

# Effects of Land Titling

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October 31, 2003

## **Abstract**

The empirical evaluation of the effect of land property rights typically suffers from selection problems. The allocation of property rights across households is usually not random but based on wealth, family characteristics, political clientelism, or other mechanisms built on differences between the groups that acquire property rights and the groups that do not. In this paper, we address this selection concern exploiting a natural experiment in the allocation of property rights. Twenty years ago, a homogenous group of squatters occupied a piece of privately owned land in a suburban area of Buenos Aires, Argentina. When the Congress passed an expropriation law transferring the land from the former owners to the squatters, some of the former owners surrendered the land (and received a compensation), while others decide to sue in the slow Argentine courts. These different decisions by the former owners generated an allocation of property rights that is exogenous to the characteristics of the squatters. We take advantage of this natural experiment to evaluate the effect of the allocation of urban land property rights. Our preliminary results show significant effects on housing investment, household size, and school attrition. Contradicting De Soto's hypotheses, we found non-significant effects on labor income and access to credit markets.

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## I. Introduction

The lack of well-defined land property rights imposes considerable costs to poor families. First, individuals may underinvest if the fruits of their investments could be seized by others (Besley, 1995). Thus, inadequate property rights may affect the incentives to invest in housing quality. Second, the non-entitled may not be able to gain from trade (Besley, 1995). The lack of property rights restricts the possibility of exchanging houses when their characteristics are inadequate for family needs. Third, houses without proper titles cannot be used as collateral, therefore preventing access to credit markets (De Soto, 2000). Thus, the fragility of property rights may impede the use of the small amounts of capital that the poor have reducing their consumption and entrepreneurial opportunities. Fourth, in the absence of formal property rights the poor may need to spend extra time and resources to protect their properties (Field, 2002). The self-protection of their houses may constitute a large burden for poor families.<sup>1</sup>

De Soto (2000) argues that the lack of property rights impedes the transformation of the wealth of the poor into capital. Proper titling could allow them to use their houses as collateral to receive credit. In turn, this credit could be invested as capital increasing their labor productivity. These productivity gains should be then translated into higher income. After De Soto's influential work, many governments in Latin America have launched land-titling programs as part of their poverty alleviation policies. The Peruvian government, for example, issued property titles to 1.2 million urban households during the 1990s. At a smaller scale, Ecuador and Paraguay have also developed titling programs. During his first week in office, Brazilian President Lula da Silva announced a massive plan to award property titles to millions of people living in the *favelas* of the major cities of Brazil.<sup>2</sup>

The effects of land titling have been documented by several studies: Jimenez (1984) for the Philippines; Besley (1995) for Ghana; Alston, Libecap, and Schneider (1996) for Brazil; Carter and Olinto (2000) for Paraguay; Miceli, Sirmans, and Kieyah (2001) for Kenya; Lanjouw and Levy (2002) for Ecuador; Do and Iyer (2002) for Vietnam; Field (2002) for Peru; inter alia. The distinctive characteristic of our study is that we exploit a

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<sup>1</sup> The inability to invest may also imply an underprotection of untitled families against crime. Di Tella, Galiani, and Schargrotsky (2003) show how the inability of the poor to invest in housing security devices translates into large crime victimization rates suffered by the poor.

<sup>2</sup> See El Pais, Madrid, Spain, January 7, 2003, [www.elpais.es](http://www.elpais.es).

natural experiment in the allocation of land titles. Given that the allocation of property rights may suffer from selection problems, exogeneity is crucial for the proper evaluation of its effects.

We take advantage of this natural experiment to evaluate the impact of property rights on several variables. Our preliminary results show significant effects on housing investment, household size, and school attrition. Contradicting the transmission mechanism hypothesized by De Soto, we found non-significant effects on labor income and access to credit markets (Woodruff, 2001).

The rest of the paper is organized as follows. In the next section we describe the natural experiment. In section III we present our data, and in section IV we discuss the empirical strategy. Sections V and VI present our preliminary results on housing and household variables, respectively, while section VII concludes.

## **II. A Natural Experiment**

The empirical evaluation of the effects of land title registration programs typically poses a major methodological challenge. In most historical experiences, the allocation of property rights across families is not random but based on wealth, family characteristics, political clientelism, or other selective mechanisms. Thus, the personal characteristics that determine the likelihood of receiving land titles are likely to be correlated with the outcomes under study. This correlation creates a selection bias that impedes the proper evaluation of the effects of property right acquisition.

In this project, we address this selection problem by exploiting a natural experiment in the allocation of property rights. Between 1981 and 1982, almost 2,000 families occupied more than two squared kilometers of wasteland in the locality of San Francisco Solano, County of Quilmes, Province of Buenos Aires, Argentina. The occupants were groups of landless citizens organized through the Catholic Church, who explicitly wanted to avoid creating a shantytown and therefore partitioned the occupied land into small

urban-shaped parcels. At the beginning of the occupation, the squatters thought that the land belonged to the state, but they later found out that it was private property.<sup>3</sup>

The squatters resisted several intents of eviction during the military government. After Argentina's return to democracy, the Congress of the Province of Buenos Aires passed Law N° 10.239 in October of 1984 expropriating these lands from the former owners to allocate it to the new occupants. The former owners would receive a monetary compensation from the government and, then, the government would allocate those lands to the squatters.

The process of expropriation resulted to be asynchronous and incomplete. The occupied area turned out to be composed of thirteen large pieces of land belonging to different owners. Each former owner had to decide whether to surrender the land (accepting the expropriation compensation) or to start a legal dispute. In 1986, eight former owners accepted the compensation offered by the government. Their lands were then gradually transferred to the occupants together with formal land titles that secured the property of the parcels. However, five former owners did not accept the compensation offered by the government and decided to dispute the expropriation in the slow Argentine courts. One of these former owners finally surrendered the land, which was lately allocated to the occupants, while the other four lawsuits are still pending.

Importantly, the people who occupied parcels of land belonging to the former owners that accepted the expropriation compensation were ex-ante similar and arrived at the same time than the people who established in the parcels of the former owners that did not surrender the land. There was simply no way for the occupants to know ex-ante, at the time of the occupation, which parcels of land had owners who would accept the compensation and which parcels had owners who would dispute the expropriation. In fact, at the time of the occupation the squatters thought that all the land was state-owned and they could not know that an expropriation law was going to be passed and which was going to be the response of the owners of each specific parcel they were occupying.

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<sup>3</sup> On the details of the land occupation process see the documentary movie "Por una tierra nuestra" by Cespedes (1984), and also CEUR (1984), Izaguirre and Aristizabal (1988), and Fara (1989).

