Land Property Rights and Resource Allocation

Autoría ditelliana: Schargrodsky, Ernesto

Otras autorías: Galiani, Sebastián (*Washington University in Saint Louis*)

Año de publicación: 2011

Nota: *La versión final de este trabajo se encuentra publicada en The Journal of Law and Economics, 54(S4), S329–S345. https://doi.org/10.1086/661957*

Land Property Rights and Resource Allocation

Sebastian Galiani

Washington University in St Louis

Ernesto Schargrodsky*

Universidad Torcuato Di Tella

April 6, 2011

Abstract

In this paper we review the most significant empirical literature on the causal effects of land property rights. The literature finds that secure property rights in land improve investment in both rural and urban areas. These effects, however, do not appear to be the result of improved credit conditions. In rural areas, land rights also lead to increases in productivity and farm earnings. In contrast, for urban areas the evidence on the effect on earnings is mixed. We find little empirical evidence suggesting that land titling programs enhance the development of land markets. Finally, some evidence suggests that land titling induces changes in household structure that foster human capital accumulation and may contribute to increase the income of the future generations.

* We thank the comments of an anonymous referee, the editor Dennis Carlton, Alexandra Benham, Lee Benham, Douglass North, John Nye, Mary Shirley and participants at conference "Markets, Firms and Property Rights: A Celebration of the Research of Ronald Coase." Sebastian Galiani, Department of Economics, Washington University in St Louis, Campus Box 1208, St Louis, MO 63130-4899, US, galiani@wustl.edu. Ernesto Schargrodsky, Universidad Torcuato Di Tella, Saenz Valiente 1010, (C1428BIJ) Buenos Aires, Argentina, eschargr@utdt.edu.

1. Introduction

Property rights fundamentally improve resource allocation and investment in a society by limiting expropriation and facilitating market transactions. Indeed, economic growth will occur only if property rights make it worthwhile to undertake socially productive activities (North and Thomas, 1973). As a result, the fragility of property rights is considered a crucial obstacle for economic development (North and Thomas, 1973; Acemoglu et al., 2001; Johnson et al., 2002; inter alia).

The literature on economic growth has traditionally focused on capital accumulation and technological change in an institution-free world with perfect property rights. Instead, the new institutional approach to development economies (North, 1990; inter alia), building on the path-breaking work of Ronald Coase (1960), has recognized that creating, specifying and enacting property rights is costly and hence they will never be perfect (see, particularly, Barzel, 1989). Therefore, the institutional approach to development now recognizes that in a world with positive transaction costs, understood as the resources used to establish and maintain property rights, the provision of property rights significantly affects the allocation of resources.

Certainly, one of the most celebrated propositions in economics is the Coase Theorem. It states that when rights are perfectly defined and the cost of transacting is zero, resource allocation is efficient and independent of the pattern of ownership (Coase, 1960).1 However, because in reality the costs of transacting are positive and delineating and enforcing rights is costly, the system of of property rights adopted by a society

1 Actually, it was George Stigler (1966) who formalized the work of Coase (1960) and dubbed them the Coase Theorem.

affects the way its economy works. Indeed, as Coase has emphasized, his aim was not to suggest that zero transaction costs were a plausible representation of the world but instead to make clear the fundamental role which transaction costs do, and should, play in the fashioning the institutions which make up the economic system (Coase, 1988).

Indeed, Barzel (1989), in the tradition of Coase (1960), emphasizes that because of the costliness of measuring accurately all of an asset's attributes, rights are never fully delineated, and property is consequently in danger of appropriation by others. Property rights facilitate specialization by ensuring enforcement. However, for the same reason, their survival after conveyance of the property rights requires costly institutions and resources (Arrunada, 2011).

Land rights are particularly important in the process of economic development. Land is obviously the main productive asset for agricultural activity. Moreover, due to its immobility and relative indestructibility (Binswanger and Rosenzweig 1986), it has the natural characteristics to be used as wealth and collateral. However, for historical, economic and political reasons, land rights, to a large extent, tend to be feebly defined even in today's modern world. Indeed, land is probably the asset with the weakest defined property rights among rival and excludable assets, in particular in developing countries.[2] Though this entails a potential efficiency loss in society, what exactly are those costs?

There are several channels through which land rights can have an effect on economic performance. First of all, insecure land rights may foster underinvestment if individuals

[2] In a conservative revision of De Soto (2000)'s estimates, Woodruff (2001) speculates that the value of untitled real estate in developing countries could reach $5000 per household.

fear others can seize the fruits of their investments (Demsetz, 1967; Alchian and Demsetz, 1973). In today's developing world, a pervasive manifestation of feeble property rights are the millions of people living in urban dwellings without possessing formal titles of the plots of land they occupy (Deininger, 2003; and Banerjee and Duflo, 2006). Second, obstacles to parcel transferability may also affect resource allocation and thus generate inefficiencies in the economy (Besley, 1995). Third, lack of land titling may affect the possibility of land collateralization, which in turn affects credit access (Feder et al., 1988). Lastly, secure land rights might affect labor, fertility, and health decisions thus having additional long-term effects on overall productivity and poverty alleviation. In turn, these effects might vary in rural or urban contexts, and might crucially depend on wealth levels.

