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A STUDY IN RESISTANCE TO INSTITUTIONAL CHANGE:
THE LOST GAME OF LATIN AMERICAN LAND REFORM

by

Alain de Janvry and Elisabeth Sadoulet

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I. Theoretical Approaches to Institutional Change

Explaining and monitoring institutional change are important aspects of economics which only recently have started to receive significant attention in formal analysis. While this work happened principally in the fields of industrial organization and finance, it is particularly relevant to development economics. This is due to the extensiveness of market failures in the less-developed countries and in the complexity of the institutions which these failures induce as well as to the power of redistributive forces in highly inegalitarian societies and to the strength of entrenched social norms. Any attempt at analyzing reformism in this second-best context thus requires endogenizing institutional change in the economic models used. In agriculture, few institutions are more important than the land tenure system, and it is to the logic and potential for land reform that this paper is addressed.

Approaches to institutional change have generally followed either the theory of transactions costs or that of collective action. The first focuses on rational choices by individual decisionmakers or by the state in a context of incomplete or failing markets and derives from this the relative social efficiency of alternative institutions. Institutional change is thus explained by the quest for net private or social gains pursued by individuals or by an active state with considerable autonomy. The forms of institution that minimize total transactions costs are thus the ones which survive the test of competition (North).

Collective action by contrast focuses on distributional and normative determinants of political behavior which generally result in net social losses (Olson). The state is in this case seen as a passive arena of conflict, responding through institutional changes to pressures and inducements coming from organized lobbies. Rational choice here applies to the rent-seeking activities of groups and to the responses of politicians and bureaucrats. Disfunctional institutions in terms of efficiency can thus be explained to exist for distributional or normative reasons (Akerlof).

While these two approaches are logically complementary, in very few studies have they been used jointly, particularly in terms of dynamic feedbacks where institutional changes motivated by the desire to save on transactions costs induce other institutional changes motivated by distributional gains (for exceptions, see Hirschman and Rausser). Integrating the transactions costs and the collective action approaches allows to understand institutional change as part of path-dependent sequences that result from series of moves between the actors involved. We develop in this paper a methodology for integrating the transactions costs and the collective action approaches. We do so by specifying individual rational choice models for the agents involved, deriving from this the economic payoffs associated with institutional alternatives, and constructing on that basis a model of collective action. The ability to engage in collective action is, however, modified by previous institutional changes. This results in path-dependent sequences of institutional change where the institutional outcome is eventually different from that which would have been predicted both by a transactions costs approach and a collective action approach. The reason why this happens in this particular case is because the state has economic rational expectations but political myopia due to its short-term political horizon and high discount rate for net

for net social gains. This does not allow it to anticipate how institutional change, motivated by the desire to reduce transactions costs, leads to a redistribution of political power and transforms future collective action with the result that it eventually blocks future net social gains generating institutional changes. The model is applied to the episode of Latin American land reforms which failed to achieve the promised net social gains by asset redistribution because they were rendered economically infeasible as a result of shifting political power induced by the very land reform initiatives.

II. Land Reform Without Land Redistribution

Family farmers by and large have been the great absents in the Latin American agrarian structure. In spite of 25 years of legislated land reforms in basically every country since the 1961 Punta del Este conference of the Organization of American States, the land tenure system remains equally, if not increasingly, polarized. At one end of the distribution of farm sizes, subfamily farms have increased in number by 92 percent between 1950 and 1980, while their average size has fallen by 13 percent. The latest available censuses for 21 countries indicate that these farms roughly account for some 50 percent of the total number of farms, do not use more than 2 percent of the total area in farms, and average in size less than 2 hectares. While no global information exists, data from 11 case studies throughout the continent suggest that households on these subfamily farms do not derive, on the average, more than half of their income from their own farms; the remaining income comes primarily from wages (de Janvry, Sadoulet, and Wilcox). At the other end of the distribution of farm sizes, medium and large farms which are net employers can be estimated to represent some 26 percent of the farms and

to occupy no less than 90 percent of the land (de Janvry, 1981; Grindle). Clearly, land reforms have failed to break the bipolarity of the Latin American land tenure system.

This is a paradoxical observation given the following four facts:

1. It is widely acknowledged that redistributive land reforms that create family farms out of large farms can increase total factor productivity at social prices (TFP*) in agriculture since an inverse relation generally exists between TFP* and farm size. This has been observed empirically (Barraclough; Dorner; Berry and Cline) and established theoretically (Feder; Eswaran and Kotwal).
2. Politically, redistributive land reforms remain a hot political issue which tends to be reactivated in the current context of return of democracy. This is best witnessed in Brazil where the national debate on land reform is creating destabilizing political tensions.
3. A number of successful redistributive land reforms have occurred on other continents, particularly Asia, which provide concrete examples that could be imitated.
4. Numerous Latin American land reforms have been enacted under the banner of redistribution to create family farms (or, equivalently, cooperatives). These reforms have generally been highly successful in using the threat of expropriation to induce modernization on large and medium farms (60 irrigated hectares in Chile, 200 in Mexico) while failing to significantly redistribute land toward family farms.

The thesis of this paper is that the Latin American states have lost the opportunity to create net social gains via redistributive land reform because they chose to first modernize medium and large farms using expropriation as a threat instead of proceeding with outright expropriation and redistribution. This threat was taken seriously and led to defensive strategies on the part of landlords, including excess modernization, manipulating the state into making the promise of nonexpropriation-if-modernization credible, and effective rent seeking, that made subsequent redistributive land reforms socially uneconomical.