Although the allocation of land titles was not based on any particular characteristic of the squatters, but depended on a decision by each former owner, a group of families now has formal property rights, while another is still living in the parcels without having titles. Thus, by comparing the groups that received and did not received land titles, we can act as if we had a randomized experiment. Because randomization resolves the selection problem, this natural experiment allows us to identify the effects of land titling using cross-sectional information.

### **III. Data Description and Collection**

We followed the evolution of the expropriation process in the Land Undersecretary of the Province of Buenos Aires, the office of the General Attorney of the Province of Buenos Aires, the Quilmes County Government, the land registry, and the tax authority, obtaining precise knowledge of the legal status of each parcel.

The area affected by Expropriation Law N° 10.239 covers a total of 1,839 parcels. 1,082 of these parcels are located in a contiguous set of blocks. However, the law also included another non-contiguous (but close) piece of land currently called San Martin neighborhood, that comprises 757 parcels. As this area is physically separated from the rest, in this version of the paper we focus on the 1,082 contiguous parcels for the main results, and then include the San Martin parcels for robustness.<sup>4</sup>

Land titles were awarded in two phases. Property titles were awarded to the occupants of 419 parcels in 1989-91, and to the occupants of 173 parcels in 1997-98. Property rights have not been offered to the families living in 427 parcels that were occupied under the same conditions and during the very same days of 1981. Finally, land titles were available for other 63 parcels, but the occupants did not receive them because they had moved or died at the time of the title offers, or had not fulfilled some of the required registration steps. For these potentially endogenous reasons, the inhabitants of these 63 parcels (out of the 655 parcels offered for titling) missed the opportunity to receive a title, i.e. missed the opportunity to receive the treatment.<sup>5</sup> Borrowing the terminology from

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<sup>4</sup> At the time of writing this preliminary version, we are confirming the exact timing of the occupation of this piece of land relative to the occupation of the main area.

<sup>5</sup> At the time of writing this preliminary version, we are double-checking whether some of these households obtained titles later on.

clinical trials, this subgroup constitutes the “non-compliers” in our study, since they were “offered” the treatment (land title) but they did not “receive” it.

Table 1 summarizes the process of allocation of land titles for the main area.<sup>6</sup>

Table 1 – Allocation of Land Titles (without San Martin)

Intention to treat (Property Right Offer = 1)				Control (Property Right Offer = 0)	Total
Year	Total	Treated (Property Right = 1)	Non-compliers (Property Right = 1))		
1989-91	425	419	6		
1997-98	230	173	57		
Total	655	592	63	427	1082

Between the months of January and March of 2003, we sent a team of architects to go over the whole area performing an outside evaluation of the housing characteristics of each parcel. At the same time, we performed a survey interviewing the inhabitants of 590 randomly selected parcels (out of the total of 1,839).<sup>7</sup> We found that 617 households live in the 590 parcels of the total sample (27 parcels host more than one family).<sup>8</sup> Excluding San Martin, our sample comprises 467 households living in 448 parcels.

#### IV. Estimation Strategy

The goal of this article is to evaluate the effect of the allocation of property rights on several variables. Let  $Y_{1i}$  denote the outcome of interest of unit  $i$  if this unit has land

<sup>6</sup> The 757 parcels of San Martin, which belonged to only one owner who surrendered the land, were offered for titling. 712 were titled, while 45 correspond to non-compliers.

<sup>7</sup> The housing evaluation and the household survey were carried out by Gestion Urbana, an NGO that works in this area and has a relationship of trust with the inhabitants. The architects and the interviewers were not informed of the hypotheses of our study and were blind to the treatment status of each parcel.

<sup>8</sup> 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.

titling, and let  $Y_{0i}$  denote the outcome of interest otherwise. Let  $D_i$  be an indicator of land titling. The average effect of land titling on outcome  $Y$  for unit  $i$  is

$$E[Y_{1i} | D_i = 1] - E[Y_{0i} | D_i = 1] \quad (1)$$

Note that the first term of (1) is observed, but the second term is an unobserved average counterfactual. Simple comparisons of outcomes by  $D_i$  generally fail to identify causal effects unless land titling is determined in a manner independent of the unit's potential outcomes, as it is the case in the natural experiment we exploit in this paper. Exogeneity in the allocation of treatment allows us to use  $E[Y_{0j} | D_j = 0]$ , the outcome of interest in the control units  $j$ , as the counterfactual realization of what would have happened to the treated group without treatment, that is, to estimate  $E[Y_{0i} | D_i = 1]$ .

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

$$Y_i = \alpha + \beta X_i + \gamma \text{Property Right}_i + \varepsilon_i \quad (2)$$

where  $Y_i$  is the outcome under study,  $X_i$  is a vector of controls,  $\varepsilon_i$  is the error term, and  $\gamma$  is the parameter of interest, which captures the effect of  $\text{Property Right}_i$  (a dummy variable indicating the possession of land title) on the outcome under study.

A potential concern with regression (2) 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 the presence of unobservable factors that could also affect the variable under study. In order to address this non-compliance concern, we instrument  $\text{Property Right}_i$  using the "intention to treat" variable  $\text{Property Right Offer}_i$ , a dummy variable indicating the availability of land title offers (see Angrist et al, 1996). Thus, we report estimates of the effect of land titling on several outcomes by Two-Stages Least Squares (2SLS).

Some of the variables under study are Limited Dependent Variables. Angrist (2001) argues that the problem of causal inference with Limited Dependent Variables is not fundamentally different from causal inference with continuous outcomes. If there are no

covariates or the covariates are sparse and discrete, linear models and associated estimation techniques like 2SLS are no less appropriate for LDV's than for other types of dependent variables.

## V. Preliminary Results: Effects on Housing Investment

For the study of the impact of property rights on housing investments two clarifications are important. First, that we will utilize the whole sample of 1,082 parcels (1,839 parcels with San Martin), regardless of whether the family occupying a given parcel has been living there since the time the former owners decided to surrender the land or sue, or it was replaced by another household later on. In this section, our purpose is to study the effect of titling on investments that remain in the parcel. Thus, the parameter we intend to estimate is “what grows in a parcel when it is entitled”. This parameter is different from “what a given family builds in a parcel when receives a land title” (that we will show later). Second, that before the occupation, this was a wasteland area without any construction. Thus, although we perform a cross-sectional analysis, it can also be interpreted as a difference-in-difference approach. The treatment and control areas had a similar (i.e., zero) baseline investment level.

In Table 2, we compare available data on parcel characteristics for the intention-to-treated and non-intention-to-treated groups (i.e., Property Right Offer = 0 and Property Right Offer=1, respectively) to analyze the presence of potential differences. The three available variables are parcel surface (in squared meters), distance to a nearby (polluted and floodable) creek (in blocks), and whether the parcel is in a corner of a block. We cannot reject the hypotheses of equality in parcel characteristics across the groups.

