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## Land Reform in Latin America: Bolivia, Chile, Mexico, Peru and Venezuela

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April 1978

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LAND REFORM IN LATIN AMERICA:  
BOLIVIA, CHILE, MEXICO, PERU AND VENEZUELA

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RECONSTRUCTION AND DEVELOPMENT  
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This report reviews the experience with land reform in five countries of Latin America: Bolivia, Chile, Mexico, Peru and Venezuela. The report is largely based on an interpretation of preexisting literature and data but also encompasses the findings from a few previously unreported case studies carried out over the period 1973-75.

The report provides a brief overview of the extent to which land reform measures have been implemented--the acreages and the number of beneficiaries involved--in each country. More importantly, the report distinguishes between land reforms which have occurred at different stages of agricultural development and under different pre-existing land tenure structures and types of post-reform organization. With typologies of this kind, it has been possible to make some preliminary judgments about the effects various land reform and associated policies might have for general agricultural development and income distribution in alternative environments.

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BOLIVIA, CHILE, MEXICO, PERU AND VENEZUELA

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## INTRODUCTION AND SUMMARY

This report reviews the experiences with land reform in five countries of Latin America. In consideration of the renewed interest in the developmental implications of such reforms, a research project was initiated in 1973 with World Bank support to summarize and evaluate the experiences in Bolivia, Chile, Mexico, Peru and Mexico, based on the voluminous pre-existing literature and some specialized field studies. The background papers produced are listed at the end of this introduction. The results of these studies are summarized here, and their findings are analyzed in a search for general inferences and possible policy implications.

Land reform will be defined here as a redistribution of the rights to land away from large-scale owners to those who work on it. Ex-owners may or may not retain a portion of their lands, and may or may not be compensated for lands transferred. This definition excludes changes in tenancy rights without any shift in ownership; it may include the distribution of unused public or private lands to new settlers in conjunction with ongoing land distribution programs, but not pure colonization projects. The newly established rights to land may take the form of individual ownership titles (as in Bolivia, Venezuela, et al.) or they may involve types of communal ownership. Communal ownership may result in the allocation of lands to individuals for family farms on a semi-permanent basis (most ejidos in Mexico); or it may result in communally organized production on the affected land (Peru, Cuba and collective ejidos in Mexico).

There were wide variations in the quantity and quality of information obtainable from different countries, but enough has been learned to indicate some preliminary conclusions which may be summarized.

(1) In Mexico and Bolivia traditional "haciendas," i.e., large properties farmed with traditionalist technology and labor/tenancy relations, have been extensively subdivided into small farms. About half the rural populations of both countries were involved as land reform beneficiaries. Since the major redistributions had occurred by 1940 (Mexico) and 1955 (Bolivia), there has been ample time for the economic results of land reform to work out their effects. Generally the evidence is that, following a transitional period of uncertainties, the new small farmers have increased their (low) incomes and have raised their output from the land in comparison with previous owners. This has clearly been the case in Bolivia. In Mexico, an initial wave of increase in subsistence food crops has been followed by relatively slow progress among most reform beneficiaries, but strong productivity gains by a significant minority. At the same time, the ex-owners of large estates who had retained substantial portions of their land (after losing some of it) appear to have considerably improved their technics and productivity after the reform--

certainly in Mexico. In both countries national agricultural production has been rising substantially, faster than before reform and faster than average growth rates for Latin America. Subdivision of traditional haciendas has thus been associated with increasing farm output as well as benefits to significant numbers of the poor.

The weak points are, first, that such land reform does not necessarily help rural families who remain landless (demand for their labor in agriculture may either grow or decline post-reform). Second, the initial impetus to output gains may not persist. Gains resulting from an increased labor intensity applied to land in small farms need to be supplemented by technological improvements for progress in productivity to continue. This may well require more intensive deployment of infrastructure, credit and extension services, adapted to the needs of small farmers, than has yet appeared in any of the countries examined. Third, if the rural population continues to grow rapidly, the gains from a land reform can be eroded over time--as has occurred to some degree in Mexico where the numbers of landless farm workers have been rising. This does not indicate, however, that economic or social benefits would have been greater if traditional haciendas had been left intact.

(2) Where large estates are cultivated with costly machinery and chemical inputs, or where sophisticated livestock operations are successfully performed, the economic consequences of land reform are more uncertain than with the less efficient traditional haciendas. To the extent that their productivity results from methods in which economies of scale are significant, and when working and fixed capital requirements are large, the subdivision of such modernized properties into small farms could be deleterious to output--whatever may be said of its impact on rural income distribution. In principle, the collective organization of production in producers' cooperatives, in conjunction with communal ownership by land reform beneficiaries who would work for wages plus a share of profits, could make possible a continuation of scale economies and the employment of skilled managers; and access to capital would not depend on creditworthiness of small farmers. Studies were made of samples of modernized estates taken over to be run as production cooperatives in Chile and Peru, and in the Laguna district of Mexico.

Here the Latin American experience has been mixed, and much of it is too recent for a test of the durability of collective arrangements. Analysis of a sample of collective farms in Laguna district, Mexico, compared to individual farms in the same area, indicates that superior performance was attained on some collectives but only on a small minority of them. Samples of several types of collective agricultural enterprises in Peru, studied in 1973, showed initial success in maintaining or raising output and incomes on some but not all types of such enterprises. Chilean experience (pre-Allende) suggests that there were output gains on reformed estates, but that these resulted more from local farmer initiative than from the inefficient state organization supporting the (temporary) cooperative farms. The transition to cooperative management was easier

and more successful where pre-reform operations utilized wage labor in standardized estate-wide activities, as on a plantation--e.g., in the Peruvian sugar estates; it was more difficult with decentralized crop cultivation. Cooperative management tends to politicize decision making, with uncertain results for output; cooperatives are more dependent on the abilities and honesty of local leaders than is small farm management. All of these collective ventures have clearly provided benefits to workers on the estates concerned but to rather few others, i.e., not to the majority of the rural poor.

(3) The results of land distribution to new settlers on a fairly large scale in Venezuela, and to settlers of newly irrigated lands in Mexico, have been generally successful. Venezuela has provided a secure, if not very productive, sanctuary for significant numbers of its rural poor on unused public (as well as private) lands. Mexico has sponsored a highly productive use of land by reform beneficiaries (as well as private farmers) in its irrigation districts, with major gains to national output.

In general, it must be noted that land reform decisions are usually highly political choices, in which the calculation of net economic benefits is only one element in policy consideration. To the extent that probable impact on national agricultural production is a factor in such decisions, the experience examined suggests a positive prospect. The record of the five Latin American countries studied showed farm output in four of them rising at a faster rate post-reform, although a positive causal relationship to land reform cannot be unambiguously established. In the fifth country, Peru, dubious effects on production could well be attributed to the attempt to impose on farmers an unfamiliar and problematical organization of production cooperatives.

Small farmers created by land reforms in Bolivia and Venezuela and in Mexico (where most ejido members are small farm operators), tend to use more labor on their land than large owners, to put more of the land to use, and often to shift toward labor-intensive crops or animals when the market is favorable. Their value productivity per hectare may be lower than on big farms (as in Mexico); but their total factor productivity may be higher. Small farmers are often inhibited by inferior access to credit or technical services, and they are less likely than large farmers to buy costly inputs in support of a high-value product mix. Production cooperatives (from the limited record of observation) are likely to fall between large and small farmers in these respects; their total factor productivity, however, may be relatively low (except in a small minority of efficient cooperatives in Laguna and in some Peruvian enterprises).

The effects of land reform on rural income distribution have varied. All five reforms have achieved some incremental income equalization by reducing resources of the most wealthy and helping at least some of the poorer people. The reform beneficiaries in Mexico and Bolivia were both numerous and poor, and they were relatively so in Venezuela; and their

initial gains were substantial. But those in Chile and coastal Peru have been fewer and from higher income levels; reform beneficiaries in highland Peru were intermediate in these respects. No land reform has reached all of the rural poor in the countries studied. Over time, the redistribution effects have been diluted in some countries as rural population increases added to the numbers of the poor and landless.

Land redistribution may be seen as one possible instrument for use in pursuing agricultural strategies. A key strategic choice is that between stress on capital-intensive methods and large farming units (however they are owned), as against labor intensive technology on small farms. The latter requires fewer manufactured inputs, generates more employment and spreads incomes more widely, and is compatible with efficient production of some products but not others. Land reform may be aimed at creating many small farms; or fewer medium sized operations, with ample support facilities (as in the plan for Chile); or relatively large cooperative or state enterprises. Land reform may be used to support private property norms, or to further socialist objectives.