All these arguments support the notion that a lack of secure property rights to land may limit the scope for investment, credit access and development, which prompted bilateral and multilateral institutions to sponsor programs that either register land or improve the functioning of institutions of land administration. For example, in 2005, the World Bank alone was supervising a portfolio of more than 1 billion US dollar's worth of land administration projects.

The impacts of different systems of land rights have been extensively discussed in the literature. However, the identification of land property rights effects is difficult because property rights are typically endogenous. In this paper we revisit the literature relying on a non-exhaustive list of studies that attempt to identify the causal effects of land property rights.

2. Land Rights, Expropriation Risks and Transaction Costs

The analysis of transaction costs is intimately tied to the delineation of property rights (Barzel, 1989). The legal ownership of assets such as land gives its holder multiple rights. In its most complete form, they include the rights to use the asset, to exclude others from using it, to transfer the assets to others, and to persist in these rights. If these conditions are lacking to some degree, gains from trade will be diminished. Instead of pursuing mutually advantageous gains, individuals will spend resources attempting to better secure ownership rights in the assets, and hence, increasing transaction costs (Barzel, 1989).

The analysis of property rights in economics concerns the effects on resource allocation of changes in these rights. A path breaking work in this literature was Ronald Coase' 1960 article: "The problem of Social Cost". Coase began by considering the historically important case of wandering cattle. Specifically, consider the case of a rancher whose property abuts a neighboring farm. The rancher's cattle occasionally wander onto the farmer's land and trample some crops. Coase posed the following question. How does production vary with who has the rights to the land? Coase's answer surprised the profession. He concluded that if the cost of transaction is sufficiently low that the farmer and the rancher can negotiate, resource allocation would be the same, regardless of the assignment of liability.3 This remarkable insight has been dubbed the **Coase Theorem**. The most important message is that the Coase Theorem only holds when transactions cots are zero and hence property rights are perfectly delineated. When transaction

3 Of course the wealth of the farmer and rancher are affected by who has to pay whom.

costs are positive, the distribution of property rights do matter for the allocation of resources.

However, property rights are not an all-or-nothing affair. There is a spectrum of rights ranging from zero to complete. Indeed, even in the absence of legal rights, individuals still hold economic rights over assets, which amount to their ability, in expected terms, to directly consume the services of an asset, or to consume it indirectly through exchange (Barzel, 1989).

Following Schlager and Ostrom (1992), we can characterize property rights regarding (1) the scope of the exercising group and (2) the degree of control granted to the exercising group. Following this characterization, one could divide property rights between private and collective property rights, the latter being subject to be divided between government property or open property.

Thus, it is important to emphasize then that whether or not the more complete defining of property rights (i.e., formal private property rights) is socially beneficial depends on the magnitude of common pool losses, the nature of contracting costs to resolve such losses, and the economic costs of defining and enforcing property rights.4

Indeed, legal rights in land are not the only set of rules and norms that guide land rights in practice. Customary law remains relatively strong and matters in different ways across countries (see, among others, Platteau, 2000). Furthermore, land rights are

4 See, for example, Ostrom (1990).

multidimensional. For example, security of tenure might provide an effective way to support investment while trade might need other ways to define property rights such as public titling.

In addition to the provision of legal rights, the enforcement of these rights also varies considerably across developing countries. Without institutions to effectively enforce property rights, land legal rights may be of little consequence in practice. Indeed, North (1990) argues that the inability of societies to develop effective, low-cost enforcement of contracts is the most important source of underdevelopment. In developed countries, effective judicial systems include well-specified bodies of law and agents, and one has some confidence that the merits of a case rather than private payoffs will decisively influence outcomes. In contrast, enforcement in poor countries is uncertain not only because of ambiguity of legal doctrine but also because of uncertainty with respect to behavior of the judicial system.

In modern societies, legal rights are provided by the State, which not necessarily decides its scope attempting to maximize social welfare, subject to transaction costs (see, among others, Libecap, 1989). Instead, governance in developing countries is usually deficient (Baland et al., 2010). State capture by elites often results in undermining land property rights for the poor or the disfranchised groups in society (see, among others, Biswanger, Deininger, and Feder, 1995, and Baland and Robinson, 2008). Therefore, and especially in developing countries and for the poor population, the provision of legal rights might be suboptimal, providing scope to advocate for the adoption of land policies that seek to formalize legal rights as a way to improve welfare and reduce poverty.