We start from the observation that imperfections on the land (or credit) and labor markets create an inverse relation between TFP* and farm size. Under this second-best situation, redistributive land reform (an institutional change) can be used as a surrogate for market forces (perfect land market and no transactions costs in access to labor) to increase social optimality in resource allocation. If the transactions costs associated with redistribution are less than those created by the two initial distortions, the net social gains created by redistribution can allow for Pareto optimality after compensation of the expropriated landlords.

The particular land reform strategy that was followed in Latin America after 1961 (with the exception of Nicaragua) sought to use the threat of expropriation combined with generous programs of agricultural development (public goods such as extension services, infrastructure investments, and new technologies) to induce modernization of medium and large farms instead of outright expropriation and redistribution. The game was in a sense potentially well played since it was meant to force landlords into levels of modernization that would increase TFP* on medium and large farms above the level on small farms or to induce them to modernize to subsequently expropriate them. Modernization of medium and large farms, however, created

economic and, hence, political power among these farmers which allowed them to gain (or reinforce their) privileged access to the state. This political power could then be used either to commit the state into making the promise of nonexpropriation-if-modernization credible or to successfully engage into rent-seeking activities. In both cases, redistributive land reform remains valid in terms of economic calculus at social prices but no longer possible for economic reasons in the new political context. The result is a deadlock in terms of redistributive land reform, which was created by the state itself, through the strategy it followed to play the game of land reform with politically responsive landlords and whose chances of successful collective action it was unable to predict (either for lack of political foresight or because political restructuring was beyond the political horizon of the state itself). A policy intervention that was meant to create net social gains resulted, through the interplay between economic and political markets, in creating net social losses or at least in losing the opportunity to create net social gains through redistributive actions of the state.

We first derive the payoffs for alternative land tenure options from a model of farm household decision making. To each land tenure option corresponds a total household income, a level of income per acre, a level of land productivity, and a level of TFP at social prices. Once these payoffs are established, land reform is conceptualized as a noncooperative game between the landlords and the state. Both the state and the landlords have perfect economic foresight, but the state underestimates the likelihood that the landlords engage in successful collective action. We finally derive the essential empirical components of this game by reference to Latin America and illustrate the validity of the game's predictions by looking at concrete Latin American land reform experiences.

III. Transactions Costs: The Payoff Structure

To establish the payoffs for the state, landlords (large farmers), and family farmers associated with a large farm structure as opposed to a family farm structure, we construct a simple behavioral model for a farm household. The model incorporates supervision costs associated with the use of hired labor due to moral hazards. Supervision is a nontradable function that is fulfilled by the farm owner. Family farms are defined as farms of a size such that there is no hired labor in addition to family labor and, hence, no supervision costs. On farms with labor hired in, there are decreasing returns from supervision, and the cost of supervision is determined by the farmer's opportunity cost. For simplicity, there is no land rental market and no explicit limitation in access to credit. Similar results would, however, be obtained with a land market and no credit market, i.e., a situation where land is a collateral for access to credit so that credit is proportional to landownership (Eswaran and Kotwal). The farmer's objective function is to maximize

$$\text{Max}_L \quad Y = p Q(L, \bar{A}) - w L + u(\ell)$$

where

$$\ell + s = 1 \text{ (time constraint)}$$

$$\ell = \text{leisure time}$$

$$s = \text{supervision time}$$

$$s = s(L), s(0) = 0, s' > 0, s'' < 0 \text{ (supervision function)}$$

$$u = u(\ell), u(1) = 0, u' > 0, u'' < 0 \text{ (utility function)}$$

$$u = \text{utility of leisure}$$

$$Q = Q(L, \bar{A}) \text{ homogeneous of degree 1}$$

Y = utility, referred to as income

p = product price

Q = output

L = labor input

\bar{A} = fixed index of land and capital, referred to as farm size

and

w = wage rate.

We approximate the utility for leisure by the linear terms in a Taylor expansion as follows:

$$u(l) = u[1 - s(L)] \approx -u' s' \cdot L \stackrel{\text{def}}{=} -v(L) \cdot L < 0, v' > 0.$$

Hence, $Y = p Q(L, \bar{A}) - [w + v(L)] L$. The maximization behavior of the farmer leads to a decreasing land productivity Q/\bar{A} with \bar{A} and to an implicit land rent, defined as profit per unit of land, $r(\bar{A}) = Y/\bar{A}$, which also decreases with \bar{A} . Defining the share of land in the gross value of output as

$$sh_A = \frac{r \bar{A}}{p Q}$$

and the share of labor as

$$sh_L = \frac{(w + v) L}{p Q},$$

TFP at market prices is:

$$TFP = \frac{Q}{(w + v) L} = \frac{1/p}{sh_L}.$$

In their empirical analysis of the relation between land productivity and farm size in a number of countries, Berry and Cline observe that the share of land (where the land input for them, like here, measures all nonlabor inputs) increases with farm size which implies that the elasticity of substitution between labor and land, σ_{LA} , is greater than one. This is all the more likely to be true where this "land" input includes an important component of laborsaving capital such as tractors and other machinery which is highly substitutable for labor. With $\sigma_{LA} > 1$, sh_L decreases with \bar{A} and TFP at market prices increases with farm size. At social prices (denoted by a star) with unemployment in the economy,

- $w^* = 0$ surplus labor
- $v^* = v(L)$ the opportunity cost of supervisory labor
- $r^* = \bar{r}$ the opportunity cost of land, where \bar{r} is the average implicit land rent in the farm sector.