Where a country has limited state resources and agricultural skills, and if it has significant lands in inefficient haciendas, the only relevant choice may be whether to cut them up into small farms; the Bolivian and Mexican experience suggests that this would be economically rewarding as well as equitable, provided that some larger properties remain intact to become a focus for technological improvement. For countries with more resources the choices are complex, and depend in part on rural population pressures. If there are large and growing numbers of the landless poor who are unlikely to find urban occupations, and if their employment and security is a major policy goal, then a combination of small farms, labor-using technology, products like staple foods and vegetables with effective demand sustained by increased purchasing power of low income consumers, and government support programs oriented to small farmers is indicated. However, the production of capital-using products, products with important economies of scale or those with exacting export requirements may be increased with more speed and efficiency on larger farm units (private or collective); support programs are not so crucial to technical innovation by larger units with their own resources. Land reform enables a nation to transform its existing farm unit structure to fit an agricultural strategy. For most countries, a mixture of small and medium-to-large units will be advisable, with greater emphasis on the former and on the appropriate support programs where employment generation is more important.

Indirect effects of land reform on national development, nonquantifiable and subject to differing value judgments, include the opening of new opportunities to substantial numbers of low-status reform beneficiaries: not only increased incomes but increased status and security, and control of one's fate are acquired. Social mobility, however circumscribed, is greater; local leadership is fostered; self respect is enhanced. While these changes might be thought minor in practice, they are movement from a traditionalist, restrictive society toward one which is more dynamic, and may therefore be considered conducive to national development.

LIST OF  
BACKGROUND PAPERS PREPARED FOR THE LAND  
REFORM STUDY

Series: Studies in Employment and Rural Development (mimeographed),  
Development Economics Department, World Bank

\*

15. Land Reform in Chile, by Eduardo Cifuentes. 105 pp.
  16. Bolivia Country Report, by Jeff Dorsey. 131 pp.
  17. A Case Study of Ex-Hacienda Toralapa in the Tiraque Region of the Upper Cochabamba Valley, by Jeff Dorsey. 98 pp.
  18. A Case Study of the Lower Cochabamba Valley, Bolivia, by Jeff Dorsey. 100 pp.
  19. Lessons from the Mexican Experience in Land Reform, by Shlomo Eckstein. 25 pp.
  20. Mexico Case Study: Comparative Analysis of Economic Performance of Tenure Groups in the Laguna Basin, by Shlomo Eckstein. 83 pp.
  21. Peasant Cooperation in Land Reform Programs: Some Latin American Experiences, by Shlomo Eckstein and Thomas Carroll. 49 pp.
  22. Peru Case Study Volume, by Douglas E. Horton. 313 pp.
  23. Land Reform and Group Farming in Peru, by Douglas E. Horton. 42 pp.
  24. Land Reform and Reform Enterprises in Peru, by Douglas E. Horton. 182 pp.
  25. The Impact of Agrarian Reform on Chile's Large Farm Sector, by David Stanfield, and others. 38 pp.
  26. Asentamiento Management and Productivity Changes in Chile's Central Valley, by David Stanfield and Stephen Smith. 20 pp.
- \*\* Group Farming in Mexico and Peru: A Multivariate Analysis of Peasant Cooperatives, by Shlomo Eckstein. 56 pp.

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\* Numbers 1 to 14 in this series were background papers of another research project report.

\*\* This paper is listed here because it was a product of the same research project, although it has not been processed for inclusion in the Bank's Background Paper series. It was published as Discussion Paper No. 7620, Department of Economics, Bar-Ilan University, Ramat-Gan, Israel, December 1976.



## CHAPTER I

### BACKGROUND

Land reform has appeared in Latin America against a background of unusually high concentrations of land ownership, with traditional estates both inefficient and oppressive in their manner of operation; of rural poverty and growing unrest; and of increasing awareness of these problems by political leaders and governments. This chapter will briefly survey the Latin American setting, first with respect to land tenure characteristics, then with an historical view of the political dimensions of land reform in the region.

#### A. Characteristics of Land Tenure in Latin America

1. High levels of concentration in ownership. By world standards, the ownership of land in Latin American countries has been relatively concentrated in large units prior to the initiation of programs for its redistribution. Table 1 indicates values of the Gini index for distribution of land ownership <sup>1/</sup> in 54 countries where data were available. Most of the 17 Latin American values are over .80, and the median is .86. By contrast, among countries from other regions shown in the sample Table 1A, <sup>2/</sup> the median index values were in the .60 to .69 range. It should be noted that land quality is not taken into account in this measure, and that in Latin America crop lands tend to be less concentrated than pastures or marginal lands (see Table 3 below). Since crop lands are more valuable, the Gini index overstates the levels of concentration of landed wealth; whether this is equally true in regions other than Latin America is not clear.

Extreme concentration is associated with the rise in demands for land redistribution: it is not coincidence that five of the Latin American countries in which substantial land reforms have occurred are those having the highest levels of concentration prior to reform, with Gini index values approaching or exceeding .90. The exception to this tendency is Cuba, where the most sweeping land reform in the region appeared despite a moderate

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<sup>1/</sup> The Gini index relates percentages of land area in the units owned to percentages of the numbers of owners. Higher values imply greater concentrations of land in fewer hands relative to the total number of owners.

<sup>2/</sup> In sub-Saharan Africa concentration of land in large individual holdings is very limited--see table footnote b.

Table 1: GINI INDEX VALUES FOR CONCENTRATION OF LAND OWNERSHIP IN 54 COUNTRIES IN VARIOUS YEARS /a

A. Numbers of Countries in Range

| <u>Range of Index Values</u> | <u>Latin American Countries</u> | <u>Other Non-industrial</u> <u>/b</u> | <u>Industrial Countries</u> <u>/c</u> |
|------------------------------|---------------------------------|---------------------------------------|---------------------------------------|
| .80 and over                 | 11 (12) <sup>/d</sup>           | 3                                     | 3                                     |
| .70 to .79                   | 5                               | 4                                     | 4                                     |
| .60 to .69                   | 0                               | 7                                     | 4                                     |
| .50 to .59                   | 0                               | 4                                     | 3                                     |
| .40 to .50                   | <u>0</u>                        | <u>3</u>                              | <u>3</u>                              |
|                              | 16                              | 21                                    | 17                                    |

B. Index Values and Years, Latin American Countries

|                  |     |                           |     |
|------------------|-----|---------------------------|-----|
| Mexico (1930)    | .96 | Brazil (1950)             | .84 |
| Bolivia (1950)   | .94 | El Salvador (1950)        | .83 |
| Chile (1936)     | .94 | Uruguay (1950)            | .82 |
| Venezuela (1956) | .91 | Dominican Republic (1950) | .79 |
| Peru (1950)      | .88 | Cuba (1945)               | .79 |
| Guatemala (1950) | .86 | Honduras (1952)           | .76 |
| Ecuador (1950)   | .86 | Nicaragua (1950)          | .76 |
| Colombia (1960)  | .86 | Panama (1961)             | .74 |
| Argentina (1952) | .86 |                           |     |

/a Years when data were available. For three countries, index values prior to land reform (used here) and after were available. Pre- and post-reform values were, respectively: Mexico .96-.69; Egypt .81-.67; Taiwan .65-.46.

/b Countries from Asia, North Africa, Southern Europe, plus Jamaica. In Sub-Saharan Africa, which is not represented in this sample, traditional patterns of communal ownership are slowly giving way to individual proprietorships, and the percentages of land in large individual holdings are generally low.

/c Industrial countries are defined as those having less than 30 percent of their labor force employed in agriculture.

/d Argentina was counted here as an "industrial country."

Source: Samuel P. Huntington, Political Order in Changing Societies (New Haven, Conn: Yale University Press, 1968) Table 6.2, p. 382.

degree of concentration by regional standards. This result is attributable to the extreme radicalism and authoritarianism of the leadership of the 1959 Cuban revolution, which differentiates this country's experience from that of its regional neighbors.

The origin of such concentrations lies partly in the history of territorial acquisition by Spain, and the grants by the crown of relatively large tracts of land, including "encomiendas," to Spaniards in its colonies.<sup>1/</sup> Encomiendas gave the grantee rights to the labor of the indigenous (Indian) inhabitants of a particular land area. By the mid-17th century these had, after several policy shifts, become transformed into inheritable legal titles to land; but the initial assumption of rights to labor services had created a kind of "feudal" relationship which had later consequences. The original large properties then tended to become subdivided by sale or inheritance as time passed, and as the number of European settlers and their descendants increased. But there were also consolidation trends occurring for various reasons at later dates.<sup>2/</sup> In Bolivia, for example, high concentration was fostered by a 19th century law requiring minimum tax payments by all owners. In Mexico, concentration resulted from reformist laws of the Juarez regime in 1856 that were intended to promote commercial homestead farming (as in the U.S.), but in fact resulted, under the Diaz regime (1876-1910), in aggressive "enclosure" moves by large companies.