The disadvantages of an inadequate institutional framework are often exacerbated by the high cost of acquiring information on the legal regime and of enforcing rights (Deininger and Feder, 2009a). Consequently, the value of land registration or land titularization depends much on the institutional context in which it takes place, on how effective is the state in enforcing legal rights as well as on how efficient is the enforcement of informal land rights. Not only different societies, but also different individuals within a society, are likely to face dissimilar transaction costs in the enforcement of property rights, inducing substantial heterogeneity in the effects of legal rights.

Finally, when land titlings are issued, there is still the question of what is the best way to do it. Arrunada and Garoupa (2005) studies the relative efficiency of the two most important titling systems: recording and registration, suggesting that, at least in developed countries, registration appears to be more efficient, the more so, the more frequently land transactions take place.

3. **Effects of Secure Land Property Rights:**

Secure land rights first improve efficiency of resource allocation by limiting the risk of expropriation and fostering investment. As it has been traditionally emphasized, individuals would underinvest if others can seize the fruits of their investments (Demsetz, 1967; Alchian and Demsetz, 1973). Secure land rights, especially public titling rights, can also encourage investment by improving the transferability of the parcels. Even if someone were facing a very low risk of expropriation, investments in untitled parcels would be highly illiquid, whereas titling reduces the cost of alienation of the assets (Besley, 1995).

In agricultural settings, land improvements and investments should translate into higher productivity of the land and higher earnings. In urban areas, instead, a direct effect of housing improvements on earnings should not be expected.

Second, secure land rights affect efficiency of resource allocation by facilitating market exchanges. Transferability allows land to end up in the hands of producers and consumers with higher valuation. Secure property rights also allow renting. Untitled land owners may not want to rent land out because they might fear not recovering it. In agricultural areas, economies of scale might get lost without rental opportunities. Moreover, landowners might get restricted to participate in the non rural economy (see Deininger and Feder 2009 and the references therein). In urban areas, migration and proper household-house matching can be impeded without renting.

A third mechanism through which land legal rights can affect resource allocation and investment is through allowing the collateralization of assets. It has been widely argued

that the lack of formal land titles impedes the use of land as collateral to access the credit markets (Feder et al., 1988; De Soto, 2000). In the presence of agency costs, effective property rights can facilitate the use of assets to mitigate them. In the credit market, where enforcement costs are important, legal land rights might improve the ability of borrowers to pledge their land assets as collateral.

Besley and Ghatak (2010) investigate the issue of land collateral using a simple formal model with moral hazard and limited liability. They assume that each borrower owns a certain wealth, and that the fraction of its value that is collateralizable is increasing in the legalization of property rights. They demonstrate that if the wealth of the borrower is low or high, marginal improvements in the security of collateral do not affect resource allocation in the credit market. This is only affected for an intermediate range of wealth endowments. This interesting theoretical insight suggests that if the values of the land assets legalized are very low, no credit effects should be expected. This does not invalidate the search for identification of average effects of titling programs in empirical work,[5] but it calls to also pay attention to heterogeneous impacts according to the distribution of wealth and other characteristics among the population.

Clearly, the effect of titling on credit access depends crucially on how the credit markets work. In rural areas, credit could foster investment and earnings, but formal credit is practically non-existent in developing countries (Deininger and Feder, 2009b), thus precluding the potential realization of this effect. Urban credit markets are typically more developed than rural ones and entail higher participation of private lending institutions,

[5] This is the main parameter in program evaluation. However, from a perspective of designing better policies, exploring the mechanisms behind the reduced form parameters of policy evaluation is certainly of interest.

but still the urban poor have little access to formal credit (Banerjee and Duflo, 2006; inter alia). Residential credit often relies on collateralized long-term loans to finance housing acquisition, and documented landownership is important to facilitate such transactions. However, among the poor, use of residential property to finance business investments is quite uncommon and likely to be constrained. From the credit demand side, the poor may lack good projects, or they may consider their own house too valuable to be jeopardized in an entrepreneurial activity. From the supply side, fixed legal costs and political factors can make difficult for banks to repossess low quality dwellings in poor neighborhoods and the gains from selling might be very limited (see Deininger and Feder, 2009a).[6]

Thus, the effect of land lilting are also likely to depend on whether land registration or land titularization programs are sizable enough to trigger scale effects. Consider, for example, the credit market. In a situation when a small share of poor households in a given area posses titles to the land they occupy, it might not be profitable for financial institutions to operate offering credit to the poor. Instead, if a large fraction of the population gains legal land ownership, this might change the incentives of financial institutions, inducing firm entry and, as a result, an effect on access to credit for the poor.