Table 2 – Pre-Treatment Parcel Characteristics

Variables	Property Right Offer=0	Property Right Offer=1	Diff
Parcel Surface	284.338 (4.814)	279.204 (2.834)	5.134 (5.586)
Distance to Creek	1.945 (0.061)	1.938 (0.034)	0.007 (0.070)
Block Corner	0.188 (0.019)	0.154 (0.014)	0.033 (0.023)

In Table 3 we start the analysis of the effect of property rights on housing quality. The dependent variable Points in Neighborhood measures the quality of each house relative to houses in this same neighborhood from 0 to 100 points assigned by the team of architects following a set of guidelines. The first two columns present OLS regressions on Property Right Offer, the “intention to treat” variable, and the last three columns present IV results on Property Right, the “treatment” variable. Controls for parcel surface, distance to a nearby creek, and whether the parcel is in a corner of a block are incorporated in columns (2), (4), and (5). The observations from the San Martin neighborhood are included in column (5). The findings suggest a significant effect of land titling on housing quality. The average sample value is 42 points, so the effect represents an overall housing improvement of 25 percent associated to titling. Similar results are obtained in Table 4 when we consider Points in Quilmes, the quality of the houses relative to houses in downtown Quilmes (the main locality of the county).

Table 5 presents the effect on constructed surface (measured in squared meters). The sample average is 73 squared meters. Our results suggest an increase of about 9 percent in the presence of land titles. Table 6 suggests a large effect of property rights in the quality of the roof.<sup>9</sup> The percentage of houses with good quality roof raises from 36 to 48 percent under proper titling. Table 7 shows significant improvements in wall quality associated to titling (although marginally significant when we include San Martin). Table 8 shows improvements in the quality of the soil and gardening outside of the houses but within the parcels.<sup>10</sup> Finally, Table 9 shows significant increases in the presence of posters indicating the house address number in the titled parcels.<sup>11</sup>

## **VI. Preliminary Results: Effects on Household Variables**

### **VI.A. Household Attrition**

In our survey, we found that although the occupation of the land occurred in 1981-82, some families arrived to the parcel that are currently occupying after the time the former

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<sup>9</sup> The dependent variable is a dummy that equals 1 for roofs of *Cubierta asfáltica o membrana*, *Baldosa o losa (sin cubierta)*, and *Pizarra o teja*; and equals 0 for *Chapa de metal (sin cubierta)*, *Chapa de fibrocemento o plástico*, *Chapa de cartón*, and *Caña, tabla o paja con barro, paja sola*.

<sup>10</sup> We include this variable because of its potentially relevant health effects.

owners made, during 1986, the decision of surrender or sue (the survey question referred explicitly to the time of arrival to the current parcel, not to the date of arrival to the neighborhood). From our sample of 467 households (617 households with San Martin), we found that the first family member had arrived to the parcel after 1985 in 154 families (192 families with San Martin), while 313 families (425 families with San Martin) had arrived before the end of 1985. It is plausible to argue that the families that arrived after that decision could have known the different expropriation status (i.e., the different probabilities of receiving the land) associated to each parcel, which would break the exogeneity in title allocation. For this reason, the study of the effect of property rights on household characteristics considers the sample of 313 households (425 households with San Martin) that have been occupying the parcels since 1985, i.e. before the decisions by the original owners of surrender or sue made during 1986.

The exclusion of the families that arrived to the parcel they are currently occupying after the decisions by the original owners of surrender or sue, raises a problem of attrition. Some original squatters in our treatment and control parcels had left the area before we ran our survey in 2003.<sup>12</sup> Moreover, the availability of titles could have affected household migration decisions. Indeed, the first row of Table 10 shows that 71.2 percent of the parcels are inhabited by families that arrived before 1986 in the treatment group, while the percentage is 61.2 for the control group.

Table 10 – Household Attrition

Variables	Property Right Offer=0	Property Right Offer=1	Property Right Offer 1989-91=1	Property Right Offer 1997-98=1	Diff
Household arrived before 1986=1	0.612 (0.035)	0.712 (0.028)			-0.099** (0.045)
Household arrived before 1986=1	0.612 (0.035)		0.781 (0.052)		-0.168*** (0.062)
Household arrived before 1986=1	0.612 (0.035)			0.689 (0.033)	-0.076 (0.048)

<sup>11</sup> This variable could be a proxy of integration into society. For example, it facilitates every type of communication, including the reception of mail.

Of course, the migration decision could be potentially correlated with the outcomes under study. However, the distortions generated by this selection problem may be not severe. In Table 11, we sequentially present our regression on overall housing quality. The first column reproduces the regression from column (4) of Table 3. In the second column, we only run the regression for the parcels that were randomly selected for our household survey. The third column shows the results for the parcels occupied by families that accepted to answer our survey, regardless of the time of arrival. Finally, the last column excludes the late-comers and only considers parcels occupied by the same family since the pre-treatment time. The coefficients are very similar across the four samples. Indeed, we cannot reject the equality of the coefficients on Property Right across the four regressions. Similar results are obtained for the other housing quality variables. These results suggest that, at least for housing investments, the problem of selection does not generate a relevant distortion of our results. The effects of property rights on housing characteristics are similar for the sample of parcels occupied by families arrived before 1986 than the effects that we presented for the whole universe of parcels.<sup>13</sup>

Still, we will use two strategies to address the attrition problem. First, we will exploit the asynchronous timing in the titling process. The second row of Table 10 shows a significant difference in attrition for the parcels titled longer ago (1989-91), than for the control group. Instead, the third row shows no statistically significant differences in attrition for the parcels more recently titled than for the control group. Thus, the coefficients estimated on the sample of recently titled parcels will not suffer from significant differences in attrition. In turn, the comparison of these coefficients with those corresponding to the early treated group leads to an indirect test of whether attrition in the latter group is ignorable.

A more traditional strategy to address the attrition concern is to utilize a Heckman selection correction. In Table 12, we run a Probit regression of the likelihood of having a household date of arrival prior to 1986 on parcel characteristics. The titling offer

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<sup>12</sup> For the families that arrived after 1985, our questionnaire attempted, with no success, to recollect information on names, home addresses, employer address current phone numbers, of the previous occupants of the parcels.

significantly increases this likelihood. A further distance to the nearby creek (a polluted creek in a floodable area) also increases this probability. As our regressions will show that Distance to Creek is ignorable in the household outcomes under study, this variable is a valid instrument for attacking the problem of selection generated by attrition. We use these two strategies as robustness checks in the following analysis.

