tracts, 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 expropriation (by the original owners) was orthogonal to the characteristics of the squatters, the allocation of

---

<sup>33</sup> 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).

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.

We find strong evidence in favor of the hypothesis that property rights change the way squatters see the world. This is significant because in our empirical design squatters with and without titles live broadly similar lives. Of the four measures of 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 for this last result 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. This convergence of beliefs is interesting given the remarkable differences in their life circumstances.

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 observed different realities. Second, the interpretation of some of the results directly contradicts the "experience" interpretation. For example, squatters with property rights declare to believe that people can be successful on their own (rather than success requiring a large group of people that supports each other), when in fact the occupation of the land would have never succeeded if it had been done by squatters acting individually. A behavioral explanation, in which subjects invest in "useful" beliefs, is 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.

A number of economists have argued that the protection of property rights brings about significant economic benefits, such as a higher level of investment, increased labor supply, improved savings opportunities, and better access to credit. In this paper we argue that property rights change the beliefs people hold.

**Table I: Allocation of Land Titles**

Property Right Availability = 1				Property Right Availability = 0 & Property Right = 0	Total
Year	Property Right = 1	Property Right = 0	Total		
1989	419	23	442		
1998	173	57	230		
Total	592	80	672	410	1082

**Notes:** *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. *Property Right* equals 1 if the household has formal titles to the parcel.

**Table II: Pre-Treatment Characteristics of the Original Household Head**

Characteristics of the Original Household Head	Property Right Availability=0	Property Right Availability=1	Difference
Age	48.875 (0.938)	50.406 (0.761)	-1.532 (1.208)
Female	0.407 (0.046)	0.353 (0.035)	0.054 (0.058)
Argentine	0.903 (0.028)	0.904 (0.022)	-0.001 (0.035)
Years of Education	6.071 (0.188)	5.995 (0.141)	0.076 (0.235)
Argentine Father	0.795 (0.038)	0.866 (0.025)	-0.072 (0.046)
Years of Education of the Father	4.655 (0.147)	4.417 (0.076)	0.237 (0.165)
Argentine Mother	0.804 (0.038)	0.856 (0.026)	-0.052 (0.046)
Years of Education of the Mother	4.509 (0.122)	4.548 (0.085)	-0.039 (0.149)

**Notes:** We define the original household head as the family member who was the household head at the time the family arrived to the parcel they are currently occupying. *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. Standard errors are in parentheses.

**Table III: Pre-Treatment Parcel Characteristics**

Parcel Characteristics	Property Right Availability=0	Property Right Availability=1	Difference
Distance to Creek (in blocks)	1.995 (0.061)	1.906 (0.034)	0.088 (0.070)
Distance to Non-Squatted Area (in blocks)	1.731 (0.058)	1.767 (0.033)	-0.036 (0.067)
Parcel Surface (in squared meters)	287.219 (4.855)	277.662 (2.799)	9.556* (5.605)
Block Corner	0.190 (0.019)	0.156 (0.014)	0.033 (0.023)

**Notes:** *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. Standard errors are in parentheses. \* Significant at 10%.

**Table IV: Beliefs and Property Rights in the Solano Settlement**

	(1a)	(2a)	(3a)	(4a)	(5a)
	Success-Alone	Money-Important	Effort-Better	Trust-Others	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>	0.169** (0.066)	0.188*** (0.068)	0.022 (0.056)	0.139** (0.065)	0.520*** (0.133)
Controls	Yes	Yes	Yes	Yes	Yes
Observations	312	312	313	313	312

**Notes:** [1] All columns present 2SLS regressions where *Property Right* is instrumented with *Property Right Availability*. Regressions in the b panel are similar but control for parcel and household characteristics. The former include surface of the parcel, distance to creek, distance to nearest non-squatted area, and a dummy that equals 1 if the parcel is at the corner of the block. The latter include age, gender, nationality and years of education of the original household head, and nationality and years of education of her/his father and mother. The original household head is the family member who was the household head at the time the family arrived to the parcel they are currently occupying.