2. Traditional forms of land tenure. In assessing the effects of land reforms in Latin America, it is important to bear in mind that the traditional forms of land tenure there have differed considerably from those in most of pre-reform Europe or Asia where the bulk of land reform experience has occurred. In the latter areas, the large owners have typically been landlords renting parcels to tenants for payment either in cash or in crop shares. While landlords may supply some credits or services, the tenants are effectively the operators of their farms, whether at a subsistence or commercial level. In Latin America, however, the dominant traditional form for large estates is the "hacienda," on which most productive work is performed by "colonos" under centralized direction of the owner, the "hacendado," or his supervisors. While the passage of time has brought many changes, a description of the hacienda of earlier years is necessary for an understanding of what followed.

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<sup>1/</sup> Portuguese colonial policies in Brazil differed, though they were also conducive to large scale land ownership. Brazil is not among the countries studied in this report.

<sup>2/</sup> The peak of concentration might have been in the 18th Century, when the church became an immense owner and administrator of lands in the Spanish colonies. After a Spanish law enacted in 1804 this particular concentration declined sharply, although other forms of consolidation appeared.

There is quite a bit of local variety in Latin American terminology and in the details of local practice, as well as changes over time. Here we will use the above terms to designate the following practices, which are generally traditional in all parts of Latin America though not uniformly or without exceptions. A colono, by this definition, has an obligation to work for his hacendado, and this may range from 3 to 6 days per week--with seasonal variations. In return, he has the right to till a subsistence plot on some portion of the estate, usually not a large one nor of the best land. He also receives allotments of estate produce, cash, or other items as determined by the owner. This distribution may be governed by custom, but it has often been administered quite flexibly on a personalistic basis. Both parties to this relationship traditionally regard it as a personal one, however circumscribed the choices for the colono; economic dependence is either mitigated or reinforced by particularistic patron-client considerations. Another aspect of land tenure in many parts of Latin America is a sharp ethnic contrast between landowners and colonos, with owners of European or mixed ("mestizo") origin versus Indian 1/ colonos. Still another Latin American characteristic bearing on land tenure relations is the much greater prevalence of livestock raising as a hacienda activity by comparison with most estates of Asia or Europe.

Among these aspects of land tenure relationships in Latin America, the most important for land reform is simply that the colonos on a traditional hacienda have not been the operators of farms, other than their subsistence plots which usually produced little or nothing for sale and which were not in any case the only source of the colonos' income or food. In comparison with a tenant farmer, a colono is much less prepared to function as an independent farm owner and manager if he is given that opportunity by redistribution of ownership. Other aspects of hacendado-colono relations, such as livestock raising and ethnic cleavage, will affect land reform prospects indirectly, but the direction of their effects is less clear than that of a lack of experience in farm management.

Among traditional forms of landholding in Latin America, it is the hacienda which has been the principal target of land reforms. Other traditional types of landholding include: big monocrop plantations, worked by wage labor (originally by slave labor in many areas); large numbers of small farms; 2/ smaller numbers of medium sized farms; and in many countries of the

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1/ "Indians" are indigenous inhabitants before European settlement.

2/ The term "minifundia" is widely used to indicate subsistence farms, or those too small for commercial viability, and we will follow usage. However, small vegetable farms near a city market can be quite profitable and perhaps should not be regarded as minifundia, a word which has the connotation of backwardness as commonly used. For this reason minifundia are defined in some field studies by value of farm output rather than farm size.

region there are traditional Indian communities within which lands are typically allotted to individuals with some reserved to communal uses. <sup>1/</sup> Large and medium farms and their boundaries will usually be officially registered properties, and this may also be true of some or most of the small farms. The legal status of the traditional Indian communities, however, is often cloudy, or insecure; and there may also be substantial numbers of squatters or farmers whose tenure might be recognized in custom but not in law.

3. Changes in land tenure over time. Traditional haciendas can be found operating today in the ways described above, but they are no longer as prevalent as they were at the turn of the century. To varying degrees, and with local variations in form, large estates have been transformed into "modern" commercialized farms or ranches, using mechanical tractor-drawn devices, improved plant varieties and non-traditional crops, and chemical inputs such as fertilizers and pesticides, or employing sophisticated feeding methods and selected breeds in the management of livestock herds. This shift has been accompanied by a transformation of farmers from a colono status into wage laborers, and usually by a reduction in the numbers of farm workers per cultivated hectare as mechanization advanced. It must be stressed that the movement toward "modernization" is a matter of degree, varying greatly among countries, and that in most countries the old, the new and the mixed may be found coexisting at the same time, even side by side. Combinations of more permanent resident laborers (with or without subsistence plots) along with casual labor are found on the same estates. The shift to wage labor status in place of colono status has often been resisted by the farm workers as such changes were frequently accompanied by evictions of colonos and increased insecurity. In some cases (e.g., Venezuela, Peru, Bolivia) farm workers have been organized in "sindicatos"-- i.e., labor unions--which have had impacts not only on owner-worker relations but on the demands for land and some of the political agitations that led to land reforms.

Other changes over time that affect land holdings have resulted from demographic trends. In most of Latin America death rates have declined substantially over the past 50 years while birth rates have decreased much less. There has also been an increased migration from rural to urban areas, but in a good many countries this movement has been smaller than the natural increase of rural populations. In countries where the rural population has

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<sup>1/</sup> The word "campesino" is widely used in Latin America for the rural poor including colonos, farm laborers, minifundistas and members of traditional Indian communities, but not large or medium-sized landowners. It is commonly translated as "peasant," though the attributes of European peasants are not identical in some respects. When the word peasant is used below, it will mean a Latin American campesino. A "farmer" will be a farm operator, or unspecified agriculturalist; "farm workers" will be only employees or colonos.

been growing and where expansion of cultivated areas has not increased proportionally, the result has been a tendency toward subdivision of the minifundia through inheritance, and a growth in the numbers of landless rural workers. This tendency, in conjunction with a progressive modernization and depopulation of the larger farms, has caused a widening gap between the opposite poles in agriculture--an increasing "dualism" in structure, which has consequences both in the political pressures for land reform and in reshaping the possibilities for change that could be accomplished by a redistribution of rights to land. While the technical potential in agriculture grows, along with the attendant investment costs and resources, so also does rural underemployment and the migration to cities in excess of urban employment opportunities, augmenting the potential for unrest in the affected countries.

## B. Historical Review of Land Reform in Latin America

1. Political dimensions. The first land reforms were the products of revolution, of movements for "radical" change. Later the cause of land reform was taken up by more moderate "reformists," and even in a limited way by "conservatives" as a means of averting unrest. Initially the notion of subdividing large estates represented a direct attack on the resources and position of the landholding class, which generally dominated political and other institutions. But with the growth of industry and urbanization, political power has shifted increasingly toward the major commercial and industrial property owners, and then toward middle class groups of employees and small owners. This process is, of course, going on at different rates in various countries. Beyond that, Castro's Cuba, and Allende's Chile, are examples of regimes relying chiefly on working class support in opposition to property owners generally. The role of the military, sometimes decisive or influential in political change, has shifted its coloration; from being a bulwark of landed conservatism, military leadership has tended to become more generally middle-class oriented, and even anti-property in some cases (as in Peru).

Land reform requires a good deal of political push to get underway, and still more to be sustained through a substantial program against the opposition of those adversely affected and their sympathizers in the bureaucracy. While rural poverty and conflicts over land have played an important part, the support of the state is necessary for the implementation of land redistribution and its legitimization; and Latin American political movements which guide state policy tend to be urban-based. While rural unrest can result in spontaneous take-overs of land, these are likely to be aborted unless radical groups of urban origin begin to see in the peasantry an important source of political support, and to act on that premise. This was the pattern for the earlier land reforms in Mexico and Bolivia: 1/ rural

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1/ This was also the pattern starting to emerge in Guatemala in the early 1950s but which was halted with the overthrow of the Arbenz government in 1954.

takeovers of estates had a triggering effect in some areas, but it required urban revolutionary groups and their political organizations to pick up the idea and sustain a national program. In later periods, and in countries where urbanization was much further advanced than in those mentioned, such as Cuba, Venezuela and Chile,<sup>1/</sup> land reform has been more of a pre-planned program--however hotly disputed--with the urban-based impetus clearly in the foreground.