Finally, secure land rights might affect the intra household allocation of resources and structure. For example, with incomplete legal rights, those holding land might need to spend resources to defend their rights. If households are resource constrained in terms

[6] Besley and Ghatak (2009) also emphasize the role of competition in credit markets as an important determinant of the effects of land titling on the terms and access to credit of the poor. They emphasize the possibility that when borrowers are poor and market competition is weak then creating collateral by improving claims to property need not have a beneficial effect for borrowers.

of labor supply, land rights can stimulate efficiency by diminishing the resources needed to maintain property rights (Lanjouw and Levy 2002, Field 2007). However, if households are not constrained in terms of their total labor supply, improving their land rights is unlikely to induce much labor supply effects (Besley and Ghatak, 2010). This effect might significantly differ between rural and urban settings.

Moreover, the absence of formal land rights could deprive poor families of the possibility of having a valuable insurance and savings tool that could provide protection during bad times and retirement, forcing them instead to rely on extended family members and offspring as insurance mechanisms (Galiani and Schargrodsky, 2010). Again, these effects might differ between rural or urban areas. For example, in rural areas, exploitation of multiple plots might provide insurance to households, partially reducing the value of gaining individual property rights (Platteau, 2000). Through these mechanisms, titling status can affect household size and, in turn, investments in the human capital of the offspring.

4. Empirical Evidence

3.1 Preliminary issues

The identification of land property rights effects is difficult because it typically faces the problem that property rights are endogenous. For example, as title acquisition and title maintenance involve costs, it is likely that farmers tend to register land parcels that benefit more from higher levels of investment, or that registered farms are those which have better profitability conditions justifying such expenditures. More generally, the allocation of property rights across households is usually not random but based on wealth, family characteristics, individual effort, previous investment levels, or other mechanisms built on differences between the groups that acquire property rights and the groups that do not.

The obvious way to deal with all those selection issues would be to randomize land rights among units (i.e., households, communities or neighborhoods). Though this is feasible, it has not been done yet. The closest research design to it would be to rely on a natural experiment, that is, a design where treatment is considered exogenous in a cross section analysis even though no purposely randomization occurred. Finally, one could also turn to use quasi-experimental designs such as those exploited by instrumental variables and fixed-effects estimators.

In this survey, we restrain our analysis to a non-exhaustive list of studies that attempt to identify the causal effects of land property rights by addressing the problem of selection of land rights allocation. Finally, and as explained in Section 3, the effects on investment, earnings, credit access, labor supply, migration, and other variables might

significantly differ between rural communities and urban settlements. Thus, it is worth considering separately the studies of land rights formalization between rural and urban areas.

4.2 Evidence from rural areas

A seminal paper studying the effects of land rights -albeit informal ones- is Besley (1995). In that paper, the author exploits the variation that individuals enjoy in traditional community-based land rights over different plots to test whether secure property rights have an effect over investment. Data comes from two regions in Ghana: Wassa –where cocoa is predominantly grown- and Anloga –a region were land is divided in very small plots-. The study focuses on self-reported land rights at the plot level with and without the approval of community leaders – the variable used to measure property rights is the number of rights (from the following: to sell, to mortgage, to rent, to pledge, to bequeath and to gift) a farmer holds over a particular plot. After controlling for household fixed effects and instrumenting land rights by plot level characteristics, the author finds that, for the case of Wassa, the more rights a farmer holds over a particular plot the more he will invest in tree planting in that plot – for instance, an additional right increases plot-level investment by 28 percent. For the case of Anloga, the author finds no particular effects of the number of land rights on investment decisions. In both regions the analysis shows also that the collateralization-based view of the relationship between land rights and investments is not supported by the empirical evidence.7

7 See also Brasselle et al (2002).

Another important paper concerning the issue of informal land rights in Ghana is the one by Goldstein and Udry (2008). In this paper the authors make use of the differences in land tenure security within the system of traditional property rights administered by the local political system. They study the effect of this variability on what is considered to be the most important investment in land productivity in West Africa – fallowing, since a significant portion of the agricultural land in that region is farmed under shifting cultivation. The data used by the authors comes from the region of Akwapim, in Ghana, where most of the land cultivated by farmers is under the ultimate control of a paramount chief and is allocated locally through the matrilineage leadership. The authors show that individuals who hold powerful positions in a local political hierarchy have more secure property rights, and that as a consequence they invest more in land fertility and have substantially higher output.

The essence of the econometric strategy in Goldstein and Udry (2008) is to examine the effect of an individual's position in local political and social hierarchies on his or her fallowing choices on a plot, conditional on plot characteristics and household fixed effects. In turn, they estimate the productivity effects of (endogenous) fallowing choices, using the individual's political and social position as instruments for the fallowing choice. What the authors find is that farmers who lack local political power (this being measured by dividing farmers between those who hold an office and those who do not) are not confident of maintaining their land rights over a long fallow if their land was allocated through the matrilineage leadership. This insecurity over land tenure is not negligible: the data show that farmers have a chance in the order of one in three of losing control over a plot in any year in which it is not cultivated. As a consequence, they fallow their land for much shorter durations than would be technically optimal –at least three years

less than politically influent farmers-, at the cost of a large proportion of their potential farm output.