[2] Standard errors in parentheses. Single-starred significant at 10 percent level; Double-starred significant at 5 percent level; Triple-starred 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 V: Beliefs and Property Rights for the Early and Late Treated**

	(1) Success-Alone	(2) Money- Important	(3) Effort-Better	(4) Trust-Others	(5) Pro-Market Beliefs
<i>Property Right 1989</i>	0.175** (0.086)	0.137 (0.088)	0.038 (0.074)	0.084 (0.086)	0.436** (0.173)
<i>Property Right 1998</i>	0.166** (0.075)	0.219*** (0.077)	0.012 (0.064)	0.161** (0.074)	0.570*** (0.151)
Controls	Yes	Yes	Yes	Yes	Yes
Observations	312	312	313	313	312
F-Stat 1989=1998	0.01	0.76	0.11	0.95	0.53

**Notes:** [1] All columns present 2SLS regressions where *Property Right 1989* and *Property Right 1998* are instrumented with *Property Right Availability 1989* and *Property Right Availability 1998*. All regressions control for parcel and household characteristics. The former include surface of the parcel, distance to creek, distance to nearest non-squatted area, and a dummy that equals 1 if the parcel is at the corner of the block. The latter include age, gender, nationality and years of education of the original household head, and nationality and years of education of her/his parents.

[2] Standard errors in parentheses. Single-starred significant at 10 percent level; Double-starred significant at 5 percent level; Triple-starred 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 VI: Direct vs. Indirect Effects (Income, Wealth and Education)**

	(1) Success-Alone	(2) Money- Important	(3) Effort-Better	(4) Trust-Others	(5) Pro-Market Beliefs
<i>Property Right</i>	0.214*** (0.075)	0.144* (0.076)	0.021 (0.064)	0.136* (0.074)	0.516*** (0.145)
Income	0.0002 (0.0005)	-0.0003 (0.0005)	0.0004 (0.0004)	-0.0001 (0.0005)	0.0001 (0.001)
Wealth	-0.0001 (0.001)	0.001 (0.001)	-0.001 (0.001)	-0.0001 (0.001)	-0.001 (0.002)
HH Education	0.046*** (0.016)	0.034** (0.016)	-0.003 (0.013)	0.011 (0.016)	0.089*** (0.031)
Controls	Yes	Yes	Yes	Yes	Yes
Observations	254	254	254	254	254

**Notes:** [1] All columns present 2SLS regressions where *Property Right* is instrumented with *Property Right Availability*, and include controls for parcel and household characteristics. The former include surface of the parcel, distance to creek, distance to nearest non-squatted area, and a dummy that equals 1 if the parcel is at the corner of the block. The latter include age, gender, and nationality of the original household head, and nationality and years of education of her/his parents.

[2] Standard errors in parentheses. Single-starred significant at 10 percent level; Double-starred significant at 5 percent level; Triple-starred 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] *Income* equals the total household income divided by the number of household members.

[6] *Wealth* equals the total number of constructed square meters.

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

[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 VII: Direct vs. Indirect Effects (TV and Telephone Lines)**

	(1) Success-Alone	(2) Money- Important	(3) Effort-Better	(4) Trust-Others	(5) Pro-Market Beliefs
<i>Property Right</i>	0.161** (0.067)	0.198*** (0.068)	0.020 (0.057)	0.148** (0.066)	0.528*** (0.133)
TV	-0.080 (0.101)	0.054 (0.103)	-0.004 (0.087)	0.111 (0.100)	0.082 (0.201)
Cable TV	0.042 (0.096)	-0.282*** (0.097)	-0.063 (0.082)	-0.083 (0.095)	-0.387** (0.190)
Home Telephone	-0.002 (0.071)	-0.019 (0.072)	-0.068 (0.060)	-0.045 (0.070)	-0.138 (0.141)
Cellular Telephone	0.224* (0.133)	0.032 (0.136)	-0.108 (0.114)	0.188 (0.132)	0.555** (0.265)
Controls	Yes	Yes	Yes	Yes	Yes
Observations	311	311	312	312	311

**Notes:** [1] All columns present 2SLS regressions where *Property Right* is instrumented with *Property Right Availability*, and include controls for parcel and household characteristics. All regressions control for parcel and household characteristics. The former include surface of the parcel, distance to creek, distance to nearest non-squatted area, and a dummy that equals 1 if the parcel is at the corner of the block. The latter include age, gender, nationality and years of education of the original household head, and nationality and years of education of her/his parents.