Table 12 – **Selection Regression**

Dependent Variable: Household arrived before 1986=1	
Property Right Offer	0.419*** (0.126)
Parcel Surface	0.0007 (0.0007)
Distance to Creek	0.194*** (0.060)
Block Corner	0.119 (0.171)
Constant	-0.341 (0.264)
Observations	467

## VI. B. Pre-Treatment Household Characteristics

Before proceeding, the first part of Table 13 compares exogenous characteristics of the household head for households living in the control and treatment groups (i.e., Property Right Offer = 0 and Property Right Offer=1, respectively). We cannot reject the hypotheses of equality in age, sex, nationality and years of education of the household heads across the groups. We also find no differences for the nationality and years of education of the parents of the household head.<sup>14</sup>

<sup>13</sup> Moreover, these results indicates that the coefficient estimated in section V (“what grows in a parcel when the owner of the parcel posses a land title”), seems to be similar to “what a given family builds in a parcel when receives a land title”.

<sup>14</sup> Although we are only comparing pre-treatment characteristics of the current household head for households that have been living in the same parcel since the time of the occupation, this comparison ignores the possibility that the current household head was not the household head or was not present at the time of the occupation. Indeed, in 72 cases (out of the 313 households) the current household head does not coincide with the “original squatter”, either because he/she arrived later than the first member of the family that occupied the parcel or he/she arrived at the same time but was not the household head at that time. We define the “original squatter” as the

### **VI.C. Differential Fear of Eviction**

A potential criticism of our experiment is that the actual occupants of the non-titled parcels may consider that, sooner or later, they will end up receiving the titles for their land, making irrelevant the different treatment status of the groups. In our survey, we specifically asked the respondents on the likelihood that the original owners could evict them from the land. In the untitled parcels, 7.8 percent of the respondents fear eviction by the old owners, while that figure is basically zero for the entitled households. The first column of Table 14 shows significant differences in the fear of eviction.

However, the main fear of these families is not being evicted by the original owners, but having their parcels occupied by other families. 17.8 percent of the families without proper titling report suffering this fear, while the percentage is half of that number for the entitled households. The significant differences are presented in the second column of Table 14.

### **VI.D. Effects on Household Size**

In Table 15, we find large differences in household size between entitled and untitled groups. Entitled families seem to have 1.1 less members than untitled families. The difference is largely significant and it is robust to the inclusion of household head and parcel controls (columns 1 and 2). In column 3, the attrition concern is addressed through a Heckman selection correction (using the results from Table 12). Moreover, the fourth column indicates that we cannot reject the hypothesis of similar effect for the early treated households (which have a significant attrition difference), than for the late treated households (with no significantly different attrition). Finally, similar results are obtained in column 5 when the San Martin households are included.

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household head at the time the family arrived to the parcel. We cannot reject the hypotheses of equality in sex, nationality and years of education and nationality and years of education of his/her parents when we compare characteristics of the “original squatters” across the groups. Our results are robust to the inclusion of the personal characteristics of the “original squatters” as controls, instead of the household head characteristics, when they differ.

The difference in household size seems to originate in two factors. First, household heads in the untitled group seem to have about 0.7 more children, children-in-law, and grandchildren living with them. This is shown in Table 16 using the same robustness checks. Second, Table 17 shows a higher presence (0.4 members) of non-nuclear relatives in untitled households.<sup>15</sup> Thus, we find that the larger household size in the untitled parcels is due to both a larger number of descendants of the household head and a more frequent presence of non-nuclear relatives. Instead, Table 18 does not show a more frequent presence of a spouse of the household head in the control group.

#### **VI.E. Performance in the Labor Market**

Our preliminary results show no differences between control and treatment groups in their performance in the labor market. Table 19 shows no significant differences in income of the household head, total household income, total household income per capita, and total household income per adult. Table 20 shows no difference in the participation of the household head in the labor market (column 1), nor in the extremely high level of unemployment suffered by household heads at the time of our survey. Interestingly, the third column of Table 20 shows a significant difference in the access to the welfare program *Jefes de Hogar*. About 40 percent of the households in the control group receive this subsidy, while this figure raises to 60 percent in the treatment group.

#### **VI.F. Access to Credit**

The possession of property rights could potentially allow home-owners to use their houses as collateral to access the credit markets (De Soto, 2000). However, our preliminary results show no differences between control and treatment groups in the access to credit. Table 21 shows no differences across groups in the access to credit cards and banking services (column 1), in access to credit from a bank, the government, a union or a cooperative (column 2), number of loans received (column 3), or on-trust credit families may receive from the stores in which they perform their daily purchases (*compras de fiado*).

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<sup>15</sup> Only two households in our sample include members who are not relatives of the household head.

### **VI.G. Durable Consumption**

Table 22 shows no differences in the consumption of durable appliances such as refrigerators, freezers, washing machines, TVs, cellular phones, home phones, and connections to cable TV.

### **VI.H. School Attrition**

The left panel of Table 23 analyzes school attrition for children in primary school (between 6 and 12 years) in the households under study. The coverage of school attendance for these children is almost total (more than 98%), and there seems to be no difference in school attrition between the control and treatment groups. Instead, attendance to secondary school (children between 13 and 16 years) drops to 85%. The right panel of Table 23 shows that secondary school attrition is significantly larger for the children in the untitled households. This result is robust to the attrition correction and to the inclusion of the San Martin households.

### **VII. Conclusions**

We exploit a natural experiment in the allocation of land titles across squatters in a poor suburban area of Buenos Aires, Argentina, to evaluate the impact of property rights. Our preliminary results show significant effects on housing investment, household size, and secondary school attrition. The quality of the houses is higher in the titled parcels. Moreover, households in the titled parcels have smaller size (although their houses are larger) and seem to invest more in the education of their children. Contradicting De Soto's hypotheses, we found non-significant effects on labor income and access to credit markets.