Another important study on this topic was carried out by Jacoby, Li and Rozelle (2002). The paper analyzes the case of China, where the regime of land management is characterized by periodical reallocations of collectively held land among farmers - a decision taken by local authorities. This naturally implies a large degree of expropriation risk for farmers, who may thus limit soil investment in their land in face of the uncertainty of appropriating the expected returns. The authors exploit an exogenous variability of expropriation risk -given by differences in village characteristics unrelated to potential determinants of soil investment- to study the impact of that risk on the use of organic fertilization, a time consuming activity that enhances soil fertility for several years. Using data from the provinces of Hebei and Lianoning, the authors find that high expropriation risk is associated with low organic fertilizer use at plot level but no effect is found for chemical fertilizers, whose effects on soil last for no more than a year. These results show that a high hazard of expropriation is correlated with diminished levels of long-term investment whilst not for short-term expenditures.

The overall evidence presented in these papers points to the fact that secure property rights, albeit informal, do have a positive effect on investment –a hypothesis also confirmed by Bandiera (2007) and Alston et al. (1996) for the case of Latin America and by Rozelle and Swinnen (2004) for Eastern Europe. Goldstein and Udry (2008) point out, however, that one should expect larger effects of securing property rights on investment and productivity, the more insecure are the land rights in the status quo situation. It is also worth mentioning that none of the papers show that the effect on investment operates through the collateralization channel.

Though greater tenure security clearly increase investment and productivity in rural areas, this does not necessarily imply that land titling is worth pursuing (at least not everywhere). In fact, some traditional land tenure systems may be optimal once transaction costs of land administration are taken into account (see Platteau, 2000). This is illustrated by the findings of Jacoby and Minten (2007) who study the benefits of land titling in Madagascar. They compare titled and untitled plots in a very restricted geographical area conditional on household fixed effects. They find no impact of land titling on investment and productivity, and a small positive effect on the value of land. However, the authors calculate that, taking into account the cost of titling the land, only plots larger than 6 hectares are worth legalization –plots which represent only 3% of the sample. What is more, the authors point out that, at least in the case they study, land titling may be socially wasteful if it is run in parallel with community based systems, as its main benefit could eventually be the protection it provides against those who use the formal titling system to grab land.

Certainly, it is not possible to generalize the findings of one paper. It might be, as Jacoby and Minter argue, that in Madagascar, the plots of land were particularly small, and hence the benefits of titularization were not enough to compensate the fixed cost involved in the legalization of land rights. But it might also be that the benefits were small because the land legalized was of poor average quality. Remember that these authors do not find positive effects of land titling on investment and productivity. This last possibility should be seriously considered once one realizes that if the state is captured by elites, it might be unlikely to give up the control of the good land to the poor.

Perhaps more positive are the findings in Do and Iyer (2008). They examine the impact of the 1993 Land Law of Vietnam which gave households the power of exchange, transfer, lease, inherit and mortgage their land-use rights after years of collectivization. Exploiting variation across regions in the speed of implementation of the reform (a variation assumed to be exogenous to land characteristics) in a two-way fixed effects model, Do and Iyer find that the issuance of land titles lead to a statistically significant increase -albeit small in magnitude- in the share of total area devoted to long-term crops. Once again, they do not find evidence for increased access to credit.

Regarding transferability effects, titling can potentially have important effects on allocative efficiency in rural areas by fostering land sales and rentals. Transferability can allow land to move toward more efficient users and to exploit economies of scale, and might help landowners to participate in non-agricultural activities. Deininger, Zegarra and Lavadenz (2003) for Nicaragua and Holden, Deininger and Ghebru (2008) for Ethiopia find that titled land owners are more able to rent their land. Deininger and Jin (2008) for China and Macours, de Janvry and Sadoulet (2004) for Dominican Republic show that titling allows rentals to community outsiders. There is little evidence, however, on the effect of titling on land sales (Deininger and Feder, 2009).

4.3 Evidence from urban areas

In a series of papers, Erica Field analyses the impact of a large titling program in urban squatter settlements in Peru. The identification of causal effects rests on a difference-in-difference approach exploiting the staggered timing of the program and differential household ownership status prior to the program. Her main findings suggest the presence of large transaction costs associated to the lack of titles combined with

binding labor constraints. Controlling for household size, Field (2007) finds that the lack of titles reduces total household labor supply by about 14%. Moreover, titling allows household to substitute work in the outside market for work at home, and adult for child labor. Her interpretation is that adults in untitled households seem to have to stay at home to protect informal tenure security. She also finds significant effects on housing investment associated to titling, but financed without the use of credit (Field, 2005), in particular without effects on formal credit from private banks (Field and Torero, 2003). Finally, Field (2003) also finds an association between land titling and fertility reductions.