[2] Standard errors in parentheses. Single-starred significant at 10 percent level; Double-starred significant at 5 percent level; Triple-starred 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] *TV* equals 1 if the household owns a TV set.

[6] *Cable TV* equals 1 if the household is connected to cable TV service.

[7] *Home Telephone* equals 1 if the household has a fixed telephone line.

[8] *Cellular Telephone* equals 1 if the household has a cellular telephone.

[9] 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 VIII: Beliefs amongst Solano Squatters and 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	0.440 (0.021)	0.671 (0.019)	0.726 (0.019)	0.476 (0.021)	2.342 (0.046)
Sample with <i>Property Right = 0</i>	0.330 (0.040)	0.503 (0.042)	0.735 (0.037)	0.335 (0.040)	1.906 (0.086)
Sample with <i>Property Right = 1</i>	0.433 (0.037)	0.676 (0.035)	0.791 (0.030)	0.393 (0.037)	2.294 (0.074)

**Notes:** *Property Right* equals 1 if the household has formal titles to the parcel. Standard errors in parentheses. 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 IX: Values and Property Rights in the Solano Settlement**

	<b>(1a)</b> Fair-Efficient	<b>(2a)</b> Flood-Help	<b>(3a)</b> Rich-Poor	<b>(4a)</b> Occupy- Wrong	<b>(5a)</b> 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

	<b>(1b)</b>	<b>(2b)</b>	<b>(3b)</b>	<b>(4b)</b>	<b>(5b)</b>
<i>Property Right</i>	0.040 (0.066)	-0.024 (0.067)	-0.040 (0.068)	0.037 (0.070)	0.024 (0.150)
Controls	Yes	Yes	Yes	Yes	Yes
Observations	310	304	311	312	301

**Notes:** [1] All columns present 2SLS regressions where *Property Right* is instrumented with *Property Right Availability*. Regressions in the b panel are similar but control for parcel and household characteristics. The former include surface of the parcel, distance to creek, distance to nearest non-squatted area, and a dummy that equals 1 if the parcel is at the corner of the block. The latter include age, gender, nationality and years of education of the original household head, and nationality and years of education of her/his parents.

[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-Alone*: 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?” was “It is possible to be successful on your own”; and 0 if the answer was “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 was “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 was “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 was “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 was “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 was “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 was “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 was “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.

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

*Wealth* equals the total number of constructed square meters.

*HH 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*.

*TV*: A dummy variable taking the value 1 if the household owns a TV set, and 0 otherwise.

*Cable TV*: A dummy variable taking the value 1 if the household has cable TV service, and 0 otherwise.

*Home Telephone* : A dummy variable taking the value 1 if the household has a fixed telephone line, and 0 otherwise.

*Cellular Telephone* : A dummy variable taking the value 1 if the household has a cellular telephone, and 0 otherwise.

Other household data used as controls include: age of the original household head (dummy for age below 50, while the baseline is 50 and more), gender of the original household head, nationality of the original household head (dummy for Argentine nationality), years of education of the original household head, nationality of the father of the original household head (dummy for Argentine nationality), years of education of the father of the original household head, nationality of the mother of the original household head (dummy for Argentine nationality), and years of education of the mother of the original household head. For deceased original household heads, the age was calculated from year of death and age at death. For the calculation of the years of education of the original household head, see *HH Education*. We also include dummies for missing data on original household heads' age, and original household head parents' nationality and years of education (a total of ten observations). The original household head is the family member who was the household head at the time the family arrived to the parcel they are currently occupying.

Data on parcels used as controls include: Surface of the parcel (in square meters), Distance to creek (in blocks), Distance to nearest non-squatted area (in blocks), and a dummy that equals 1 if the parcel is at the corner of the block and 0 otherwise.