Many factors have been cited as "pre-conditions" or causes for land reform, such as land concentration ratios, rural poverty and misery, peasant unrest and its political mobilization. All these factors were present in countries where land reforms took place, but were also found in other countries as well. They are evidently necessary but not sufficient conditions. While a high concentration in land ownership in conjunction with rural poverty may be conducive to land reform movements, the more important causes for implementation of a land reform program seem to be related to factors which precipitate, or at least facilitate, social change more generally. The modernization of agriculture loosens the old social ties and forces or stimulates rural mobility in the more traditional areas; industrial growth reduces the weight of rural property interests in national politics; and the development of cities supplies a variety of stimuli to change. Yet such modernizing countries as Brazil and Colombia have had only minor land reforms, and still less is found in Argentina, while the Bolivian reform occurred with very little "modernization" preceding it. Clearly, much depends on the particular orientation of groups who came to power in individual countries, and on the extent of their sustained commitment to the cause of land reform after such a policy has been discussed or initiated.

2. Historical sequence. The earliest reform of major consequence began with the Mexican revolution of 1910. Its implementation during the 1920s was relatively slow, but under President Cardenas in 1934-40 the lands affected by redistribution increased significantly. The next major event was the land reform brought on by the 1952 revolution in Bolivia. Land reform movements also appeared in Guatemala, and in the Cuban revolution of 1959. In all cases these were movements of political radicals, successful (or not) in conjunction with revolutionary changes in government that were not merely coups d'etat.

A second phase began in the 1960s, as many Latin American officials came to the conclusion that land reform was necessary for reducing rural tensions and averting revolution. The example of the Cuban revolution and its efforts to export doctrine to other nations in the region stimulated such ideas. The Charter of Punta del Este which established the Alliance for Progress had as one main theme the need for structural reforms, including land reform. Lending from the Inter-American Development Bank became

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<sup>1/</sup> Peru is an intermediate case; Mexico is now far more urban than in 1910.

conditional on adoption of land reform laws, and United States assistance policies were sympathetic. Thus land reform became respectable, and in the mid-1960s most Latin American governments which did not already have land reform laws enacted them. In this period the Latin American reformist parties included land reform planks in their political platforms. In most countries, however, implementation of these laws and election promises did not in fact bring about redistribution of more than a small fraction of agricultural lands. The most effective of the reforms of this "reformist" phase of the 1960s were those of the Betancourt regime in Venezuela, of Frei in Chile, and Belaunde in Peru, none of which had as wide a scope as the earlier redistributions in Mexico and Bolivia.

At the end of the 1960s, new and more radical approaches were taken in Chile and Peru by the governments of Allende and Velasco respectively. The Allende regime, while it lasted (1970-73), speeded up the time-table for action under essentially the Frei legislation; after 1973 the process of redistribution was halted, but a significant number of estates had been affected. In Peru, an ambitious program for placing large properties under communal ownership and cooperative management began in 1969 and has continued on schedule to date. And in Mexico a new impetus toward land reform has arisen since 1970, following a period of about 30 years in which priorities in agricultural policy gave emphasis to output increases rather than to equity considerations. The land reforms in Mexico, Bolivia, Peru, Chile and Venezuela are described in more detail in the next chapter.

3. Some aspects of Latin American land reform laws and their implementation. One of the more significant aspects of land reform legislation in Latin America has been its use of what is called the "social function of landed property" as a criterion for redistribution decisions. In essence, this means that owners who are making more productive uses of their land are less vulnerable to losing it to reform beneficiaries. Owners who produce efficiently, who invest in modern equipment, who comply with social, fiscal and labor legislation, and who do not employ "anti-social production systems," are thought to be fulfilling their social function. They may be exempted from expropriation entirely, or given more favorable terms such as larger limits on land retained. Favorable terms may also be given to producers of crops promoted by the government; e.g., cotton estates in Mexico can hold up to 300 instead of 100 hectares. Difficulties arise over definitions of fulfillment of the social function: "efficiently operated," "capitalized," and "anti-social systems" are difficult to determine, and legal specifications vary. In Bolivia, for example, an inefficient owner might qualify for keeping more of his land by buying one tractor, or repairing a few buildings--or simply by putting pressure on administrative officials. Elsewhere, landlords have been motivated to expel colonos and other occupants of estate lands and substitute wage labor, and/or take up cattle raising in place of crop farming, to avoid accusations of having an "anti-social production system." In

many cases the legal definitions have tended to favor the largest landlords; vague definitions, or highly complex provisions to overcome vagueness, have made laws difficult to administer, and left loopholes. Some observers feel that the social function concept has on balance impeded rather than facilitated land redistribution.

In the majority of cases estate owners have been allowed to keep a portion of their lands, with reserves ranging from 40 hectares (irrigated) in Chile up to 100 in Mexico. 1/ Usually they will retain their best land, and most of their livestock, machinery, and installations. Most laws state that owners of expropriated land will be compensated in bonds and/or cash, and that land reform beneficiaries shall reimburse the state for their newly acquired assets over a long period (usually 20-30 years). But ex-owner compensation has seldom approached the levels specified in the laws, and almost never have beneficiaries actually paid for their land, although they often paid for other assets such as livestock and machinery. The particulars of land retention, selection of beneficiaries, and post-reform organization of the latter will be reviewed below for the five countries taken up in this report.

Concerning implementation, it must be remembered that land reforms have been initiated in most cases by new radical regimes under relatively chaotic conditions, and as a weapon in an ongoing political struggle. Since redistribution affects major changes in an agrarian structure ("deep surgery," in Edmund Flores' words 2/), short term dislocations are inevitable. Reform touches the interests of large landowners, hacienda colonos, wage laborers, smallholders and others, all of whom will try to influence the course of events. All this makes for unpredictable fluctuations in implementation. Land redistributions tend to come about in waves, to slow down after the first impetus as administrative proceedings get bogged down in conflicts over particulars and as opponents rally their forces for resistance. A first wave may or may not be followed by later ones after various intervals. In practice, land redistribution in Latin America has nowhere been extended to 100 percent of the large holdings except in Cuba (and even there, despite an ideology favoring collective farming, much of the vegetables and tobacco are still grown on family farms organized in service cooperatives). Any discussion of land reforms must take account of wide de facto variations in the effective impact of redistribution at particular points in time.

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1/ 100% expropriation is usual in Cuba and in Peru after 1969; it is applied to some categories of "inefficient" estates in Venezuela, Bolivia and Chile.

2/ Quoted in Doreen Warriner, Land Reform in Principle and Practice (Oxford, England: the Clarendon Press, 1969) p. 23.

Land reform is part of a dynamic process of change rather than a one-time action. Certain changes in agrarian structure and institutions can sometimes be made within a relatively short time period, but only after a sufficient impetus has developed. Effects of land reform continue for many years, and their magnitudes are affected by such elements as: (1) The rate and depth of implementation of land redistribution, and its shifts over time. (2) The extent of public institutional support to the land reform beneficiaries, e.g., in credit, technical assistance, roads, marketing; these too, change in magnitude from one time to another. Land redistribution can fail to produce its full potential effect when such institutional support is weak. (3) A land reform develops a kind of momentum of its own, which may lead it on to further redistributive moves and "radicalization," or may lead to growing resistance and either a tapering down of the initial impetus on a sharp counter-reaction. All these will shape and reshape the "results" of the reform, and the ways in which reforms are judged and lessons are learned from them. Each country has, in effect, lived through several reforms in this sense, not just one, with intermingling and overlapping effects. Results of land redistribution alone cannot be segregated from other elements in the overall agrarian evolution, and from the nature of a process which may become either self-propelling or self-defeating at various stages along the way.

CHAPTER II

REVIEW OF LAND REFORM IN SELECTED COUNTRIES

A. Scope of Land Reforms in Mexico, Bolivia, Peru, Chile and Venezuela

The overall magnitudes of land reforms in the five countries can be seen in the figures of Table 2, which provides recent data on the area of land redistributed, numbers of reform beneficiaries who received land, and the percentages of national agricultural land and farm families affected. By far the most important land reform in absolute magnitudes is that in Mexico, where over 60 million hectares of land had been distributed to nearly 2 million families as of 1970. In terms of impact on the rural population, Mexico also comes out ahead: by 1940, after the period of most vigorous redistribution in the 1930s, 54 percent of farm families had received land. By 1960 the rural population had grown and redistribution had slowed; reform beneficiaries then represented 42 percent of agricultural families. By 1970, however, the percentage had risen to 66 as new beneficiaries were added in the 1960s while the agricultural workforce had passed its peak in numbers and started to decline. The corresponding figures for Bolivia are also high: 49 percent of farm families had received land as of 1955; but by 1970 the share had fallen to 34 percent as population had increased. The proportions of farm lands affected in these two countries were smaller: 43 percent for Mexico, and 30 percent for Bolivia.