Galiani and Schargrodsky (2010) study the effects of titling exploiting a natural experiment of land occupation in the outskirts of Buenos Aires, Argentina, in 1981. At the time of the occupation, the squatters thought the land was state-owned, but it was actually privately owned. When a law was passed expropriating the land from the former owners to allocate it to the squatters, the resulting titling process became incomplete and asynchronous. Some former owners accepted the government monetary compensation and their land parcels where titled to the squatters. Instead, other former owners sued the government in the slow Argentine courts claiming for a larger compensation. One of these trials ended, and this tract of land was afterwards transferred to the squatters, but the squatters occupying the other plots of land remain untitled. Thus, a group of families now has formal property rights, while another group who arrived at the same time and under the same conditions, it is still living in the parcels without having titles. The allocation of land titles and its timing was exogenous to the land quality as well as to the squatters' behavior and characteristics.

The evidence shows a strong effect of land titling on different forms of housing investments which aggregate into an index showing 40% more investment in titled houses. Titling is also related to a change in household structure. The average household size fell from six to five members in titled parcels, stemming from reductions in fertility and in the presence of extended family members. The effect on fertility is made more credible because the impact is concentrated among the appropriate age group of parents. Following this reduction in fertility, titled households show higher educational investments: the likelihood of completing secondary school for household heads´ children in titled properties is 27 percentage points higher and on average they have 0.69 more years of schooling. Galiani and Schargrodsky (2004) also find better nutrition and lower teenage pregnancies for children in titled households.

The reduction in the presence of extended family members associated to titling might reflect the need for extra protection by untitled households as argued by Field (2007). Galiani and Schargrodsky (2010), however, do not find a differential presence of adult males in untitled households. They discuss two additional mechanisms. One is that the property owned by titled households (and the incremental housing investment) provides an insurance tool for the old-age and the bad times: Instead, insurance for untitled household is provided through higher fertility and non-nuclear members. The other is that the lack of titles increases intra-household transaction costs. Without titles the division of property among household members upon death, divorce, migration, etc. cannot be completed easily, forcing relatives to remain in the house to protect their informal rights.

Galiani and Schargrodsky (2010) nevertheless find very small effects on formal credit and no effects on earnings and labor supply. Instead, Field (2007) reports an increase

in labor supply and a reduction in child labor for titled households To reconcile these results, the theory suggests that it would be important to investigate whether households are constrained in their labor supply (Besley and Ghatak, 2010). This was not the case among the households in the natural experiment studied by Galiani and Schargrodsky (2010), which showed high levels of adult unemployment and nil levels of child labor for the urban population under analysis.

Galiani and Schargrodsky (2010) point out, however, that the lack of earnings and credit effects findings should not necessarily imply that land titling entails no progress for poor people. Through the access to a savings tool and improved educational achievement, land titling may contribute to reduce poverty of the next generations. Moreover, Di Tella, Galiani and Schargrodsky (2007) study the formation of beliefs exploiting this natural experiment and find that titled squatters report beliefs closer to those that favor the workings of a free market. To the extent these beliefs encourage effort and enterprise, this could be an additional channel through which property rights might enhance the welfare of the poor and economic development.

Although the lack of titles hinders the development of an urban land market, evidence on the effect of these transaction costs and measures of the titling premium (the price difference between titled and untitled properties) is, however, scarce. Attrition is one impediment to research on this topic. Information on covariates for households that sold their properties and migrated is usually unavailable and, therefore, the effect of titling on transactions remains elusive. In turn, a nuisance to properly measure the titling premium is created by investment differences. As titling leads to differences in housing quality and size, price differences of houses not only reflect titling status. Using self-

declared valuations from household responses to hypothetical titling states, Lanjouw and Levy (2002) estimate a titling premium of 24% for urban slums in Guayaquil, Ecuador. Also using estimated sale prices appraised by occupiers in hedonic price regressions, Jimenez (1984) obtains a titling premium of 58% for Davao, Philippines. Lanjouw and Levy (2002) and Galiani and Schargrodsky (2010) find that house rentals are facilitated by titling, likely reflecting the risks of not recovering property undertaken by untitled owners.

5. Conclusions

Land property rights can affect efficiency of resource allocation through different channels. First, it could enhance investment incentives by limiting expropriation risk and it might reduce the need to divert private resources to protect property. Second, by facilitating trade in assets and improving collateralization, land titling could enhance credit transactions. Finally, secure land rights might affect the intra household allocation of resources and structure. As we argued in Section 3, there are good theoretical reasons to expect that at least some of these effects to be different in rural and urban areas.