Maintaining the same allocation of resources, TFP becomes

$$TFP^* = \frac{Q}{v(L) L + \bar{r} \bar{A}} = \frac{1/p}{sh_L \frac{v}{w} + sh_A \frac{\bar{r}}{r}} .$$

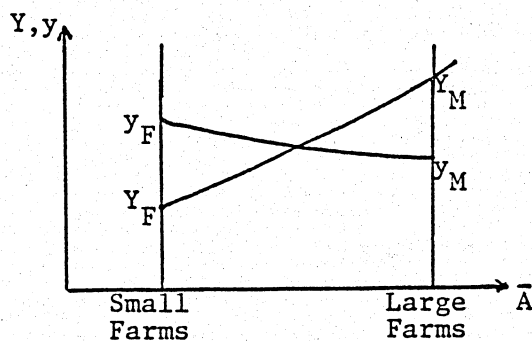
For family farms, $v = 0$ and $TFP^* \equiv T_F = \frac{Q}{\bar{r} \bar{A}} .$

For large farms, $v > 0$ and $TFP^* \equiv T_M = \frac{Q/\bar{r} \bar{A}}{1 + v(L)L/\bar{r} \bar{A}} .$

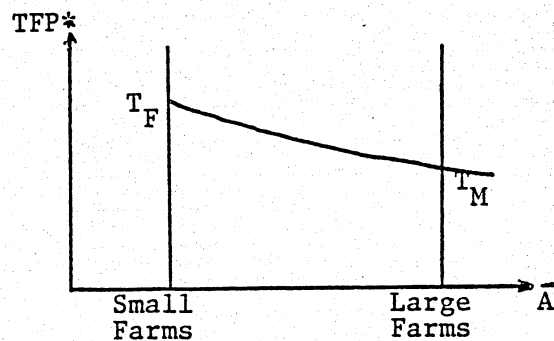
Since Q/\bar{A} is a decreasing function of \bar{A} , TFP^* decreases with farm sizes irrespective of the size of σ_{LA} . Introducing additionally supervision

costs further depresses TFP^* on large farms and reinforces the inverse relation between TFP^* and farm size.

Maximum income at market prices increases with farm size while income per acre, $y = (Y/\bar{A}) = r(\bar{A})$, decreases with farm size. We thus have the following payoffs for landlords, family farmers, and the state (in terms of TFP^*):



Total (Y) and per acre (y) income for small and large farms.



Total factor productivity at social prices by farm size.

With these relations, a land reform that redistributes large farms into family farms is both desirable since it increases TFP^* and feasible with compensation since income per acre is also increased.

We now consider the defensive strategies that landlords can follow to make land reform either no longer desirable in terms of TFP^* or no longer feasible in terms of compensation. One is when technological change α is introduced at a private cost $C(A)$, $C' > 0$, per acre, with the defensive purpose of increasing TFP^* above that on family farms. In this case,

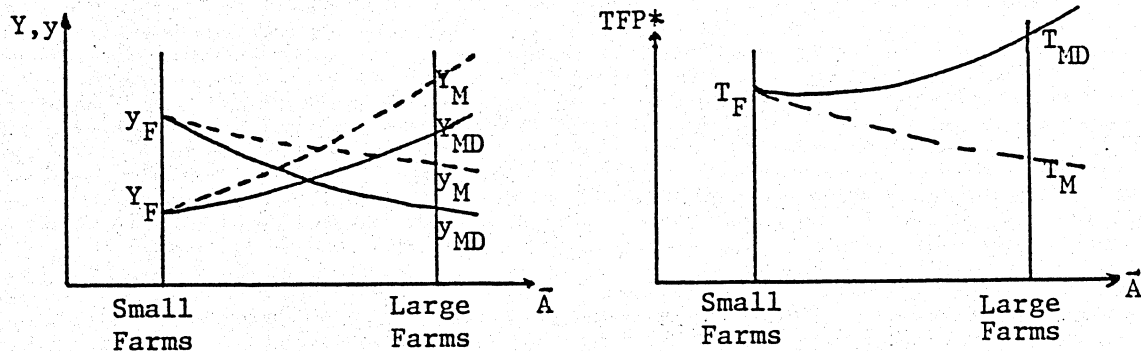
$$Y_{MD} = \alpha(C) p Q(L, \bar{A}) - [w + v(L)] L - C \bar{A} < Y_M$$

and

$$y_{MD} = \frac{Y}{\bar{A}} = r(\bar{A}) - C < r(\bar{A}).$$

If the private resources which landlords use either have zero social opportunity cost or are a sunken cost that makes their use in alternative activities impossible,

$$T_{MD} = \frac{\alpha(C) Q}{v(L) L + \bar{r} \bar{A}} > T_F.$$

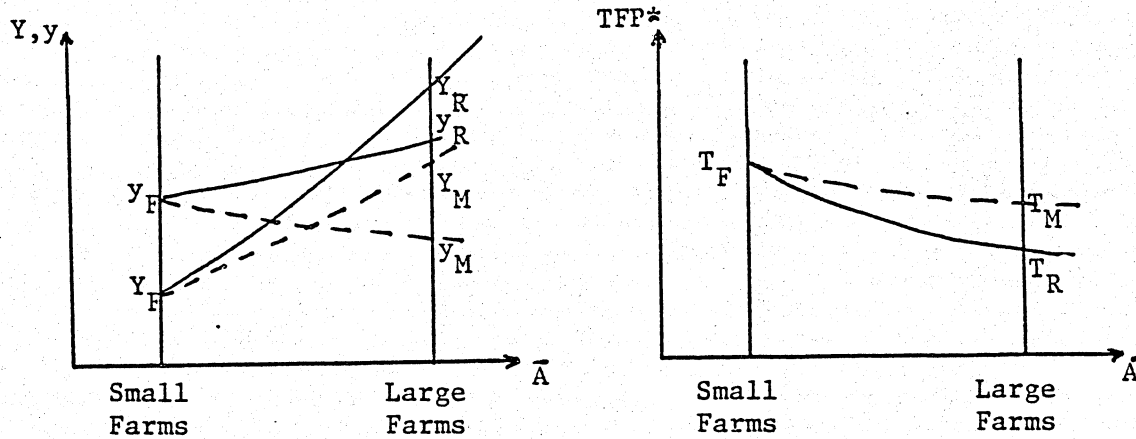


Since total factor productivity at social prices is now higher than the level that can be achieved by redistributive land reform, the latter is no longer desirable to increase TFP^* . Compensation of landlords would, however, still be feasible since $y_F > y_{MD}$.