Table 2: TOTAL LAND REDISTRIBUTED AND NUMBERS OF BENEFICIARIES AS PERCENT OF TOTALS

|                 | <u>Total Land Redistributed</u> |                                    | <u>Land Reform Beneficiaries</u> |                                      |
|-----------------|---------------------------------|------------------------------------|----------------------------------|--------------------------------------|
|                 | <u>Thousand Hectares</u>        | <u>As % of Total Land in Farms</u> | <u>Thousands</u>                 | <u>As % of Agricultural Families</u> |
| Mexico, 1960    | 44,500                          | 26                                 | 1,524                            | 42(54) <u>/a</u>                     |
| 1970            | 60,724                          | 43 <u>/b</u>                       | 1,986                            | 66                                   |
| Bolivia, 1970   | 9,792                           | 30                                 | 237                              | 34(49) <u>/a</u>                     |
| Venezuela, 1973 | 1,650                           | 6 <u>/c</u>                        | 128                              | 35                                   |
| Peru, 1973      | 5,508                           | 50                                 | 166                              | 14                                   |
| (1976 Target)   | (11,869)                        | (72)                               | (340)                            | (28)                                 |
| Chile, 1973     | 9,517                           | 47                                 | 58                               | 13                                   |

/a Figures in parentheses correspond to earlier dates: 1940 in the case of Mexico, and 1955 in Bolivia.

/b This percentage increased in part because the 1970 census decreased its coverage of lands by excluding wide areas of idle, mostly barren lands in private "Farms."

/c Private owned land only.

Sources: See Appendix A.

A quite different pattern is found in Peru and Chile. As of 1973 about half the agricultural land in these countries had been redistributed, but only 13-14 percent of farm families had received any of it. In contrast, only 6 percent of privately owned agricultural land in Venezuela was redistributed, but 35 percent of farm families were benefited. This happened because the majority of reform beneficiaries in Venezuela were settlers on uncultivated public lands rather than recipients of land taken from private owners. (Note: throughout this text and its tables the term "distribution" of land refers to its de facto occupation and use by reform beneficiaries, whether or not de jure distribution by grant of land titles has been completed.)

Reasons for these differences in national impact include such factors as the time period since reforms were initiated and the thoroughness of implementation; the proportions of land and rural workers involved in properties subject to redistribution; the extent of land retention by property owners; the methods of designating beneficiaries, and the size of their plots. Where large estates occupy high percentages of the agricultural land, as in Mexico and Bolivia (see Table 3), a greater reform impact on land and workers could be expected. However, this could be partly offset with respect to area by generous retention allowances to owners, as in Mexico. In the other three countries there were proportionally many more small farmers prior to reform--at least with respect to crop lands, although pasture lands were quite heavily concentrated. Table 3 provides data on "large estates," defined as those of 1,000 hectares or more (except in Chile --see footnote); in the absence of a refined, internationally comparable measure of land resources, this rough measure of size is used. The table shows the relative importance of the large properties pre-reform and the extent to which their lands were redistributed.

Generally, the pre-reform ownership of crop lands--the most valuable kind--in large units has been significantly reduced, most dramatically from 79 to 10 percent in Bolivia. However, it appears that land reforms have not prevented very large percentages of pasture lands from remaining in large holdings in all of these countries (including Chile). In the arid or mountainous areas, such lands may have low potential value; in other cases, however, they may be lands which are not intensively utilized by large-scale owners but which could become more productive in other hands. A final point to note in Table 3 is that in pre-reform Mexico and Bolivia any policies affecting workers on "large estates" would involve the majority of their national populations, in sharp contrast to the three more urbanized countries in which the affected groups were only 7-12 percent of population totals.

Table 4 indicates the relative importance of the land area in the reformed sector, i.e., the land transferred to reform beneficiaries. The Table also shows the average land holding per beneficiary in three land categories. In terms of impact, the Bolivian reform stands out as having transferred ownership of three quarters of all crop land and over half the total farm land; "other" (marginal and unsettled) land in the Bolivian mountains and jungles is considerable, however. In Mexico, after half a century of land reform about half of the crop land and lesser amounts of other lands have been distributed. In Chile, after the Allende regime, nearly half of farm and other lands had moved into new reform units; and if Peru's 1976 target is met, the result will be similar. In Venezuela the proportions are more modest.

Table 3: IMPORTANCE OF "LARGE ESTATES" OVER 1,000 HECTARES

|                    | Land in Large Estates<br>as % of |                                      | Families of Workers on<br>Large Estates as % of: |              |
|--------------------|----------------------------------|--------------------------------------|--|--------------|
|                    | Total<br>Crop Land               | Total Farm Land<br>Including Pasture | Farm<br>Families (urban, rural)                  | All Families |
| <u>Pre-Reform</u>  |                                  |                                      |  |              |
| Mexico (1923)      | 70                               | 82                                   | 70   | 54           |
| Bolivia (1950)     | 79                               | 92                                   | 79   | 59           |
| Venezuela (1950)   | 41                               | 79                                   | 35   | 10           |
| Peru (1961)        | 22                               | 69                                   | 26   | 12           |
| Chile (1955) /a    | 68                               | 73                                   | 27   | 7            |
| <u>Post Reform</u> |                                  |                                      |  |              |
| Mexico (1960)      | 29                               | 55                                   |  |              |
| (1970) /b          | 12                               | 30                                   |  |              |
| Bolivia (1955)     | 10                               | 65                                   |  |              |
| Venezuela (1971)   | n.a.                             | 67                                   |  |              |
| Peru (1973)        | 10                               | 42                                   |  |              |
| (1976 target)      | (0)                              | (20)                                 |  |              |
| Chile (1973) /a    | 27                               | n.a.                                 |  |              |

/a In the case of Chile, the definition of "large estates" was based on official data, where the limit was defined as 80 "Basic Irrigated Hectares" or its equivalent in non-irrigated areas under different conditions. The BIH concept of equivalence was more systematically applied in Chile than were any similar definitions in other countries.

/b Decreases from 1960 to 1970 resulted largely from the shift in Census coverage--see footnote b, Table 2. In 1970 the definition of large estates is 400 hectares or more of crop land.

Sources: See Appendix A.

Concerning the average allotments of land to reform beneficiaries, the totals in Mexico, Bolivia, and Peru fall in the 30-35 hectare range, of which 5-10 hectares represent crop land and 13-21 hectares pasture land. In Venezuela, the 13 hectare average for the total is smaller, but most of this reportedly is crop land. These beneficiary allotments would seem to be reasonably generous by comparison with the holdings of many of the mini-fundists in the same countries; certainly they appear generous in comparison with the small holdings in many Asian countries. When we turn to Chile, we find an average beneficiary allotment of 164 hectares in toto, with 35 hectares of it crop land, which is generous by almost any standard. 1/ But it must

1/-See page 15 for footnote.

Table 4: LAND REDISTRIBUTED IN REFORMS

|   | (1)      | (2)           | (3)                  | (4)                     | (5)                   |
|---|----------|---------------|----------------------|-------------------------|-----------------------|
|   | Cropland | Pasture       | Farm Land<br>(1 + 2) | Other<br>Land <u>/a</u> | Total Land<br>(3 + 4) |
| <u>Percentages of land category redistributed:</u>                    |          |               |                      |                         |                       |
| Mexico, 1960  | 43       | 25            | 29                   | 22                      | 26                    |
| 1970 <u>/b</u>  | 51       | 38            | 41                   | 48                      | 43                    |
| Bolivia, 1955   | 76       | 53            | 58                   | 7                       | 30                    |
| Venezuela, 1973   |          |               |                      |                         |                       |
| Private land  | 13       | 5             | 8                    | 24                      | 10 <u>/c</u>          |
| Private & public  | -        | -             | -                    | -                       | 29(6) <u>/d</u>       |
| Peru, 1976 target   | 49       | 42            | 43                   | 78                      | 50                    |
| Chile, 1973   | 39       | -             | 49                   | -                       | 47(35) <u>/e</u>      |
| <u>Average allotment of land per reform beneficiary, in hectares:</u> |          |               |                      |                         |                       |
| Mexico, 1970  | 6        | 14            | 20                   | 10                      | 30                    |
| Bolivia, 1955   | 8        | 21            | 29                   | 5                       | 34                    |
| Venezuela, 1973   | -        | -             | -                    | -                       | 13 <u>/f</u>          |
| Peru, 1976 target   | 5        | 19            | 24                   | 11                      | 35                    |
| Chile, 1973   | 35       | 129 <u>/g</u> |                      |                         | 164                   |

/a Chiefly barren, forested, or inaccessible.