In this paper we review the empirical literature on the causal effects of land property rights. The literature finds that secure property rights in land positively affect investment. This tends to be true in both rural and urban areas, and also following both formal and informal improvements in land rights. In some cases, the effects are large. However, contrary to what some literature suggests, this does not appear to be the result of improved credit conditions. In particular, in urban areas, where land titling interventions were more likely to stimulate access to credit, the evidence suggests little or no average effect on this access to credit.

In rural areas, as expected, improved land rights also lead to increases in productivity and farm earnings. In urban areas, the evidence on the effect on earnings is mixed and it seems to crucially depend on whether the labor supply constraint of squatter families is binding.

Unfortunately, there is little evidence about the effect of land titling on the development of land markets. Some evidence suggests positive effects on rural and urban areas for rental markets, but we still lack any evidence on the effect of titling on land sales. More research in this area is needed.

Finally, there is some evidence that land titling is also related to a change in household structure and that, in particular, it reduces fertility among poor urban households. To the extent that this occurs, human capital accumulation can also be stimulated.

Though more secure land rights increase investment, and at least in rural areas to higher earnings, this does not necessarily imply that land titling is worth pursuing everywhere. Understanding better the conditions where land titling programs could enhance welfare should be on the top of the research agenda in this area (see, also, Arrunada 2011). On the one hand, we need to assess the conditions under which land titles will improve resource allocation (as compared to the situation with informal rights). This will depend, to a large extent, but not only, on the strength of the informal rights in place. On the other hand, we need to incorporate into the analysis the social costs of titling systems in order to assess the cost-effectiveness of land titling programs.

Two other important areas of research are the following: First, we need to understand why land titling programs do not lead to increased access to credit markets. Is this the result of other high transaction costs in the financial system (i.e. a supply constraint)? In that case, how policy can change these constraints in order to potentiate the effects of land titling programs. Second, Ernesto, aca necesito que escribas algo de lo de deformalizacion asociado a transaction costs!

References

Acemoglu, Daron, Simon Johnson and James Robinson. (2001). “The Colonial Origins of Comparative Development: An Empirical Investigation”, *American Economic Review*.

Alchian, Armen and Demsetz, Harold (1973). “The Property Rights Paradigm.” *Journal of Economic History*, *33*(1), pp. 16-27.

Alston, Lee; Libecap, Gary and Schneider, Robert (1996). “The Determinants and Impact of Property Rights: Land Titles on the Brazilian Frontier.” *Journal of Law, Economics & Organization.*

Arrunada, Benito (2011): Institutional Foundations of Impersonal Exchange: Theory and Policy of Contractual Registry, Mimeo.

Arrunada, Benito and Nuno Garoupa (2005): “The choice of titling system in land”, *Journal of Law and Economics*, 709-727.

Baland, Jean-Marie and Robinson, James (2008). "Land and Power: Theory and Evidence from Chile." *American Economic Review*, vol. 98(5), pages 1737-65, December.

Baland, Jean-Marie; Robinson, James and Ove Moene, Karl (2010). “Governance and development”, in M. Rosenzweig and D. Rodrik (eds.), Handbook of Development Economics, Vol V, North-Holland.

Bandiera, Oriana (2007). “Land Tenure, Investment Incentives, and the Choice of Techniques: Evidence from Nicaragua”, *World Bank Economic Review*.

Banerjee, Abhijit and Esther Duflo (2006). “The Economic Lives of the Poor”, *Journal of Economic Perspectives*.

Barzel, Yoran (1989). Economic Analysis of Property Rights, Cambridge University Press.

Besley, Timothy (1995). “Property Rights and Investments Incentives: Theory and Evidence from Ghana.” *Journal of Political Economy.*

Besley, Timothy and Maitreesh Ghatak (2010). “Property Rights and Economic Development”, in M. Rosenzweig and D. Rodrik (eds.), Handbook of Development Economics, Vol IV, North-Holland.

Binswanger, Hans; Deininger, Klauss and Feder, Gershon (1995). “Power, distortions, revolt and reform in agricultural land relations.” In Handbook of Development Economics 3B: 2659-2773.

Binswanger, Hans and Rosenzweig, Mark. (1986) “Behavioural and material determinants of production relations in agriculture”, *Journal of Development Studies* 22(3): 503-539.

Coase, Ronald (1988): The Firm, the Market and the Law, The University of Chicago Press.

Coase, Ronald (1960), “The Problem of Social Cost”, *Journal of Law and Economics*.

Di Tella, Rafael; Sebastián Galiani and Ernesto Schargrodsky (2007). “The Formation of Beliefs: Evidence from the Allocation of Land Titles to Squatters,“ *Quarterly Journal of Economics*.