## References

- Acemoglu, Daron, Simon Johnson, and James Robinson (2001) "The Colonial Origins of Comparative Development: An Empirical Investigation," *American Economic Review* 91(5), 1369-401.
- Ahn, Hyungtaik, and James L. Powell (1993) "Semiparametric Estimation of Censored Selection Models with a Nonparametric Selection Mechanism", *Journal of Econometrics*, 58, 3-29.
- Akerlof, George and William Dickens (1982) "The Economic Consequences of Cognitive Dissonance," *American Economic Review*, 72, 307-19.
- Alesina, Alberto, Ed Glaeser and Bruce Sacerdote (2001) "Why Doesn't the US have a European Style Welfare State?," *Brookings Papers on Economic Activity*, 2, 187-277.
- Alesina, Alberto and Ed Glaeser (2004) Fighting Poverty in the US and Europe, Oxford University Press.
- Alesina, Alberto and George-Marios Angeletos (2005) "Fairness and Redistribution", *American Economic Review* 95 (4).
- Alston, Lee, Gary Libecap, and Robert Schneider (1996) "The Determinants and Impact of Property Rights: Land Titles on the Brazilian Frontier", *Journal of Law, Economics & Organization*, 12, pp. 25-61.
- Alston, Lee, Gary Libecap and Bernardo Mueller (1999) Titles, Conflict and Land Use, Ann Arbor: The University of Michigan Press.
- Babcock, Linda, Xianghong Wag and George Lowenstein (1996) "Choosing the Wrong Pond: Social Comparisons in Negotiations that Reflect a Self-Serving Bias," *Quarterly Journal of Economics*, 91,1, 1-19.
- Benabou, Roland and Efe Ok (2001) "Social Mobility and the Demand for Redistribution: The POUM Hypothesis", *Quarterly Journal of Economics*, 116(2), 447-487
- Benabou, Roland and Jean Tirole (2002) "Belief in a Just World and Redistributive Politics", mimeo, Princeton University.
- Ben-Ner, Avner and Louis Putterman (1998) Economics, Values and Organizations, Cambridge University Press: New York.
- Besley, Tim (1995) "Property Rights and Investments Incentives: Theory and Evidence from Ghana" *Journal of Political Economy* 103, 903-937.
- Bettelheim, Bruno (1953) "Individual and mass behaviour in extreme situations", *Journal of Abnormal and Social Psychology*, 38, 417-52.
- Biais, Bruno and Enrico Perotti (2002) "Machiavellian Privatization", *American Economic Review*, 92(1), 240-48.
- Bourdieu, Pierre and Jean Claude Passeron (1970) La Reproduction, Eléments pour une théorie du système d'enseignement. Minuit: Paris.
- Bowles, Samuel (1998) "Endogenous Preferences: The Cultural Consequences of Markets and Other Economic Institutions", *Journal of Economic Literature*, 36 (1), 75-111.
- Boycko, Maxim, Andrei Shleifer, and Robert Vishny (1995) Privatizing Russia. Cambridge, Massachusetts: MIT Press.
- Carrillo, Juan and Thomas Mariotti (2002) "Strategic Ignorance as a Self-Disciplining Device," *Review of Economic Studies*, 66, 529-44.
- Corneo, Giacomo and Hans Peter Gruner (2002) "Individual Preferences for Political Redistribution", *Journal of Public Economics*, 83, 83-107.
- Céspedes, Marcelo (1984) Por una tierra nuestra, documentary movie.
- CEUR (1984) Condiciones de Habitat y Salud de los Sectores Populares. Un Estudio Piloto en el Asentamiento San Martín de Quilmes. Buenos Aires: Centro de Estudios Urbanos y Regionales.
- Coleman, James (1990) Foundations of Social Theory. Cambridge, MA: Harvard University Press.
- Denzau, Arthur and Douglass North (1994) "Shared Mental Models: Ideologies and Institutions", *Kyklos*, 47 (1), 3-31.
- De Soto, Hernando (2000) The Mystery of Capital, Why Capitalism Triumphs in the West and Fails Everywhere Else, Basic Books: New York.
- Di Pasquale, Denise and Ed Glaeser (1999) "Incentives and Social Capital: Are Homeowners Better Citizens?" *Journal of Urban Economics* 45: 354-384.
- Di Tella, Rafael and Robert MacCulloch (2002) "Why Doesn't Capitalism flow to Poor Countries?," mimeo, Harvard Business School.
- Do, Quy Toan and Lakshmi Iyer (2003) "Land Rights and Economic Development: Evidence from Viet Nam", World Bank Working Paper No. 3120.
- Dobbin, Frank (2004) "The Sociological View of the Economy", in The New Economic Sociology, Frank Dobbin (ed.), Princeton, N.J.: Princeton University Press, 1-46.
- Durlauf, Steven (2002) "On the Empirics of Social Capital", *The Economic Journal*, 112 (483), F459-79.