The second strategy is when technological change can be paid for by successful rent-seeking activities, $R(\bar{A})$, $R' > 0$, per acre. In this case larger farm income and TFP* are

$$Y_R = \alpha(C) p Q(L, \bar{A}) - [w + v(L)] L - (C - R) \bar{A}$$

$$T_R = \frac{\alpha(C) Q}{v(L) L + \bar{r} \bar{A} + R \bar{A}} .$$



In terms of TFP*, land reform remains even more desirable since the social cost of this modernization is increased and $T_R < T_M < T_F$. If, as it has been observed in areas where substantial technology occurred, yields are an increasing function of farm size, then necessarily $y_R > y_F$ and redistribution with compensation of landlords is no longer feasible.

Adding a traditional technology as the pre-land reform starting point, we can summarize the payoff matrix for the landlords, family farmers, and the state (TFP*) as follows. Feasibility of redistribution with compensation holds when income (utility) per acre achieved by the landlords is less than that of farmers.

	<u>Landlord income</u>	<u>Farmer income</u>	<u>State TFP*</u>	<u>Income per acre of land- lords relative to farmer</u>
Traditional (T)	Y_T		T_T	-
Modernized (M)	Y_M		T_M	-
Modernized defensive (MD)	Y_{MD}		T_{MD}	-
Modernized rent seeker (R)	Y_R		T_R	+
Farmer (F)		Y_F	T_F	
Farmer with promise (FP)		Y_F	T_{FP}	

where

$$Y_R > Y_M > Y_{MD} > Y_T > Y_F \quad \text{landlord income}$$

$$T_{MD} > T_F > T_M > T_{FP} > T_R > T_T \quad \text{TFP*}$$

$$Y_R > Y_F > Y_M > Y_{MD} > Y_T \quad \text{income per acre}$$

The graphs in Figure 1 summarize these three relations.

IV. A Noncooperative Game Between the State and Landlords

Land reform can be conceptualized as a noncooperative game between the state and the landlords. The state is motivated by the search of land tenure alternatives to minimize transactions costs in agriculture, i.e., to maximize TFP*. The landlords are motivated by maximizing income Y . In the initial situation T , the landlords do not have the ability to engage in collective action. Both the state and the landlords have full knowledge of the economic consequences (TFP*, Y) of any institutional alternative. Once landlords have

