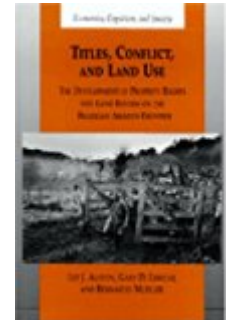


Lee J. Alston, Gary D. Libecap, Bernardo Mueller. *Titles, Conflict and Land Use: The Development of Property Rights and Land Reform on the Brazilian Frontier.* Ann Arbor: University of Michigan Press, 1999. xiv + 227 pp. \$49.50, cloth, ISBN 978-0-472-11006-3.



Reviewed by D. Bruce Johnsen

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Titles, Conflict, and Land Use comes very close to being a tour de force. The authors provide a careful and largely convincing theoretical and empirical analysis of both the evolution of property rights to land and the determinants of violent conflict on the Brazilian frontier. Although the book has important policy implications -- most notably that a failure of private property rights, and not corporate capitalism, is probably the main threat to the Amazon rain forest -- the authors downplay policy analysis in favor of hypothesis testing. This book is essential reading for development economists, economic historians, public choice economists, serious environmental scholars, and followers of New Institutional Economics. I also recommend it to those interested in the evolution of property rights in cyberspace or any other new frontier.

Several of the book's early chapters address the history and current structure of Brazilian land policy, describing in detail the relevant legal, regulatory, constitutional, and political institutions that have influenced frontier settlement. Brazil's land holdings have always been highly concen-

trated owing to a system of large land grants the Portuguese Crown made to promote early settlement. The Crown issued these grants under the condition that recipients put the lands into beneficial use, but due to low land values over the long course of time this condition has rarely been met or enforced on the frontier.

Beginning in the 1930s, the modernization of Brazilian agriculture led to widespread agrarian unemployment, a large and growing class of poor landless peasants, and corresponding social unrest. Given the large tracts of idle and unproductive frontier land, public sentiment and political favor eventually turned to land reform to achieve social justice (and quite possibly social efficiency) by reducing the inequitable distribution of land holdings. Despite organized and often successful resistance to land reform by large landholders, the current Brazilian constitution allows the federal government to expropriate private lands that have not been put into beneficial use.

Land reform policy is now carried out primarily by INCRA, a federal agency created in 1970 to administer frontier settlement. INCRA per-

forms its mission largely by organizing settlement on public lands, expropriating unproductive private lands for settlement by squatters, and securing title for settlers. As it turns out, organized squatter groups have become increasingly adept at controlling the land reform agenda by planning effective invasions of likely parcels and using violence strategically to induce INCRA to press for expropriation. Although Brazilian statutory law requires that owners of expropriated land receive just compensation, in practice landowners are unlikely to receive fair market value. This prospect often leads them to resist squatter invasions through various legal or extra-legal means, such as eviction or armed intimidation, all of which are costly and likely to lead to violent conflict.

To explain the evolution of frontier property rights, the authors develop an analytical framework in which land values decline with distance from the central market and the differential value between titled and untitled land rises with land values and declines with distance. The data clearly support these underlying relationships. Further empirical analysis reveals that the length of a settler's tenure on a plot substantially increases the likelihood the plot will be titled, that title clearly has a positive effect on land-specific investment, and that land-specific investment dramatically increases land value. In cases involving a squatter invasion, the participation of a squatter organization significantly increases the likelihood of expropriation, and the percentage of a landholding that has been cleared (a proxy for beneficial use) significantly reduces the likelihood of successful expropriation. This naturally leads landowners to clear their lands to strengthen property rights.

The authors infer from the evidence that INCRA tends to undertitle high-valued land claims near market centers, possibly because INCRA's performance is judged on the number of families initially settled rather than on the quality of the final settlement project. Although this is surely plausible, the inference seems premature because

we have no measure of the value of INCRA's scarce resources in alternative activities and because we know very little about the costs and benefits of establishing title relative to alternative institutions.

To explain the determinants of violent conflict, the authors develop a game-theoretic model with three possible outcomes from squatter invasions: the landowner may evict the squatters, INCRA may expropriate the parcel for the squatters' benefit, or the squatters may remain on the land indefinitely with no expropriation. The probability the landowner evicts the squatters increases with what the authors characterize as "landowner violence," and the probability the squatters either remain on the land indefinitely or mobilize a successful INCRA expropriation increases with "squatter violence." The authors use this model to generate comparative statics regarding the effects on landowner and squatter violence from changes in the level of property rights security, changes in land values, parametric shifts in the parties' cost functions, and changes in the positions of the courts regarding evictions.