/b Land distribution in the 1960s accounts for the increase in column 1. But the shift in census coverage in 1970 (see footnote b, Table 2) probably accounts for more of the change in Columns 2 and 4 than does distribution.

/c Private land distributed as percent of all land in private farms.

/d 29 percent of all lands were acquired by the land reform agency (IAN) but only 6 percent had been distributed as of 1973. Undistributed portions are mainly public lands in frontier areas.

/e The 35 percent in parenthesis refers to calculations based on BIH equivalents (see footnote a, Table 3).

/f Mostly crop land.

/g Includes pasture and "other land."

Sources: See Appendix A.

also be considered that estate owners kept the best lands for themselves (when they were allowed to do so under reform provisions), so that reform beneficiaries were usually getting the lower grades of land within given categories. In any case, national averages without reference to land quality can be misleading.

Land reform beneficiaries came principally from the farm workers, whether colonos or wage earners, who were the resident workers on expropriated estates. In some cases, most often in Mexico but also in Peru and sometimes in Chile, the people who got rights to estate land were farmers residing near the estate, whether minifundists or landless. Only in Venezuela, and in new irrigation districts in Mexico, where land was distributed predominantly to new settlers, did significant numbers of beneficiaries come from areas other than their new lands. Table 5 shows values indicating the relation of numbers of land reform beneficiaries to numbers in several national categories.<sup>1/</sup> Beneficiaries were half or more of the rural population in Mexico and Bolivia at the dates noted, but much less in Chile or Peru; in the latter, most crop land and a large share of the rural population were already in the "small" farm sector before reform.

Another way to assess the impact of reform is to consider data on the numbers of landless rural families, and of families who owned "sub-family" sized plots--i.e., minifundists, defined as owners of less than 5 hectares--before and after reforms occurred (Table 6). In Mexico, the reduction in numbers in both groups between 1910 and 1940 is striking; however, their numbers had grown over half-way back to the 1910 figure again by 1960 due to increases in the landless families. In Bolivia, the pre-reform figure was exceeded by 1970, despite the sharp reduction in 1955. Elsewhere, land reforms did reduce numbers of landless and minifundists, but not by so much; and in Peru this change was negative--i.e., rural population growth over 1961-73 was faster than land distribution to beneficiaries.

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<sup>1/</sup> These values are given in the table as percentages, but this does not mean that X percent of a category became beneficiaries. For example, total Mexican beneficiaries in 1940 equalled 74% of pre-reform estate workers; but most of the beneficiaries had not been estate workers.

Footnote 1 of page 13:

Where land ownership titles were distributed by the Frei and Allende Governments (only to 109 and 73 estates respectively, a small fraction of the 5,497 estates expropriated), the average numbers of hectares of irrigated and dry land per beneficiary in a large sample were:

|          |                  |             |
|----------|------------------|-------------|
| Frei:    | irrigated - 6.6, | dry - 114.9 |
| Allende: | irrigated - 5.7, | dry - 50.1  |

Table 5: RELATIVE IMPORTANCE OF LAND REFORM BENEFICIARIES

|                             | Numbers of<br>Beneficiaries<br>(Thousands) | Beneficiaries as % of:       |                          |                 |
|-----------------------------|--|------------------------------|--------------------------|-----------------|
|                             |  | "Large Estate"<br>Workers /a | Agricultural<br>Families | All<br>Families |
| Mexico, 1940 <u>/b</u>      | 1,223                                      | 74                           | 54                       | 30              |
| Bolivia, 1955 <u>/b</u>     | 237  | 67                           | 49                       | 35              |
| Venezuela, 1973             | 128  | 85                           | 35                       | 6               |
| Peru, 1973<br>(1976 target) | 166<br>(340)                               | 68<br>(139) <u>/c</u>        | 14<br>(28)               | 6<br>(10)       |
| Chile, 1973                 | 58 <u>/d</u>                               | 51                           | 13                       | 3               |

/a Workers on pre-reform estates of 1,000 hectares or more, except in Chile (see Table 3, footnote a).

/b Dates chosen to reflect short-range impact of principal phase of reform.

/c Target for beneficiaries includes workers on estates less than 1,000 hectares, thus a percentage over 100.

/d 58,000 designated beneficiaries had obtained land by 1973. A figure of 75,000, sometimes used for beneficiary numbers, represents total workers on expropriated estates; some 17,000 of these were non-resident workers whose claims to beneficiary status were in dispute.

Source: See Appendix A.

If it is thought that landlessness and minifundism represent problems that need to be overcome, then one may see how land reform has reduced the absolute numbers of people in these groups and their proportions in the agricultural work force. But it is clear that population increases work in the opposite direction, bringing up the absolute numbers and, to a lesser degree, the percentages of rural populations in the problematic groups after redistribution ends or slows down.

The rest of this chapter will briefly review the land reforms in each of the five countries separately. Terminology and categories particular to individual countries will be defined here.

Table 6: LANDLESS RURAL FAMILIES AND MINIFUNDISTS,  
BEFORE AND AFTER LAND REFORMS /a  
(in thousands)

|                           | (1)<br>Landless | (2)<br>Mini-<br>fundists <u>/b</u> | (3)<br>Total<br>(1+2) | (4)<br>(3) as % of<br>all farm<br>families |
|---------------------------|-----------------|------------------------------------|-----------------------|--|
| Mexico, Prereform 1910    | 1,100           | 1,200                              | 2,300                 | 98   |
| 1940                      | 200             | 630                                | 830                   | 37   |
| 1960                      | 1,280           | 470                                | 1,750                 | 48   |
| Bolivia, Prereform 1950   | 365             | 51                                 | 416                   | 92   |
| 1955                      |                 |                                    | 207                   | 43   |
| 1970                      |                 |                                    | 431                   | 57   |
| Venezuela, Prereform 1960 | 86              | 177                                | 263                   | 62   |
| 1973                      | 74              | 76                                 | 150                   | 40   |
| Peru, Prereform 1961      | 93              | 700                                | 793                   | 85   |
| 1973                      |                 |                                    | 866                   | 74   |
| (1976 target)             |                 |                                    | 738                   | 60   |
| Chile, Prereform 1965     | 177             | 67                                 | 244                   | 57   |
| 1973                      |                 |                                    | 240                   | 53   |

/a No persons covered in this table were land reform beneficiaries.

/b Owners of less than 5 hectares of land.

Sources: See Appendix A.

#### B. Mexico

Mexico's land reform, the first in Latin America, was a major result of the Revolution which began in 1910. The Revolution had been preceded by a generation of rapid economic growth, accompanied by pronounced concentrations of wealth and income under the dictatorship of Porfirio Diaz (1876-1910). During this period peasant villages lost much of their land to the expanding estate sector,<sup>1/</sup> and by 1910 the degree of land concentration exceeded that of any other Latin American country. Inflation of basic

<sup>1/</sup> The 1856 law referred to earlier (Ley Lerdo) stripped the church and the traditional peasant communities of their right to land ownership. Under the government of Porfirio Diaz, large surveying companies and other private businessmen were encouraged to purchase or appropriate lands which had been traditionally held by peasant communities but for which there were not individual titles.

commodity prices had far outstripped the increase in agricultural wages.<sup>1/</sup> and the welfare of most rural people declined.

Land reform was not initially a major goal of the revolutionaries who overthrew the Diaz regime in 1910, but as the authority of the central government disintegrated the agrarian problem emerged as a central element of the Revolution. <sup>2/</sup> In 1915, at the height of the Civil War, a land reform decree was enacted; later, this was incorporated as Article 27 of the 1917 constitution. In 1922 a set of agrarian by-laws was enacted to clarify the objectives and procedures of the land reform process. In 1934, the above-listed and several other statutes were issued as an agrarian code (Codigo Agrario). In 1942 the Codigo was revised, and with a few subsequent modifications remained in effect until the major revision of 1970.

Mexico's land redistribution program has differed fundamentally from those of other Latin American countries in that land has been adjudicated not to estate workers but to neighboring peasant communities. The purpose of land reform in its conception was to bring about a restoration to their rightful owners of lands improperly taken from peasant communities during the nineteenth century. Therefore, estate owners generally received no compensation for expropriated lands under the reform, and reform beneficiaries were not required to pay for assets received. Estate owners, however, were allowed to retain a relatively large portion of their lands, a "reserve" of 100 hectares of irrigated land or its equivalent in other types of land. <sup>3/</sup> (It was assumed that most resident estate workers would continue to work on the reserves of the estate owners.) Landless peasants petitioned as a group to obtain land for their community. They received community (not individual) rights to land as members of a newly formed "ejido," a communal unit which held title to the land and administered its allocation to individual farmers or other uses.