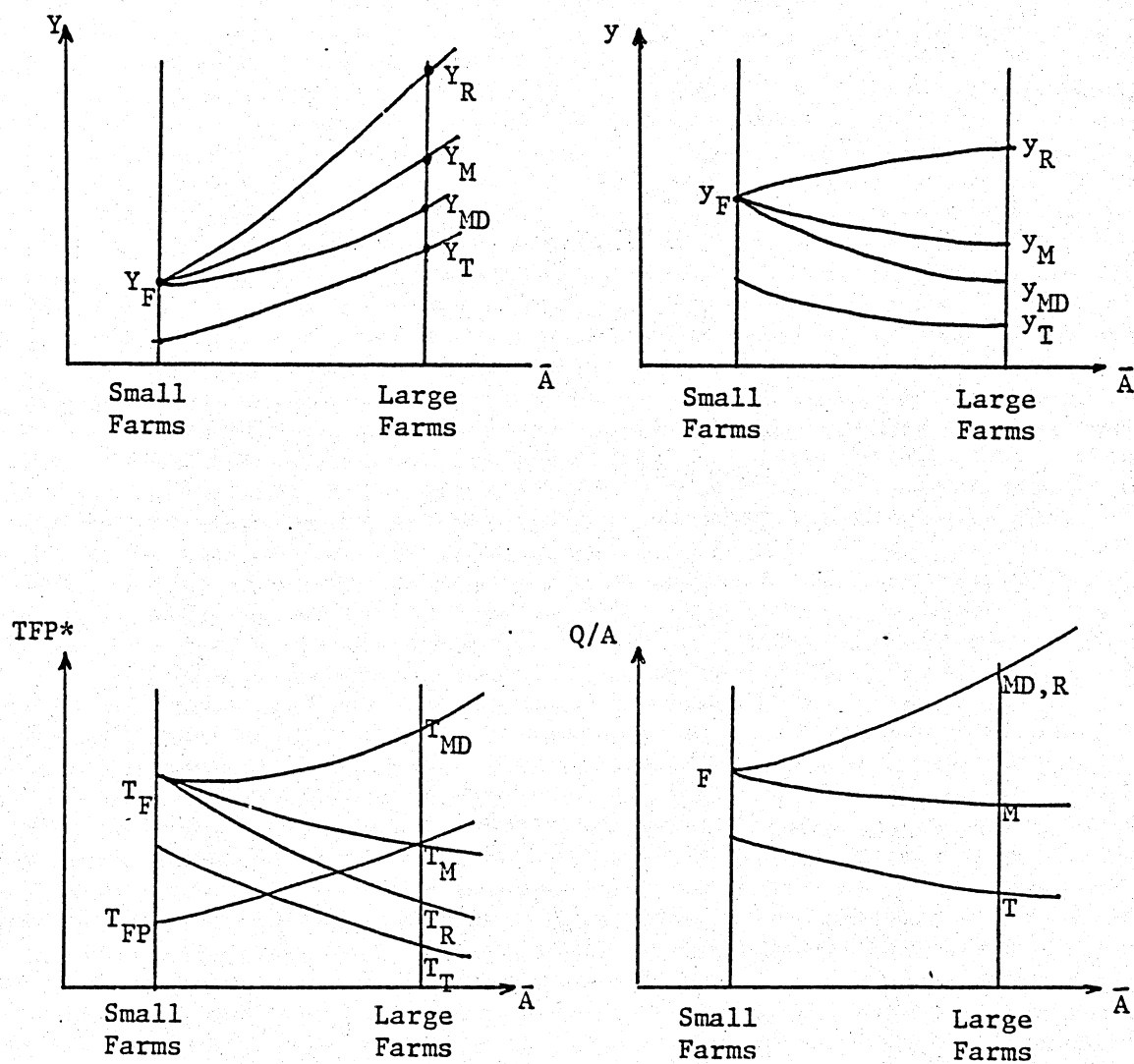


Figure 1
Income, TPP at social prices and Land productivity
by Farm size

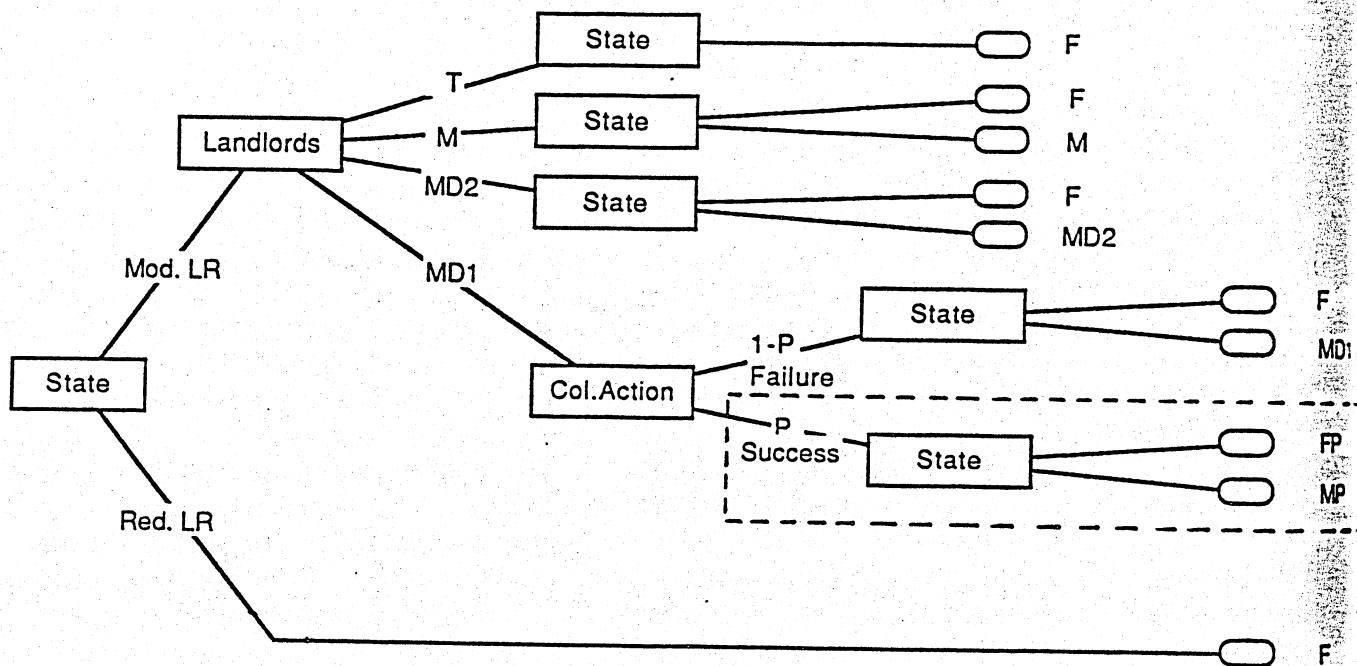
modernized (to M or MD), their enhanced economic status gives them the possibility of engaging in collective action with a probability P of success. Collective action can be directed either at rent seeking (MR) or to wrest from the state credible promises of nonexpropriation (MP).

The land reform game is played under two alternative structural conditions: in one case, landlords are not compensated for expropriated lands, and they are only allowed to keep a family farm yielding an income Y_F . In the other case, landlords are compensated at the last income level reached before expropriation, less a subjective cost ϵ .

To simplify the presentation, we first consider the land reform game when the probability of successful collective action is zero. In Figures 2 and 3, this means that the strategies available to the state and the landlords exclude the boxed areas.

The moves available to the state are to either implement a redistributive land reform outright or to threaten of expropriation if modernization does not occur (referred to as modernizing land reform) while at the same time making new opportunities to modernize available under the form of public goods such as technology and infrastructure (referred to as agricultural development). If two strategies lead to the same solutions, for instance F, the state will choose the alternative of first modernizing the large farms since the marginal cost of raising TFP* with agricultural development is less than with rural development programs. The landlords can respond by refusing to modernize (T), modernizing in response to agricultural development incentives (M) or over-modernizing defensively (MD) at their own cost to raise TFP* above that of family farmers and thus protect themselves from expropriation.