- Dominitz, Jeff and Charles Manski (1997) "Using Expectations data to Study Subjective Income Expectations", *Journal of the American Statistical Association*, 92 (439), 855-67.
- Earle, John, S. Gehlbach, Z. Sakova, and J. Vecernik (1997) "Mass Privatization, Distributive Politics, and Popular Support for Reform in the Czech Republic." Working Paper, Institute of Sociology, Academy of Sciences, Prague, Czech Republic.
- Earle, John, and R. Rose (1996) "Causes and Consequences of Privatization: Behavior and Attitudes of Russian Workers." Studies in Public Policy No. 264. Centre for the Study of Public Policy, University of Strathclyde.
- Easterly, William and Ross Levine (2003) "Tropics, Germs and Crops: How Endowments Influence Economic Development", *Journal of Monetary Economics*, 50 (1), 3-39.
- Engerman, Stanley, and Kenneth Sokoloff (1997) "Factor Endowments, Institutions, and Differential Paths of Growth among New World Economies," in Stephen Haber (ed.), How Latin America Fell Behind, Stanford, CA: Stanford University Press.
- Fara, Luis (1989) "Luchas Reivindicativas Urbanas en un Contexto Autoritario. Los Asentamientos de San Francisco Solano", in Elizabeth Jelin (comp.), Los Nuevos Movimientos Sociales. Buenos Aires: Centro Editor de América Latina.
- Field, Erica (2003) "Entitled to Work: Urban Property Rights and Labor Supply in Peru", mimeo, Princeton University.
- Fong, Christina (2004) "Which Beliefs Matter for Redistributive Politics? Target-specific versus General Beliefs about the Causes of Income", mimeo, Carnegie Mellon University.
- Galiani, Sebastian and Ernesto Schargrotsky (2005) "Property Rights for the Poor: Effects of Land Titling", mimeo, UdeSA.
- Geertz, Clifford (1973) The Interpretation of Cultures, New York: Basic Books.
- Glaeser, Ed, David Laibson and Bruce Sacerdote (2002) "An Economic Approach to Social Capital", *Economic Journal*, 112 (483), 437-58.
- Glaeser, Edward, Rafael La Porta, Florencio Lopez-de-Silanes and Andrei Shleifer (2004) "Do Institutions Cause Growth?," mimeo, Harvard University.
- Goffman, Erving (1974) Frame Analysis: An Essay on the Organization of Experience, Cambridge: Harvard University Press.
- Greif, Avner (1994) "Cultural Beliefs and the Organization of Society: A Historical and Theoretical Reflection on Collectivist and Individualist Societies", *Journal of Political Economy* 102(5), 912-50.
- Greif, Avner (2003) Institutions: Theory and History, *Forthcoming* Cambridge University Press.
- Hechter, Michael and Karl-Dieter Opp (2001) Social Norms, Russel Sage Foundation: New York.
- Hochschild, Jennifer, (1981) What's Fair? American Beliefs about Distributive Justice, Cambridge, Harvard University Press.
- Inglehart, Ronald (1990) Culture shift in advanced societies, Chicago University Press: Chicago.
- Izaguire Ines, and Zulema Aristizabal (1988). Las Tomas de Tierras en la Zona Sur del Gran Buenos Aires. Un Ejercicio de Formación de Poder en el Campo Popular. Buenos Aires: Centro Editor de América Latina.
- Jamieson, Amie, Hyon Shin and Jennifer Day (2002) "Voting and Registration in the Election of 2000", US Census Bureau, Current Population Report, 1902, P20-542.
- Jencks, Christopher and Susan Mayer (1990) "The Social Consequences of Growing Up in a Poor Neighborhood," in Inner-City Poverty in the United States, L.E. Lynn Jr. and M.G.H. McGeary, (eds.) Washington, DC: National Academy Press.
- Johnson, James (2002) "How Conceptual Problems Migrate", *Annual Review of Political Science*, 5, 223-48.
- Jones, Steve, Jeffrey Netter, William Megginson and Robert Nash (1999) "Share Issue Privatizations as Financial Means to Political and Economic Ends," *Journal of Financial Economics*, 53, 217-53.
- Katz, Lawrence, Jeffrey Kling, and Jeffrey Liebman, (2000) "Moving to Opportunity in Boston: Early Results of a Randomized Mobility Experiment," Princeton University, Industrial Relations Section Working Paper # 441.
- Kertzer, David (1996) Politics and Symbols, New Haven: Yale University Press.
- Ladd, Everett Carl and Karlyn Bowman (1998) Attitudes Towards Economic Inequality, AEI Press: Washington.
- Lanjouw Jean, and Philip Levy (2002) "Untitled: a Study of Formal and Informal Property Rights in Urban Ecuador", *Economic Journal*, 112: 986-1019.
- La Porta, Rafael, Florencio Lopez-de-Silanes, Andrei Shleifer, and Robert Vishny (1998) "Law and Finance," *Journal of Political Economy*, 106(6), 1113-55.