In the implementation of its programs, the government has not initiated redistribution processes but has relied upon peasant communities

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<sup>1/</sup> According to Frank Tannenbaum, many commodity prices more than doubled between 1890 and 1910 whereas cash wages paid on agricultural estates increased by roughly 20 percent, p. 141.

<sup>2/</sup> In the original Revolutionary Program of 1910 only one paragraph is dedicated to the agrarian problem, calling for the return of lands acquired illegally or immorally to their rightful communal owners; and this measure was not implemented. In 1911 Emiliano Zapata, a peasant leader in Morelos, initiated an agrarian revolt which soon spread to other parts of the country.

<sup>3/</sup> The equivalents were roughly two hectares of rainfed croplands, and various amounts up to 500 hectares of arid pastureland, per hectare of irrigated cropland.

to submit petitions for land. Initially only estate lands within 7 kilometers of villages were subject to redistribution. Where a hacienda was surrounded by several communities, distinct portions of its lands could be transferred to each; and where a community was located between several haciendas it could receive a portion of each. Given the 7 kilometer limitation, estates which did not border on existing peasant communities were not originally subject to redistribution, and in the early years the majority of estates affected were in areas of high population density.

Until the 1930s very few modernized estates were expropriated. As of 1930, only 6 percent of the country's land had been redistributed among 25 percent of the rural families. Crop lands acquired by ejidos were generally distributed among ejidatarios for individual crop production, pastures and woodlands remained for joint use. In 1936, when faced with massive strikes in the modernized cotton estates of the Laguna Region, President Cardenas altered the land reform process by expropriating the excess lands (above 150 hectares) of the larger cotton plantations and setting up "ejidos colectivos," i.e., agricultural collectives. He then went on to accelerate land redistribution more widely throughout the country. By 1940, 22 percent of all farmland, including 47 percent of the cropland, had been distributed to over half the country's agricultural population.

After 1940 the pace of land redistribution dropped sharply, and more extensive guarantees were given to private owners that their land would not be expropriated. Nevertheless the land redistribution process continued, and was extended to areas of low population density. In many of these areas land was not distributed to existing ejido communities but to new ones set up for receipt of land. In the 1960s, under peasant pressure for renewed land redistribution, the pace of redistribution increased once again. Nearly all the lands affected in this period were pastures or arid lands, and of very low productive capacity. However, a small percentage of the area distributed to newly created ejidos was in newly irrigated, highly productive lands. As of 1960, roughly 26 percent of all land in farms and 43 percent of the cropland was held in ejidos; and ejidatarios constituted 42 percent of the rural population. By 1970 a new distribution effort had raised these percentages to 43, 51, and 66, respectively.

Two basic types of ejido exist. (1) "Individual ejidos," in which landownership is legally vested in a community, but cropland is allocated on a semi-permanent basis by elected ejido managers to ejido members for family farming. These lands are reallocated to some extent as family numbers and needs change; and some lands are reserved for community purposes. 1/ Ejido lands cannot be sold or transferred to

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1/ Generally it is grazing lands, forests, barren lands, and village nuclei that are held communally.

non-members of the ejido; they may sometimes be rented to outsiders by managers on behalf of the ejido. (2) "Collective ejidos," in which land resources are pooled for collectively organized production. As of 1960 <sup>1/</sup> about 95 percent of all ejidos were of the individual type, the remainder being collective or semi-collective. During the Cardenas administration between 700 and 800 collective ejidos were established, about half of these in the Laguna region. In most cases these have functioned as semi-collective enterprises, with part of the land farmed or part of the operations performed individually. <sup>2/</sup> Initially one collective group was set up in each ejido; later, there was a tendency for the original groups to split into smaller ones, and many collective or semi-collective ejidos evolved into individual ejidos. By 1960 the number of Mexican ejidos in which collective groups still operated had fallen to about half the original number.

The Mexican government has never intended to do away entirely with large commercial farms, and even during the radical Cardenas administration large farmers selectively received property guarantees against expropriation within the legal land ceiling. Since 1940 the Mexican government's agricultural policies have been concerned primarily with productivity rather than equity. Consequently, credit, technical assistance, and other public services have been concentrated on the more commercialized ejido and private sectors, to the exclusion of smaller and poorer ejidatarios and private smallholders. In the 1920s an Ejido Bank (Banco de Credito Ejidal) was established to supply credit to ejidatarios receiving land under the reform. Since ejidatarios have no individual titles to land they do not qualify for commercial bank credit. Beginning in the 1930s, ejido credit cooperatives were formed to channel credit from the Bank to individual ejidatarios. But with limited resources this program has never reached all ejidatarios, and has served only the more prosperous and commercially oriented--about 15-20 percent of the total.

Despite the prewar achievements of the Mexican reform, problems of rural poverty and landlessness have reappeared. By 1940 half of the Mexican peasants had been given land, rural landlessness was significantly reduced, and the rural income distribution had improved markedly over the pre-reform situation. But since that time rural population growth has swollen the category of landless rural families, and big landholdings still loom large in agriculture (Table 7). Since 1970 there has been an increasing concern with rural poverty, and active discussion and initiation of new programs in Mexico. It is not possible, however, to see how these new initiatives will turn out nor to discuss them adequately in this report.

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<sup>1/</sup> The most recent date for which data are available.

<sup>2/</sup> Seldom did all ejidatarios choose to enter the collectives; usually some preferred to farm individually. Often the members of collective ejidos also farmed small ejido parcels outside the collective operation. In some cases ejido cooperatives were established in which certain operations were performed collectively and other operations were carried out individually on family parcels.

Table 7: MEXICO, CHANGES IN SIZE DISTRIBUTION OF  
LANDHOLDINGS, TOTAL LAND IN FARMS

|                          | Number       |           | Area          |           | Average size<br>in hectares |
|--------------------------|--------------|-----------|---------------|-----------|-----------------------------|
|                          | 000          | %         | 000 has       | %         |                             |
| <u>Pre- Reform, 1923</u> |              |           |               |           |                             |
| A. Private Farms:        |              |           |               |           |                             |
| Less than 5              | 367          | 59        | 1,230         | 0.8       | 3                           |
| 5 - 100                  | 201          | 32        | 8,660         | 5         | 43                          |
| 100 - 1,000              | 41           | 7         | 19,100        | 12        | 466                         |
| Over 1,000               | 13           | 2         | 130,115       | 82        | 10,009                      |
| B. Ejidatarios           | <u>0</u>     | <u>0</u>  | <u>0</u>      | <u>0</u>  | <u>0</u>                    |
| Total                    | 622          | 100       | 159,102       | 100       | 256                         |
| <u>Post Reform, 1970</u> |              |           |               |           |                             |
| A. Private Farms:        |              |           |               |           |                             |
| Less than 5              | 522          | 18        | 881           | 0.7       | 1.7                         |
| 5 - 100                  | 313          | 11        | 8,436         | 6         | 27                          |
| 100 - 1,000              | 65           | 2         | 18,986        | 15        | 292                         |
| Over 1,000               | 10           | 0.3       | 41,840        | 32        | 4,184                       |
| B. Ejidatarios           | <u>1,986</u> | <u>69</u> | <u>60,724</u> | <u>46</u> | <u>30</u>                   |
| Total                    | 2,896        | 100       | 130,867       | 100       | 45                          |

Source: See Appendix A.

C. Bolivia

Bolivia's land reform was the direct result of the Revolution of 1952. Prior to the Revolution land concentration was extreme,<sup>1/</sup> in large part due to an 1866 law of the Melgarejo regime which effectively deprived Indian communities of their legal rights to land for non-payment of taxes. In 1952 two-thirds of Bolivia's population was rural, with a majority living on traditional haciendas located chiefly in remote, arid and generally

<sup>1/</sup> 92 percent of all land in farms was held in units of 1,000 hectares or larger; 82 percent of all owners controlled 1 percent of the land.

backward mountain areas. In the late 1940s rural conflicts erupted, and "sindicatos"--unions of farm workers--were established but suppressed. The Revolution of 1952, initially an urban movement, soon led to a resurgence of the peasant sindicatos; organized peasants invaded hacienda lands, drove out owners and redistributed land among themselves. In some cases they organized sindicato production cooperatives.

Against this backdrop of violence and unrest, an agrarian reform law was drawn up in 1953. Under the law, large inefficient "latifundia" were to be expropriated in their entirety, but efficient "agricultural enterprises" and medium-sized farms were to be left with a reserve of variable size based on land quality. The terms of the law were complicated, and the distinction between latifundio and agricultural enterprise was subject to interpretation and manipulation. Since the initiative for redistribution was almost always a peasant occupation of land, the actual division of the land by the courts in different areas tended to reflect the political strength of local sindicato organizations as against the persistence of local landowners in fighting campesinos' claims, rather than the precise legal distinctions. The law provided for owner indemnification in 8 percent bonds for land expropriated, and for beneficiary payments for land received. But neither of these occurred; and with hyper-inflation in process such bonds would have been nearly worthless if they had been issued.