Figure 2 shows the land reform game when no compensation is paid for the expropriated land. If the state offers a modernizing land reform, landlords



Note: MD1 = Private resources with zero social opportunity cost or sunken cost
 MD2 = Private resources with positive social opportunity cost

Figure 2 - Land Reform Without Compensation

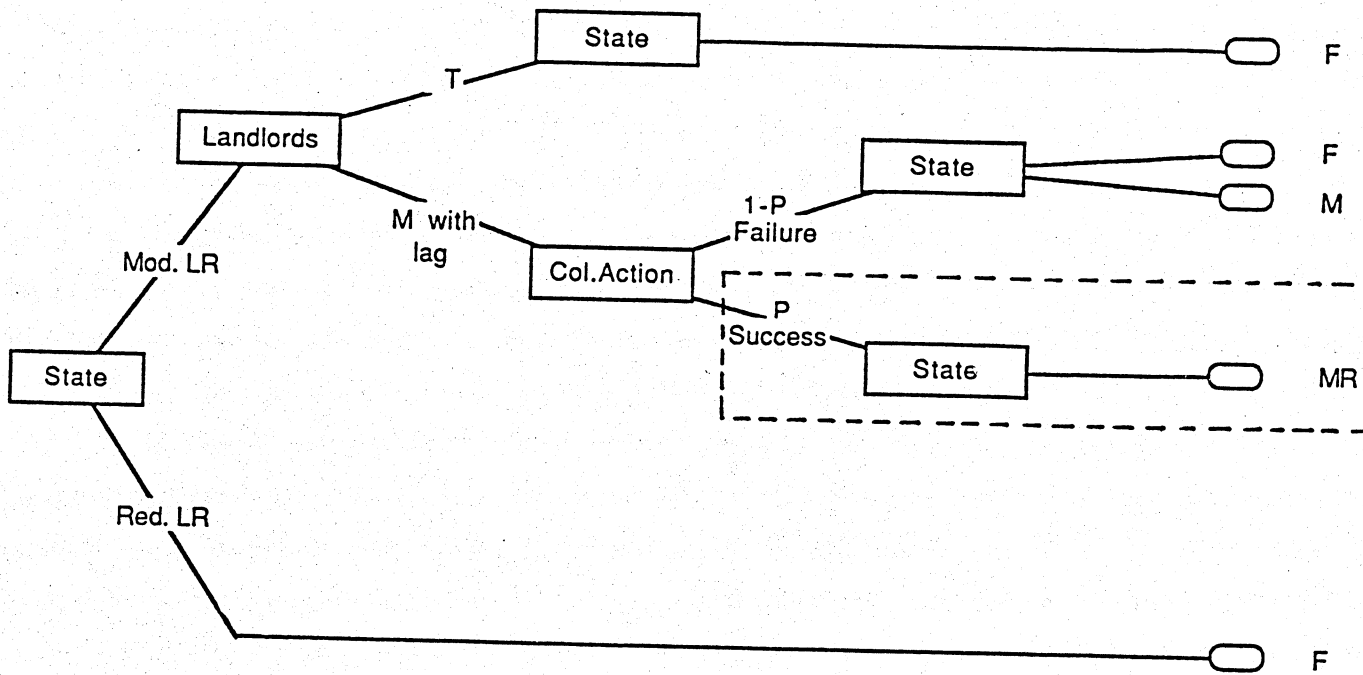


Figure 3 - Land Reform With Compensation

cannot choose M since the promise of nonexpropriation-if-modernization is not credible because the state could still reach $T_F > T_M$ by expropriating them. The solution is thus defensive modernization where $T_{MD} > T_F$ but $Y_F < Y_{MD} < Y_M$. Landlords thus incur a private cost in protecting themselves against expropriation. If these private resources have a low social opportunity cost, imposing a redistributive land reform is not rational for the state, and the solution is MD_1 with payoff ($Y_{MD} > Y_F$, $T_{MD} > T_F$). If the private resources used for defensive modernization have an ex ante social opportunity cost, but are ex post sunken cost because they have been specifically committed to the modernization of large farms, redistributive land reform is blocked as well at MD_1 . It is only when these resources have a positive social opportunity cost and can be reallocated to the modernization of small farms that a redistributive land reform preserves its economic rationale in spite of defensive modernization MD_2 . Redistributive land reform does then occur, and the final payoff is ($Y_F < Y_{MD}$, $T_F > T_{MD}$). Since the landlords choose the type of defensive modernization they engage in, they will pursue defensive modernization if the private resources used have a zero opportunity cost or they will seek making expropriation uneconomical by engaging in clay-type investments when resources used have a positive social opportunity cost.

Figure 3 shows this same game with compensation. In this case, the landlords have no incentive to engage in defensive modernization if $Y_M - \epsilon < Y_{MD}$. The state will either proceed directly with a redistributive land reform or, after the landlords have modernized to M, expropriate them with a compensation $Y_M - \epsilon$. Since the marginal cost of raising TFP* via agricultural development is expectedly less than via rural development, the

state will choose to first pursue a modernizing land reform to M and then expropriate with compensation to F.

As played by the two actors with full economic information on transactions costs and no collective action, the land reform program thus generates net social gains. With no compensation paid, the solution is defensive modernization MD_1 where $(Y_{MD} < Y_F, T_{MD} > T_F)$. With compensation paid, redistributive land reform does occur with the resulting payoff $(Y_M - \epsilon > Y_T, T_F > T_M)$.