- Loewenstein, George, Samuel Issacharoff, Colin Camerer and Linda Babcock (1993) "Self-Serving Assessments of Fairness and Pre-trial Bargaining", *Journal of Legal Studies*, XXII, 135-59.
- North, Douglass (2005) Understanding the Process of Economic Change, Princeton University Press.
- Putnam, Robert (1993) Making Democracy Work: Civic Traditions in Modern Italy, Princeton University Press.
- Piketty, Thomas (1995) "Social Mobility and Redistributive Politics." *Quarterly Journal of Economics*, 110(3), 551–84.
- Piketty, Thomas (1998) "Self Fulfilling beliefs about Social Status", *Journal of Public Economics*, 70, 115-32.
- Przeworski, Adam (2004) "The Last Instance: Are Institutions the Primary Cause of Economic Development", mimeo, NYU.
- Rabin, Matthew (1995) "Moral Preferences, Moral Constraints and Self Serving Biases", University of California, Berkeley, economics wp 95-241.
- Rodrik, Dani, Arvind Subramanian and Francesco Trebbi (2002) "Institutions Rule: The Primacy of Institutions over Geography and Integration in Economic Development", NBER working paper 9305.
- Roland, Gerard and Thierry Verdier (1994) "Privatization in Eastern Europe: Irreversibility and Critical Mass Effects" *Journal of Public Economics*, 54 (2), 161-183.
- Rotemberg, Julio (2002) "Perceptions of Equity and the Distribution of Income", *Journal of Labor Economics*, 20(2), 1, 249-88.
- Roth, Alvin and Keith Murningham (1982) "The Role of Information in Bargaining: An Experimental Study", *Econometrica*, L, 1123-42.
- Sacerdote, Bruce (2000) "Peer Effects with Random Assignments: Results from Dartmouth Roommates," mimeo, Dartmouth College.
- Schotter, Andrew (1998) "Worker Trust, System Vulnerability and the Performance of Work Groups", Ch 14 in Ben-Ner and Putterman (editors) Economics, Values and Organization, Cambridge University Press.
- Shiller, Robert, Maxim Boycko, and Vladimir Korobov (1991) "Popular Attitudes toward Free Markets: The Soviet Union and the United States Compared," *American Economic Review*, 81(3), pages 385-400.
- Shiller, Robert, Maxim Boycko, and Vladimir Korobov (1992) "Hunting for *Homo sovieticus*: Situational versus Attitudinal Factors in Economic Behavior", *Brookings Papers on Economic Activity*, 1, 127–81.
- Thatcher, Margaret (2000) Convocation Address by Lady Thatcher at Hofstra University, New York, Monday, 27 March 2000.
- Zavalía Lagos, Raul (2005). "La Confianza como Agente Superador de los Problemas de Vivienda", presentation of Fundación Pro-Vivienda Social at "Seminario sobre Políticas de Vivienda en Argentina", CEF-World Bank, Buenos Aires, June 30.