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Table 3 - Dependent Variable: <b>Points in Neighborhood</b>					
	(1) OLS	(2) OLS	(3) IV	(4) IV	(5) IV
Property Right Offer	10.256*** (1.399)	10.203*** (1.377)			
Property Right			11.272*** (1.561)	11.209*** (1.540)	9.386*** (1.438)
Parcel Surface		-0.008 (0.009)		-0.009 (0.009)	0.001 (0.005)
Distance to Creek		4.184*** (0.655)		3.875*** (0.668)	1.233*** (0.401)
Block Corner		-0.150 (1.910)		-0.181 (1.945)	1.158 (1.584)
Constant	35.732*** (1.089)	29.969*** (2.968)	35.732*** (1.106)	30.844*** (2.986)	32.814*** (1.917)
Observations	1061	1061	1061	1061	1809

Standard errors in parentheses

\* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%

Table 4 - Dependent Variable: <b>Points in Quilmes</b>					
	(1) OLS	(2) OLS	(3) IV	(4) IV	(5) IV
Property Right Offer	8.970*** (1.204)	8.948*** (1.182)			
Property Right			9.844*** (1.340)	9.812*** (1.320)	6.966*** (1.240)
Parcel Surface		-0.009 (0.007)		-0.009 (0.007)	0.000 (0.004)
Distance to Creek		3.810*** (0.560)		3.542*** (0.571)	0.256 (0.346)
Block Corner		-0.047 (1.636)		-0.063 (1.665)	0.676 (1.365)
Constant	21.706*** (0.937)	16.741*** (2.548)	21.706*** (0.950)	17.515*** (2.562)	21.033*** (1.657)
Observations	1061	1061	1061	1061	1809

Standard errors in parentheses

\* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%

Table 5 - Dependent Variable: <b>Constructed Surface</b> (in squared meters)					
	(1) OLS	(2) OLS	(3) IV	(4) IV	(5) IV
Property Right Offer	5.910*** (2.002)	6.370*** (1.969)			
Property Right			6.496*** (2.202)	6.996*** (2.167)	4.586** (1.991)
Parcel Surface		0.019 (0.012)		0.018 (0.012)	0.023*** (0.007)
Distance to Creek		5.342*** (0.932)		5.150*** (0.936)	0.426 (0.555)
Block Corner		9.698*** (2.725)		9.682*** (2.731)	7.578*** (2.189)
Constant	69.619*** (1.558)	51.990*** (4.245)	69.619*** (1.559)	52.534*** (4.202)	60.869*** (2.658)
Observations	1062	1062	1062	1062	1812

Standard errors in parentheses

\* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%

Table 6 - Dependent Variable: <b>Good Roof Quality</b>					
	(1)	(2)	(3)	(4)	(5)
	OLS	OLS	IV	IV	IV
Property Right Offer	0.116*** (0.031)	0.114*** (0.031)			
Property Right			0.128*** (0.034)	0.125*** (0.034)	0.127*** (0.032)
Parcel Surface		-0.000 (0.000)		-0.000 (0.000)	0.000 (0.000)
Distance to Creek		0.035** (0.015)		0.031** (0.015)	0.025*** (0.009)
Block Corner		-0.045 (0.043)		-0.045 (0.043)	0.008 (0.035)
Constant	0.361*** (0.024)	0.325*** (0.067)	0.361*** (0.024)	0.335*** (0.066)	0.292*** (0.043)
Observations	1058	1058	1058	1058	1806

Standard errors in parentheses

\* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%

Table 7 - Dependent Variable: <b>Good Wall Quality</b>					
	(1)	(2)	(3)	(4)	(5)
	OLS	OLS	IV	IV	IV
Property Right Offer	0.081*** (0.031)	0.078** (0.031)			
Property Right			0.089*** (0.034)	0.085** (0.034)	0.051 (0.032)
Parcel Surface		-0.000 (0.000)		-0.000 (0.000)	-0.000 (0.000)
Distance to Creek		0.052*** (0.015)		0.049*** (0.015)	0.017* (0.009)
Block Corner		-0.065 (0.043)		-0.065 (0.043)	-0.037 (0.036)
Constant	0.549*** (0.024)	0.545*** (0.066)	0.549*** (0.024)	0.552*** (0.065)	0.562*** (0.043)
Observations	1053	1053	1053	1053	1792

Standard errors in parentheses

\* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%

Table 8 - Dependent Variable: <b>Garden</b>					
	(1)	(2)	(3)	(4)	(5)
	OLS	OLS	IV	IV	IV
Property Right Offer	0.105*** (0.031)	0.113*** (0.030)			
Property Right			0.115*** (0.034)	0.124*** (0.034)	0.121*** (0.031)
Parcel Surface		0.001*** (0.000)		0.001*** (0.000)	0.001*** (0.000)
Distance to Creek		-0.031** (0.014)		-0.034** (0.015)	-0.006 (0.009)
Block Corner		0.067 (0.042)		0.066 (0.042)	0.044 (0.035)
Constant	0.499*** (0.024)	0.199*** (0.066)	0.499*** (0.024)	0.209*** (0.065)	0.277*** (0.042)
Observations	1062	1062	1062	1062	1811

Standard errors in parentheses

\* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%

Table 9 – Dependent Variable: <b>Address Number</b>					
	(1) OLS	(2) OLS	(3) IV	(4) IV	(5) IV
Property Right Offer	0.076** (0.031)	0.073** (0.031)			
Property Right			0.084** (0.034)	0.081** (0.034)	0.058* (0.031)
Parcel Surface		0.000 (0.000)		0.000 (0.000)	0.0002* (0.0001)
Distance to Creek		0.059*** (0.015)		0.057*** (0.015)	0.040*** (0.009)
Block Corner		-0.107** (0.043)		-0.107** (0.043)	-0.115*** (0.035)
Constant	0.507*** (0.024)	0.364*** (0.066)	0.507*** (0.024)	0.371*** (0.066)	0.393*** (0.042)
Observations	1061	1061	1061	1061	1811

Standard errors in parentheses

\* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%

Table 11 - Comparison Across Samples

Dependent Variable: Points in Neighborhood				
	(1)	(2)	(3)	(4)
Property Rights	11.209*** (1.540)	15.151*** (2.504)	14.992*** (2.515)	11.755*** (2.876)
Parcel Surface	-0.009 (0.009)	-0.028** (0.012)	-0.022* (0.013)	-0.023 (0.016)
Distance to Creek	3.875*** (0.668)	3.752*** (0.998)	4.182*** (1.021)	3.754*** (1.311)
Block Corner	-0.181 (1.945)	-1.248 (2.786)	-0.590 (2.913)	-0.978 (3.619)
Constant	30.844*** (2.986)	36.791*** (4.353)	34.512*** (4.448)	35.916*** (6.075)
Observations	1061	487	446	299

Standard errors in parentheses. IV Regressions.

\* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%

Table 13 – Pre-Treatment Household Head Characteristics

Variables	Property Right Offer=0	Property Right Offer=1	Diff
Age household head	44.688 (1.088)	46.795 (0.882)	-2.107 (1.401)
Female Household Head	1.344 (0.043)	1.366 (0.034)	-0.022 (0.055)
Argentine Household Head	0.950 (0.019)	0.916 (0.020)	0.034 (0.028)
Years of educ household head	6.303 (0.193)	6.308 (0.147)	-0.005 (0.243)
Years of educ household head (for age $\geq$ 40)	5.875 (0.214)	6.136 (0.163)	-0.261 (0.270)
Argentine household head father	0.803 (0.036)	0.869 (0.024)	-0.065 (0.043)
Years of educ father household head	4.733 (0.123)	4.581 (0.086)	0.152 (0.150)
Argentine household head mother	0.819 (0.034)	0.874 (0.024)	-0.054 (0.042)
Years of educ mother household head	4.808 (0.157)	4.736 (0.107)	0.071 (0.190)
Number of Observations	122	191	

Table 14 – **Fears of Eviction or New Occupation**

	Dependent Variable: <b>Fear of Eviction by Old Owner</b>	Dependent Variable: <b>Fear of Occupation by New Squatter</b>
	(1)	(2)
Property Right	-0.066** (0.028)	-0.114** (0.045)
Age household head ≤ 35	0.008 (0.036)	-0.081 (0.058)
Age household head 36-49	-0.032 (0.027)	-0.010 (0.044)
Sex household head	0.002 (0.026)	-0.020 (0.041)
Argentine household head	-0.004 (0.062)	0.103 (0.100)
Argentine household head father	0.011 (0.047)	0.004 (0.076)
Years of educ household head father	-0.003 (0.012)	0.054*** (0.019)
Argentine household head mother	0.055 (0.046)	-0.072 (0.074)
Years of educ household head mother	0.015 (0.010)	-0.011 (0.016)
Constant	-0.013 (0.072)	-0.012 (0.116)
Observations	310	310

Standard errors in parentheses. IV Regressions.

\* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%

Table 15 - Dependent Variable: **Number of Household Members**

	Sample Selection				With San Martin
	(1)	(2)	(3)	(4)	(5)
Property Right	-1.181*** (0.370)	-1.137*** (0.381)	-1.242*** (0.463)		-1.001*** (0.333)
Property Right 1989-91				-1.269*** (0.482)	
Property Right 1997-98				-1.142*** (0.410)	
Age Household Head ≤ 35	0.079 (0.478)	0.072 (0.480)	0.078 (0.468)	0.079 (0.479)	0.161 (0.423)
Age Household Head 36-49	1.206*** (0.361)	1.215*** (0.363)	1.208*** (0.353)	1.203*** (0.361)	0.972*** (0.307)
Female Household Head	-0.224 (0.336)	-0.264 (0.345)	-0.231 (0.331)	-0.221 (0.337)	-0.259 (0.290)
Argentine Household Head	-0.700 (0.821)	-0.678 (0.824)	-0.708 (0.804)	-0.687 (0.824)	-0.429 (0.716)
Argentine Household Head Father	1.069* (0.618)	1.070* (0.622)	1.062* (0.606)	1.063* (0.620)	0.718 (0.568)
Years of Education HH Father	-0.182 (0.157)	-0.177 (0.158)	-0.184 (0.153)	-0.179 (0.157)	-0.182 (0.129)
Argentine Household Head Mother	-0.309 (0.604)	-0.341 (0.609)	-0.307 (0.592)	-0.296 (0.607)	-0.252 (0.550)
Years of Education HH Mother	0.126 (0.129)	0.120 (0.130)	0.125 (0.126)	0.127 (0.129)	0.090 (0.121)
Parcel Surface		0.002 (0.002)			
Distance to Creek		0.008 (0.168)			
Block Corner		0.037 (0.477)			
Constant	6.017*** (0.946)	5.543*** (1.173)	6.246*** (1.414)	5.980*** (0.962)	6.271*** (0.808)
F-Stat <sup>†</sup>				0.07	
Observations	310	310	464	310	417

Standard errors in parentheses. IV Regressions. † Null hypotheses: *Property Right 1989-91 = Property Right 1997-98*.

\* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%

Table 16 - Dependent Variable: <b>Number of Household Head Children, Children-in-Law &amp; Grandchildren</b>					
			Sample Selection		With San Martin
	(1)	(2)	(3)	(4)	(5)
Property Right	-0.795** (0.335)	-0.738** (0.345)	-0.931** (0.425)		-0.710** (0.305)
Property Right 1989-91				-1.030** (0.437)	
Property Right 1997-98				-0.694* (0.372)	
Age Household Head ≤ 35	-0.656 (0.434)	-0.667 (0.435)	-0.656 (0.425)	-0.657 (0.434)	-0.719* (0.388)
Age Household Head 36-49	1.104*** (0.327)	1.119*** (0.329)	1.110*** (0.321)	1.097*** (0.328)	0.826*** (0.282)
Female Household Head	0.377 (0.305)	0.307 (0.313)	0.360 (0.301)	0.385 (0.306)	0.306 (0.265)
Argentine Household Head	-0.574 (0.744)	-0.548 (0.747)	-0.591 (0.731)	-0.539 (0.747)	-0.445 (0.656)
Argentine Household Head Father	1.136** (0.561)	1.149** (0.563)	1.122** (0.551)	1.122** (0.562)	0.847 (0.521)
Years of Education HH Father	-0.150 (0.142)	-0.145 (0.143)	-0.154 (0.139)	-0.141 (0.143)	-0.138 (0.118)
Argentine Household Head Mother	-0.331 (0.548)	-0.385 (0.552)	-0.326 (0.538)	-0.297 (0.550)	-0.170 (0.504)
Years of Education HH Mother	-0.023 (0.117)	-0.028 (0.118)	-0.023 (0.114)	-0.021 (0.117)	-0.040 (0.111)
Parcel Surface		0.002 (0.002)			
Distance to Creek		0.024 (0.152)			
Block Corner		-0.073 (0.432)			
Constant	4.127*** (0.858)	3.519*** (1.063)	4.631*** (1.291)	4.029*** (0.872)	4.299*** (0.740)
F-Stat <sup>†</sup>				0.57	
Observations	310	310	464	310	417

Standard errors in parentheses. IV Regressions. † Null hypotheses: *Property Right 1989-91 = Property Right 1997-98*.

\* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%

Table 17 - Dependent Variable: <b>Number of Other Relatives of Household Head</b>					
	(1)	(2)	Sample Selection (3)	(4)	With San Martin (5)
Property Right	-0.402*** (0.147)	-0.421*** (0.152)	-0.297 (0.190)		-0.291** (0.128)
Property Right 1989-91				-0.276 (0.192)	
Property Right 1997-98				-0.457*** (0.163)	
Age Household Head ≤ 35	0.638*** (0.190)	0.640*** (0.191)	0.638*** (0.186)	0.639*** (0.191)	0.813*** (0.163)
Age Household Head 36-49	0.082 (0.144)	0.072 (0.145)	0.077 (0.140)	0.086 (0.144)	0.107 (0.118)
Female Household Head	-0.142 (0.134)	-0.108 (0.137)	-0.129 (0.131)	-0.146 (0.134)	-0.116 (0.112)
Argentine Household Head	-0.221 (0.327)	-0.216 (0.328)	-0.207 (0.319)	-0.240 (0.328)	-0.048 (0.276)
Argentine Household Head Father	-0.008 (0.246)	-0.023 (0.247)	0.002 (0.240)	-0.001 (0.247)	-0.085 (0.219)
Years of Education HH Father	-0.063 (0.062)	-0.060 (0.063)	-0.059 (0.061)	-0.068 (0.063)	-0.079 (0.050)
Argentine Household Head Mother	0.117 (0.241)	0.141 (0.242)	0.113 (0.234)	0.099 (0.242)	0.036 (0.212)
Years of Education HH Mother	0.148*** (0.051)	0.144*** (0.052)	0.148*** (0.050)	0.147*** (0.051)	0.114** (0.047)
Parcel Surface		-0.000 (0.001)			
Distance to Creek		-0.045 (0.067)			
Block Corner		0.170 (0.190)			
Constant	0.145 (0.377)	0.228 (0.467)	-0.243 (0.570)	0.198 (0.383)	0.292 (0.311)
F-Stat <sup>†</sup>				0.85	
Observations	310	310	464	310	417

Standard errors in parentheses. IV Regressions. † Null hypotheses: *Property Right 1989-91 = Property Right 1997-98*.

\* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%

Table 18 - Dependent Variable: **Household Head Spouse**

	Sample Selection				With San Martin
	(1)	(2)	(3)	(4)	(5)
Property Right	0.017 (0.052)	0.022 (0.053)	-0.014 (0.066)		-0.000 (0.047)
Property Right 1989-91				0.037 (0.067)	
Property Right 1997-98				0.008 (0.057)	
Age Household Head ≤ 35	0.097 (0.067)	0.099 (0.067)	0.096 (0.065)	0.097 (0.067)	0.067 (0.060)
Age Household Head 36-49	0.020 (0.050)	0.023 (0.051)	0.021 (0.049)	0.020 (0.051)	0.040 (0.043)
Female Household Head	-0.459*** (0.047)	-0.463*** (0.048)	-0.463*** (0.046)	-0.460*** (0.047)	-0.449*** (0.041)
Argentine Household Head	0.094 (0.115)	0.086 (0.115)	0.090 (0.112)	0.091 (0.115)	0.064 (0.101)
Argentine Household Head Father	-0.059 (0.086)	-0.056 (0.087)	-0.062 (0.084)	-0.058 (0.087)	-0.044 (0.080)
Years of Education HH Father	0.031 (0.022)	0.028 (0.022)	0.029 (0.021)	0.030 (0.022)	0.036** (0.018)
Argentine Household Head Mother	-0.095 (0.084)	-0.098 (0.085)	-0.094 (0.082)	-0.098 (0.085)	-0.118 (0.077)
Years of Education HH Mother	0.001 (0.018)	0.004 (0.018)	0.0008 (0.017)	0.001 (0.018)	0.015 (0.017)
Parcel Surface		-0.000 (0.000)			
Distance to Creek		0.029 (0.023)			
Block Corner		-0.059 (0.066)			
Constant	0.744*** (0.132)	0.796*** (0.163)	0.859*** (0.200)	0.753*** (0.134)	0.680*** (0.114)
F-Stat <sup>†</sup>				0.18	
Observations	310	310	464	310	417

Standard errors in parentheses. IV Regressions. † Null hypotheses: *Property Right 1989-91 = Property Right 1997-98*.

\* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%

Table 19 - <b>Income</b>				
	Dependent Variable: <b>Household Head Income</b>	Dependent Variable: <b>Total Income</b>	Dependent Variable: <b>Total Income per capita</b>	Dependent Variable: <b>Total Income per adult</b>
	(1)	(2)	(3)	(4)
Property Right	-18.391 (30.961)	-61.715 (40.846)	-2.804 (9.803)	4.337 (14.008)
Age Household Head ≤ 35	-46.411 (40.580)	-136.812** (53.412)	-28.359** (12.818)	-3.930 (18.317)
Age Household Head 36-49	0.276 (31.153)	-52.826 (40.360)	-14.830 (9.686)	-1.798 (13.841)
Female Household Head	-88.728*** (29.831)	-69.733* (38.175)	-10.079 (9.162)	-17.707 (13.092)
Argentine Household Head	21.289 (72.565)	11.729 (87.502)	19.309 (20.999)	58.265* (30.007)
Argentine Household Head Father	-47.746 (45.273)	6.899 (61.688)	-10.851 (14.804)	-40.759* (21.155)
Years of educ HH Father	9.327 (12.483)	9.944 (16.404)	-0.324 (3.937)	-2.299 (5.626)
Argentine Household Head Mother	45.691 (48.518)	-30.880 (62.634)	3.191 (15.032)	17.855 (21.480)
Years of educ HH Mother	8.920 (9.877)	20.662 (13.097)	1.664 (3.143)	1.982 (4.491)
Constant	206.895** (82.772)	307.741*** (103.636)	70.421*** (24.871)	81.603** (35.540)
Observations	175	209	209	209

Standard errors in parentheses. IV Regressions. Households are considered only if reported income > 0.  
\* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%

Table 20 - Labor Force Participation, Unemployment and Welfare Program

	Dependent Variable: <b>HH in Labor Force</b> (1)	Dependent Variable: <b>Unemployed HH</b> (2)	Dependent Variable: <b>Plan Jefes</b> (3)
Property Right	0.017 (0.055)	0.030 (0.084)	0.197*** (0.066)
Age Household Head ≤ 35	0.244*** (0.071)	0.272** (0.110)	0.027 (0.085)
Age Household Head 36-49	0.235*** (0.054)	0.200** (0.082)	0.099 (0.064)
Female Household Head	-0.123** (0.050)	-0.074 (0.076)	0.011 (0.060)
Argentine Household Head	0.023 (0.122)	0.004 (0.194)	0.067 (0.147)
Argentine Household Head Father	0.035 (0.092)	0.104 (0.154)	0.154 (0.110)
Years of educ HH Father	0.013 (0.023)	0.000 (0.037)	0.003 (0.028)
Argentine Household Head Mother	0.037 (0.090)	0.056 (0.140)	-0.097 (0.108)
Years of educ HH Mother	-0.019 (0.019)	-0.016 (0.029)	0.015 (0.023)
Constant	0.594*** (0.139)	0.394* (0.217)	0.171 (0.169)
Observations	305	182	309

Standard errors in parentheses. IV Regressions. The unemployment regression only considers household heads in the labor force.

\* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%

	Dependent Variable: <b>Credit Card &amp; Bank Account</b> (1)	Dependent Variable: <b>Loan Received</b> (2)	Dependent Variable: <b>Number of Loans</b> (3)	Dependent Variable: <b>Grocery Store Loan</b> (4)
Property Right	-0.031 (0.024)	0.051 (0.041)	-0.898 (0.880)	-0.039 (0.058)
Age Household Head ≤ 35	0.001 (0.030)	-0.033 (0.053)	3.301*** (1.146)	0.006 (0.075)
Age Household Head 36-49	0.007 (0.023)	0.052 (0.040)	0.464 (0.872)	0.044 (0.057)
Female Household Head	-0.011 (0.021)	-0.034 (0.037)	0.989 (0.811)	-0.108** (0.053)
Argentine Household Head	0.010 (0.052)	0.121 (0.091)	1.957 (1.966)	0.205 (0.129)
Argentine HH Father	-0.021 (0.039)	-0.100 (0.069)	0.133 (1.472)	0.099 (0.097)
Argentine HH Mother	0.012 (0.010)	-0.001 (0.017)	0.485 (0.372)	-0.006 (0.025)
Years of educ HH Father	0.051 (0.038)	0.055 (0.068)	-1.310 (1.440)	-0.069 (0.095)
Years of educ HH Mother	-0.005 (0.008)	0.013 (0.014)	-0.173 (0.307)	0.018 (0.020)
Constant	-0.019 (0.060)	-0.061 (0.104)	0.336 (2.240)	0.030 (0.149)
Observations	309	309	299	309

Standard errors in parentheses. IV Regressions.

\* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%

Table 22 - Durable Consumption

	Dependent Variable: Refrigerator with Freezer	Dependent Variable: Refrigerator without Freezer	Dependent Variable: Washing Maching	Dependent Variable: TV	Dependent Variable: Cellular Phone	Dependent Variable: Phone	Dependent Variable: Cable TV
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Property Right	0.011 (0.063)	0.107 (0.066)	0.047 (0.062)	-0.033 (0.038)	-0.023 (0.028)	-0.001 (0.053)	0.022 (0.039)
Age Household Head ≤ 35	0.021 (0.082)	0.016 (0.085)	0.061 (0.081)	0.010 (0.049)	0.048 (0.036)	-0.120* (0.069)	-0.048 (0.050)
Age Household Head 36-49	0.072 (0.062)	0.008 (0.064)	0.053 (0.061)	0.019 (0.037)	-0.000 (0.027)	0.021 (0.052)	-0.025 (0.038)
Female Household Head	0.054 (0.058)	-0.139** (0.060)	-0.125** (0.057)	-0.014 (0.034)	-0.013 (0.025)	-0.048 (0.049)	-0.008 (0.035)
Argentine Household Head	-0.136 (0.141)	0.145 (0.148)	-0.157 (0.138)	-0.173** (0.083)	0.004 (0.061)	-0.056 (0.118)	0.040 (0.085)
Argentine Household Head Father	0.078 (0.106)	-0.123 (0.111)	0.018 (0.104)	0.044 (0.063)	0.043 (0.046)	-0.049 (0.089)	0.004 (0.064)
Years of educ HH Father	-0.006 (0.027)	0.021 (0.028)	0.004 (0.027)	-0.005 (0.016)	0.012 (0.012)	-0.002 (0.023)	0.036** (0.016)
Argentine Household Head Mother	-0.056 (0.104)	0.095 (0.108)	-0.025 (0.102)	0.047 (0.061)	-0.001 (0.045)	-0.070 (0.087)	0.043 (0.063)
Years of educ HH Mother	0.037* (0.022)	-0.034 (0.023)	-0.019 (0.022)	0.005 (0.013)	-0.011 (0.010)	0.011 (0.019)	0.002 (0.013)
Constant	0.258 (0.163)	0.477*** (0.169)	0.873*** (0.160)	1.007*** (0.096)	0.013 (0.071)	0.348** (0.137)	-0.150 (0.098)
Observations	308	308	308	309	309	309	309

Standard errors in parentheses. IV Regressions.

\* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%

Table 23 - Dependent Variable: **School Attendance**

	6 to 12 years old			13 to 16 years old			
	(1)	(2)	(3) With San Martin	(4)	(5)	(6) sample selection	(7) With San Martin
Property Right	-0.011 (0.021)	-0.018 (0.021)	-0.003 (0.017)	0.152** (0.064)	0.175*** (0.066)	0.122* (0.074)	0.108* (0.058)
Sex	-0.022 (0.018)	-0.018 (0.018)	-0.012 (0.014)	0.052 (0.054)	0.040 (0.054)	0.049 (0.051)	0.031 (0.048)
Age	-0.009** (0.004)	-0.009** (0.004)	-0.009** (0.004)	-0.072*** (0.026)	-0.065** (0.026)	-0.070*** (0.025)	-0.038* (0.023)
Age HH	-0.000 (0.001)	-0.000 (0.001)	-0.000 (0.001)	0.005 (0.004)	0.004 (0.004)	0.005 (0.003)	-0.004 (0.003)
Female Household Head	-0.006 (0.019)	-0.011 (0.020)	0.003 (0.015)	0.035 (0.057)	0.001 (0.059)	0.025 (0.055)	0.049 (0.050)
Argentine Household Head	-0.027 (0.052)	-0.025 (0.053)	-0.024 (0.038)	0.207 (0.159)	0.287* (0.163)	0.224 (0.154)	0.003 (0.128)
Argentine HH Father	0.023 (0.032)	0.026 (0.032)	0.016 (0.028)	-0.051 (0.101)	-0.068 (0.102)	-0.071 (0.097)	-0.081 (0.098)
Years of Educ HH Father	0.007 (0.010)	0.008 (0.010)	0.008 (0.009)	0.010 (0.029)	0.010 (0.029)	0.009 (0.028)	0.021 (0.024)
Argentine HH Mother	-0.020 (0.029)	-0.021 (0.030)	-0.022 (0.026)	-0.010 (0.109)	-0.032 (0.111)	0.007 (0.105)	0.003 (0.103)
Years of Educ HH Mother	0.001 (0.008)	0.003 (0.009)	-0.001 (0.007)	0.009 (0.022)	0.010 (0.022)	0.008 (0.021)	0.001 (0.022)
Parcel Surface		-0.000 (0.000)			0.001 (0.000)		
Distance to Creek		-0.000 (0.010)			-0.004 (0.027)		
Block Corner		-0.047* (0.025)			-0.092 (0.083)		
Constant	1.082*** (0.086)	1.129*** (0.092)	1.085*** (0.069)	1.333*** (0.421)	1.110*** (0.446)	1.597*** (0.454)	1.399*** (0.377)
Observations	254	254	349	162	162	162	221

The unit of observation is each household member of age 6 to 12. IV regressions. The dependent variable is a dummy that equals 1 when the child attends school, and 0 otherwise. Standard errors in parentheses

\* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%