V. Path-Dependent Institutional Change:
From Market to Political Failure

The model we started with has two market failures: There is no land market and there are transactions costs associated with hired labor due to the need to supervise. Alternatively, this model could have specified a land rental market, but no credit market (access to credit being determined by landownership since land is the necessary collateral) and labor supervision costs. These two distortions together generate an inverse relation between TFP* and farm size. Redistributive government intervention can be used to reduce the transactions costs created by these market failures and generate net social gains. Allocative efficiency can thus be enhanced through institutional change: a redistributive land reform that changes the structure of property rights with compensation to the former landlords; or defensive modernization in response to the credible threat of expropriation if the private resources used have a low social opportunity cost and no compensation is paid. The greater the relative autonomy of the state, the greater the likelihood that either one of these two land reforms will be successfully implemented.

These two initiatives of the state to redistribute productive assets following modernization, however, open the way to manipulation of the state by

interest groups seeking to protect their own interests. This competition in political markets results in adding a third distortion to the initial two which makes land reform economically impossible and (in the case of rent seeking) reduces social efficiency relative to the pre-reform situation.

The modernization of large farms agriculture from (Y_T, T_T) to (Y_M, T_M) or (Y_{MD}, T_{MD}) enhances the economic and, hence, the political power of land lords. This gives them a probability $P > 0$ to successfully influence the state through collective action. The state remains motivated by the goal of raising TFP* but will be increasingly submitted to effective rent-seeking activities by landlords and to pressures to commit expenses that will make the promise of nonexpropriation-if-modernization credible. The result is an increasing ability on the part of landlords to use the state to introduce additional distortions that make future redistributive land reforms eventually impossible and thus cancel the threat of expropriation and the associated cost of defensive modernization. The land reform game now includes the landlords' collective action move with its uncertain outcome (represented in the boxed areas of Figures 2 and 3). Since the state, however, systematically underestimates P (because of a short-term political horizon and high discount rate for gains in TFP*), the solution to the land reform game will be a successful collective action unanticipated by the state.

When expropriation is without compensation (Figure 2), the landlord's weight over the state will be used to secure a promise of nonexpropriation-if-modernization by lowering to $T_{FP} < T_M$ the potential level of productivity that could be reached in the farms created by reform. This can be achieved, for instance, by eliminating the land reform budget directed at rural development programs. This will allow landlords to cancel the threat of expropriation,

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eliminate the expenses of defensive modernization, and secure a payoff $Y_M > Y_{MD}$. Redistributive land reform is thus made economically impossible as a result of collective action since it would only yield a level of TFP* equal to $T_{FP} < T_M$.

When expropriation occurs with compensation at the income level of the last move less ϵ (Figure 3), and if there is a lag between modernization and expropriation, the landlords can use their enhanced economic power to invest successfully into rent-seeking activities. This allows them to externalize part of the cost of modernization needed to increase yields and income per acre above the levels that would be secured by a redistributive land reform. The social cost of doing this originates in the social opportunity cost of both the resources invested into rent-seeking activities and the rents transferred to landlords. The resulting payoff for the state is $T_R < T_M < T_F$. Since $y_F < y_R$, redistributive land reform with compensation is made impossible as a result of the distributional gains created by rent seeking to the benefit of landlords.

Adding a third distortion (promise of nonexpropriation-if-modernization or rent seeking) to the original two (no land or credit market and labor supervision costs) eliminates the possibility of a redistributive role for the state able to create net social gains by reducing transactions costs, in spite of the fact that T_M or T_R are below T_F , the level of TFP* that redistributive land reform would achieve. While economic market failures still call upon redistributive state interventions, political market failures have blocked this possibility.

VI. Epilogue: The Latin American Land Reform Deadlock

While the threats of redistributive land reforms were effectively waved at landlords in the 1960s and early 1970s to coerce them into modernization, the credibility of that threat or the threat itself had essentially disappeared by the mid-1970s. This occurred in spite of the fact that the creation of family farms through land redistribution had been minimal indeed, that the land tenure system had likely become more polarized than it was in 1961, and that the problems of upward pressures in food prices and of extensive rural poverty had, if anything, not been alleviated.

The end of land reform took a variety of forms in different countries (de Janvry, 1981; and Grindle). In Colombia, a political agreement between the Conservative and Liberal parties in 1977 officially ended land expropriations, reallocated the land reform budget to agricultural development investments, and initiated ambitious programs of integrated rural development to modernize existing family farms without land redistribution. In Chile, the military regime that assumed power in 1973 not only put an end to expropriations but returned a third of the expropriated lands to former owners and auctioned privately another third, basically to medium and large farmers. Once this was done, the land reform agency was redirected to tasks of agricultural development. In Honduras, the military government increasingly backed away from implementing the land reform law and used repression to control land invasions. In Ecuador, peasant organizations creating pressures for land reform were disbanded and new legislation strengthened the security of land rights for large farmers and expanded programs of agricultural development to assist modernization of their holdings. In Peru, land expropriations were brought to a halt by the neoliberal military regime in 1975, and emphasis was placed on

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increasing the productivity of large farms. In Brazil, the budget of the regional development agency for the North East (SUDENE) was reallocated away from redistributive land reform programs to road-building projects.