My main concern with the model is that it assumes each side understands the rules of the game and knows the relevant probability functions, valuations, and costs. With full information, however, why would violence ever occur? What the authors characterize as violence is really an input provided by the parties to encroach or resist encroachment and bears no necessary relationship to actual violent conflict, which is an outcome. By failing to account for this, the authors neglect the selection effect so familiar to law and economics scholars in explaining which legal disputes are selected for litigation. A legal rule more favorable to plaintiffs, say, a change from negligence to strict liability for injuries due to defective products, will not necessarily lead to more litigation (violence). It simply shifts the parties' expectations and changes the character of the disputes that get litigated.

The authors recognize earlier in the book that "there must be some uncertainty in the outcome that contributes to violence." But uncertainty, alone, may not be enough if the parties hold identical expectations. Rather, asymmetric information about probabilities, valuations, or costs seems necessary to generate violence conflict. A model capable of explaining violent conflict might hypothesize two different types of landowners and squatters – say, aggressive and passive – with each group receiving a costly signal about the other's type that is accurate on average but subject to imperfectly correlated errors. Violence occurs when the parties hold mistaken beliefs about one another's type.

From this perspective, violence is a costly but effective method of correcting mistaken signals. Conditional on land reform policy, violence might even be seen as a socially efficient signaling mechanism compared to the alternative. Apparently, the alternative is for INCRA to expropriate private lands and then match settlers to those lands in an orderly process free from violence. The success of squatters in controlling the matching process through organized invasions suggests that INCRA is incapable of efficiently generating the necessary information. For all its drawbacks, a process of targeted invasions backed by the threat of violent conflict may be superior.

This hypothesis has testable implications, the most obvious of which is that the parties will have a mutual interest in minimizing information asymmetry and the associated social losses from violence. By categorizing land disputes according to various characteristics, we should be able to predict that information asymmetry will decline as a given category of disputes recurs and the parties learn. New categories of disputes reflecting a different combination of characteristics than has previously been witnessed will be most prone to violent conflict, while routine categories of disputes will be the least prone to violent conflict. I cannot resist noting that the common ability of

human beings to recognize patterns and to reason by analogy allows them to anticipate outcomes and to avoid or minimize costly signaling. This knowledge is a public good that appears subject to network effects and may be one plausible explanation for how human beings have escaped the infinite regress problem, in which all rents are dissipated. That the rule of law, which institutionalizes this knowledge by relying on precedent, is strongly associated with wealth accumulation should come as no surprise.

According to the asymmetric information hypothesis, the magnitude of changes in land values, rather than the level of land values, should be associated with information asymmetry and should lead to an increase in violent conflict. Indeed, the authors include a measure of land value changes in their empirical analysis of violent deaths and its coefficient is positive and marginally significant. If available, the variance of land values in an area might have even greater predictive power.

The presence of INCRA in an area should increase information asymmetry and violent conflict. Although INCRA might act predictably under normal circumstances, as land disputes escalate there comes a point at which public sentiment leads INCRA to dramatically change its stance in favor of supporting squatters. Through some range, it therefore seems plausible that landowner and squatter expectations regarding INCRA involvement will differ, leading to violent conflict. According to the authors' empirical work, the presence of INCRA in an area has a large and highly significant positive effect on violent deaths.

Additional measures of information asymmetry might be the presence of overlapping agency jurisdiction, changes in law or judicial sentiment, and changes in political administration. Early on in a squatter organization's existence we should expect more violent deaths in the disputes it organizes, but over time this effect should diminish as the organization gains a credible reputation.

The authors may be correct in conceding that land reform is in some broad sense socially efficient, but this should translate into the inference that settling the large population of unemployed landless peasants on the Brazilian frontier can somehow be made privately efficient for frontier landowners. Why, in spite of their considerable political influence, have they been unable to accomplish this through sharecropping or land rental arrangements? I can even imagine a group of neighboring landowners agreeing to give away a portion of their lands to settlers in hopes that doing so would expand the market and generate improvements in infrastructure sufficient to compensate for their ceded lands.

An entertaining explanation for this failure is that through some kind of invisible hand process the owners of Brazil's frontier lands have been inadvertently acting to forestall the familiar rent dissipation from premature settlement. But with the Brazilian government unable to credibly commit to enforcing landowners' claims, in what might be characterized as an episode of Malthusian rational expectations rent dissipation took the form of a large buildup in the population of unemployed peasants that ultimately overwhelmed landowner interests. Land reform is then seen as the political manifestation of the race to first possession.

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