Deininger, Klaus and Gershon Feder (2009a). “Land Registration, Governance, and Development: Evidence and Implications for Policy”, *The World Bank Research Observer*.

Deininger, Klaus and Gershon Feder (2009b). “Land registration, economic development, and poverty reduction”, in Ingram, Gregory and Hong, Yu-Hung (eds). Property Rights and Land Policies.

Deininger, Klaus and Jin, Songkinj (2008). “Securing property rights in transition: Lessons from implementation of China´s rural land contracting law”. *Journal of Economic Behavior and Organization*.

Deininger, Klaus; Zegarra, Eduardo and Lavadenz, Isabel (2003). “Determinants and impacts of rural land market activity: Evidence from Nicaragua.” *World Development* 31(8): 1385-1404.

Demsetz, Harold (1967). “Toward a Theory of Property Rigths”, *American Economic Review*.

De Soto, Hernando (2000). *The Mystery of Capital: Why Capitalism Triumphs in the West and Fails Everywhere Else*. New York: Basic Books.

Do, Quy Toan and Iyer, Lakshmi (2008). “Land Titling and Rural Transition in Vietnam." *Economic Development and Cultural Change*.

Feder, Gerschon; Onchan, Tongroj; Chalamwong, Yongyuth and Hongladarom, Chira (1988). Land Policies and Farm Productivity in Thailand. Baltimore: Johns Hopkins University Press.

Field, Erica (2003). “Fertility responses to land titling: The roles of ownership security and the distribution of household assets”, Mimeo. Cambridge, MA: Harvard University.

Field, Erica (2007). “Entitled to Work: Urban Property Rights and Labor Supply in Peru.” *Quarterly Journal of Economics*.

Field, Erica and Maximo Torero (2003). “Do Property Titles Increase Credit Access among the Urban Poor? Evidence from a Nationwide Titling Program in Peru.” Mimeo, Princeton University.

Galiani, Sebastian and Ernesto Schargrodsky (2004): “Effects of Land Titling on Child Health”, *Economics and Human Biology* 2(3): 353-372.

Galiani, Sebastian and Ernesto Schargrodsky (2010): “Property Rights for the Poor: Effects of Land Titling”, *Journal of Public Economics*.

Goldstein, Markus and Christopher Udry (2008). “The Profits of Power: Land Rights and Agricultural Investment in Ghana”, *Journal of Political Economy*.

Holden, Stein; Deininger, Klaus and Ghebru, Hosaena (2007). "Impact of Land Certification on Land Rental Market Participation in Tigray Region, Northern Ethiopia.” MPRA Paper 5211, University Library of Munich, Germany.

Jacoby, Hanan; Guo Li and Scott Rozelle (2002). “Hazard of Expropiation: Tenure Insecurity and Investment in Rural China”, *American Economic Review*.

Jacoby, Hanan and Bart Minten (2007). “Is Land Titling in Sub-Saharan Africa Cost-Efective? Evidence from Madagascar”. *World Bank Economic Review*.

Jimenez, Emmanuel (1984). “Tenure Security and Urban Squatting.” *Review of Economics and Statistics*, *66*(4), pp. 556-67

Johnson, Simon; McMillan, John and Woodruff, Christopher (2002). “Property Rights and Finance.” *American Economic Review*.

Lanjouw, Jean and Levy, Philip (2002). “Untitled: A Study of Formal and Informal Property Rights in Urban Ecuador.” *Economic Journal*, *112*, pp. 986-1019.

Libecap, G. (1989). Contracting for Property Rights, Cambridge University Press.

Macours, Karen; de Janvry , Alain and Sadoulet, Elisabeth (2004). “Insecurity of property rights and matching in the tenancy market.” Working paper 992, Berkeley: Department of Agricultural and Resource Economics, University of California, Berkeley.

North, Douglass (1990). Institutions, Institutional Change and Economic Performance. Cambridge University Press.

North, Douglass (1981). Structure and Change in Economic History, Norton.

North, Douglass and Thomas, Robert (1973). *The Rise of the Western World: A New Economic History*. New York*:* Cambridge University Press.

Ostrom E. (1990). Governing the Commons: The Evolution of Institutions for Collective Action, Cambridge University Press.

Platteau, Jean-Philippe (2000). Institutions, Social Norms, and Economic Development. Routledge.

Rozelle, Scott and Swinnen, Johan (2004). “Success and failure of reform: Insights form transition of agriculture.” *Journal of Economic Literature* 42(2): 404-456.

Schalager, E. and Ostrom D. (1992). “Property-rights regimes and natural resources: a conceptual analysis”, Land Economics, 68(3), pp. 249-262.

Stigler, G. (1966). The Theory of Price, Macmillan, New York.

Woodruff, Christopher (2001). “Review of De Soto’s *The Mystery of Capital*.” *Journal of Economic Literature*, *39*(4), pp.1215-23.