In all cases, the end of land reform originated in the growing influence of the medium and large farmers over the state. While it is certain that landlords had a dominant role over the state throughout the colony and the liberal period, this power had been strongly eroded by import substitution industrialization policies and rapid urbanization starting in the 1930s. By 1960, the urban classes together with landless agricultural workers were able to challenge this power and pass land reform legislation to force landlords to modernize under the threat of expropriation. The rise in the landlords' political power in the 1970s was based on the economic power which they had derived from successful modernization. It was compounded by the facts that the fears of peasant rebellions, fueled in the early 1960s by the Cuban revolution, rapidly decreased and that the political importance of the peasantry was undermined by urbanization and the rise to power of neoliberal authoritarian regimes, diminishing political pressures for land redistribution. This rising hegemony of the medium and large farmers was used by them to secure two advantages from the state: a credible promise of nonexpropriation-if-modernization and successful rent seeking to externalize part of the cost of modernization particularly under the form of abundant access to subsidized credit.

The promise of nonexpropriation-if-modernization was principally secured by inducing the state to reallocate the land reform budget and the attention of land reform agencies to the pursuit of modernization in medium and large farms. This is exemplified by the weakening of INCORA in Colombia and CORA in Chile and the redefinition of their tasks like SUDENE in Brazil. Since it is well known that a successful redistributive land reform requires not only land

redistribution but also costly investments in rural development activities (such as infrastructure, technical assistance, credit, extension, organization, etc.), canceling the budget for the package of programs addressed to beneficiaries of the land reform made it simply impossible to reach T_F through land redistribution. Instead, further expropriations would be doomed to result in $T_{FP} < T_M$ making them economically unjustified. Through political manipulation of the state to make the promise of nonexpropriation economically credible, redistributive land reform with no compensation was made impossible.

In situations where expropriation would occur with compensation, power over the state was used to successfully engage in rent-seeking activities. The extensiveness of institutional rents in favor of medium and large farms is well established in Latin America. It takes the form of tax advantages, the location of public work projects, the nature and availability of technological progress, selective price-support programs and differential exchange rates, and, more than anything else, access to subsidized credit, all of which are allocated by the forces of the political economy. A few recent figures serve to illustrate the monopoly of medium and large farmers over credit. In Colombia, the 1 percent largest farmers received 50 percent of public credit while the 50 percent smallest farmers received 4.2 percent. Across Latin America, the proportion of farm households receiving any institutional credit was only 27 percent in Colombia, 22 percent in Venezuela, 20 percent in Honduras, 16 percent in Mexico, 6 percent in Peru, and 5 percent in Ecuador (de Janvry, 1981).

Our model predicts that the extent of rent seeking is directly related to the modernizing initiatives of the state which resulted in enhancing the economic and political power of the landlords. While causality is difficult to

establish, the association between productivity-enhancing government expenses in agriculture (GEA, which includes public goods such as research and extension, administration, irrigation, education, health, marketing, and land reform expenses) and the magnitude of credit subsidies (R, measured as the value of public credit to agriculture times the difference between the rate of inflation and the nominal interest rate paid). As we have seen it, access to subsidized credit is one of the main forms of rent seeking, and its benefits are principally captured by the large farmers. Using data at constant prices developed by Elias for 1960, 1970, and 1980 for six countries (15 observations) and dividing GEA and R by the area in cropland (A), we obtain

$$\log \frac{R}{A} = \begin{matrix} -.58 \\ (-.81) \end{matrix} + \begin{matrix} .75 \\ (4.04) \end{matrix} \log \frac{GEA}{A}, \quad R^2 = .56.$$

For every 1 percent increase in net social gain-creating public goods expenditures in agriculture, there is a 0.75 percent increase in net social loss-creating institutional rents transferred to the large farmers. Countries with the highest GEA/A and R/A are Colombia and Brazil. These are also the countries with the strongest large farmer commodity associations which act as corporatist forces able to successfully engage in rent-seeking activities.

With access to generous institutional rents for medium and large farmers well established, it is no surprise that yields on farms of family size and above are frequently observed to have either no significant relation with farm size or to increase with farm size. Data for Mexico and Peru in the early 1970s show the first pattern (de Janvry, 1986). In regions of Mexico where substantial investments in modern technology have occurred, this relation is likely to be positive. Burke indeed observes that the adoption of yield-increasing technologies is substantially more pervasive on larger than smaller

farms. While the technology itself is neutral to scale, differential adoption results from institutional biases favoring the larger farmers. With a positive relation between yields and farm size and, hence, also between income per acre and farm size, redistributive land reform with compensation is made impossible. Thus, while a redistributive intervention of the state remains justified in terms of TFP*, it is no longer economically feasible.

Our model predicts that landlords should use their political power to seek credible promises of nonexpropriation-if-modernization when expropriation occurs without compensation and to seek institutional rents when expropriation occurs with compensation. This also is difficult to test empirically. Yet, the cases of Chile (1962-1967), Colombia, and Brazil are ones where full compensation was offered and substantial rent seeking did develop. Chile after 1967, Peru after 1969, and Honduras are all countries where compensation was only partial and where guarantees of nonexpropriation were subsequently wrested from the state. As the case of Colombia shows, effective rent seeking can evidently also occur once the promise of nonexpropriation has been obtained.

We conclude that redistributive land reforms failed to materialize in Latin America because the state sought first to modernize the medium and large farms as the most cost-effective approach to raising TFP*. Successful modernization created economic power which reinforced the political power of landlords. They, in turn, were able to use this power to obtain credible promises of nonexpropriation and to successfully engage in rent seeking. This third distortion (credible promises or institutional rents) made redistributive state interventions to compensate, through institutional change, for the initial two market distortions (no land or credit market and moral hazards in

hiring labor), impossible. The result is a heavy social cost in terms of foregone TFP* level that could have been achieved by redistributive land reform and the perpetuation of an extremely unequal pattern of landownership. The policy implication is that land redistribution should have been sought outright, before modernization endowed the landlords with enough power over the state to make land reform economically impossible.

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