The de facto land redistribution was rapid in most areas and was largely complete by 1955. Thus, within 2 to 3 years about half of Bolivia's rural families had become farm operators, free of burdensome obligations to hacendados, and presumptive landowners. But the certification of land titles by the SNRA 1/ has already taken over two decades, and is still far from complete. 2/ Both beneficiary and reserve lands required new titles. About 37 percent of the land in farms had been titled by 1970, and less than 30 percent of all peasant families had received title to land. Approximately two-thirds of all land titled by the SNRA to date has gone to land reform beneficiaries, one-third to estate owners. About one-fourth of all cultivable land going to beneficiaries was collectively titled; but the sindicato production cooperatives did not function for long, and by the early 1970s almost all such land had been distributed in individual parcels.

Throughout the post-war period the colonization of unsettled lands has received considerable support from the Bolivian government and foreign lending institutions. But recent studies indicate that spontaneous internal

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1/ Servicio Nacional de Reforma Agraria, the land reform agency.

2/ Less than a third of those eligible had received titles by 1970. The delay in land titling is attributable to the complex judicial procedures set up by the law for determining expropriability of land and rights of landowners and campesinos, and to the low level of funding of the SNRA over most of the period. Disputed cases averaged 6-7 years in duration, some lasting over a decade.

migration has had a greater impact than government-sponsored colonization projects. Much of the expansion of the eastern frontier behind the Andes mountains has taken the form of large-scale ranching enterprises, some of which even exceed the 50,000 hectares allowed by law. This, together with the widely varying impact of land redistribution, which left livestock estates relatively unaffected in some mountainous parts of Bolivia, has meant that nearly two-thirds of the nation's farm land is still in holdings over 1,000 hectares (see Table 8). Only 10 percent of crop lands, however, remains in these large units. Government programs to supply services to reform beneficiaries were relatively minor, due largely to the limited resources of the Bolivian government.

Table 8: BOLIVIA, CHANGES IN SIZE DISTRIBUTION OF LANDHOLDINGS, TOTAL LAND IN FARMS

|                          | Number     |           | Area         |           | Average size<br>in hectares |
|--------------------------|------------|-----------|--------------|-----------|-----------------------------|
|                          | 000        | %         | 000 Has.     | %         |                             |
| <u>Pre- Reform, 1950</u> |            |           |              |           |                             |
| A. Private Farms         |            |           |              |           |                             |
| Less than 5              | 51         | 60        | 74           | 0.2       | 1.4                         |
| 5 - 100                  | 22         | 26        | 462          | 1.4       | 21                          |
| 100 - 1,000              | 6          | 7         | 2,101        | 6         | 350                         |
| Over 1,000               | 0          | 6         | 30,105       | 92        | 5,018                       |
| B. Land Reform           |            |           |              |           |                             |
| Beneficiaries            | <u>6</u>   | <u>0</u>  | <u>0</u>     | <u>0</u>  | <u>n.a.</u>                 |
| Total                    | 85         | 100       | 32,740       | 100       | 385                         |
| <u>Post-Reform, 1970</u> |            |           |              |           |                             |
| A. Private Farms         |            |           |              |           |                             |
| Less than 5              | 51         | 14        | 74           | 0.2       | 1.4                         |
| 5 - 100                  | 22         | 6         | 462          | 1         | 21                          |
| 100 - 1,000              | 4          | 1         | 1,122        | 3         | 280                         |
| Over 1,000               | 3          | 1         | 21,292       | 65        | 7,097                       |
| B. Land Reform           |            |           |              |           |                             |
| Beneficiaries            | <u>289</u> | <u>78</u> | <u>9,792</u> | <u>30</u> | <u>34</u>                   |
| Total                    | 369        | 100       | 32,740       | 100       | 89                          |

Source: See Appendix A.

#### D. Venezuela

Land redistribution in Venezuela occurred at a far more advanced stage of economic development than in Mexico or Bolivia, as less than a third of the workforce was in agriculture in Venezuela compared to about three fourths in the other two countries. Venezuela's land reform also differs from reforms in other Latin America in two major respects. First, this oil-rich country has paid handsome compensation to landowners whose estates were expropriated. Second, after a brief initial period of private land redistribution, the reform evolved into what is essentially a colonization program. More public lands have been affected than private, and the large estate system has not been seriously threatened. The key to this result was the existence of large areas of unsettled public lands suitable for crop cultivation, and a low overall population density. Historically the country's population has been concentrated along the northern seacoast, where most of its economic activity including market oriented agriculture was located. Since the Second World War Venezuela's agricultural growth has been one of the most rapid in Latin America. Expansion of the agricultural frontier inland from the coast has been the most important factor in this growth.

When the AD Party 1/ first came to power in 1945, peasant unionization was promoted and a very modest land reform program was initiated. In 1948 a land reform law was enacted, but it was never implemented because later in that year the AD government was replaced by the conservative regime of Perez Jimenez. When Perez Jimenez was overthrown and the AD Party returned to power in 1958, peasant invasions of estate lands erupted in several parts of the country. In 1960 a new land reform law was enacted which based land redistribution on the concept of social function of property ownership; the maximum limits on land size are quite generous. 2/ As in Mexico, the government does not take the initiative in expropriating estate lands; petitions for land redistribution must be presented by peasant groups. In general the affected estates have been distributed in their entirety. Compensation to landowners is made part in cash and part in bonds. 3/ Under the law, land reform beneficiaries were to

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1/ Accion Democratica--Democratic Action Party--founded by Romulo Betancourt.

2/ Landowners may hold from 150 to 5,000 hectares, depending upon the quality of their land, the water supply and the distance of their estates from markets. Landowners near markets and with top-quality land may retain 150 hectares of land; owners with poor quality land in remote areas may retain 5,000 hectares of land.

3/ Cash for capital assets, bonds for land. Owners of high-quality, well exploited lands near market centers receive larger payments in cash, and shorter term bonds, than owners of low quality, underexploited lands in remote areas. Very rarely have well-exploited lands been affected by the land reform process.

reimburse the state over a twenty year period for the value of assets received. However, the government has not enforced payment schedules and most peasants have not paid for assets received.

The Venezuelan land reform agency, the IAN,<sup>1/</sup> had been able to meet peasant demands for land redistribution without seriously threatening the large estate sector. Initially, it was land invasions by sindicatos in politically organized areas that motivated the government to purchase or expropriate estates in commercial farming areas; but by 1963 the sindicato movement had been largely co-opted by the national government. The reform program emphasis then shifted from estate redistribution to colonization, to the consolidation of reform settlements already started, and to rural development programs such as education, housing, credit and technical assistance. These have been financed out of the public sector's oil revenues.

The pace of land redistribution has fluctuated sharply in response to major political events. During and immediately after the peasant invasions of the late 1950s large amounts of private and public lands were redistributed. But later in the Betancourt administration budgetary restrictions, and a split within the AD Party, resulted in a marked decline in land redistribution. After the election of President Leoni in 1964 the pace of redistribution increased sharply again; this time over two-thirds of the lands affected came from the public domain. After the first two years of Leoni's administration the volume of private lands affected fell each year while that of public lands tended to rise. Then, during the Caldera administration (1969-1973), record amounts of public land were given out but private land redistribution declined further. Over the entire period 1959 to 1973 three-fourths of all lands taken for redistribution came from the public domain. <sup>1/</sup>

By 1973 approximately 9 million hectares of land had been taken over by the IAN, but only 1.6 million hectares of this had been redistributed to the 128 thousand beneficiaries. As of that date roughly 35 percent of all rural families had received land under the land reform program, while only about 12 percent of the country's private estate land had been affected. Land titling has lagged behind the redistribution process: by 1973 roughly two-fifths of all beneficiaries had clear titles, <sup>2/</sup> 30 percent had provisional titles, and 27 percent were merely "occupants" of land controlled by the IAN.

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<sup>1/</sup> Instituto Agrario Nacional = National Agrarian Institute

<sup>2/</sup> In the period 1960-63 over half (54 percent) of all lands affected were private; during 1964-68 the proportion fell to 32 percent; it fell to 12 percent in 1969-73.

<sup>3/</sup> 35 percent of beneficiaries had individual titles, 7 percent had collective ones.

Land reform settlements known as "asentamientos" were established. These do not function as economic enterprises (as did asentamientos in Chile): they are administrative units for the implementation of land reform and for such follow-up measures as providing housing, potable water, credit, and technical assistance. In nearly all cases land has been parceled among individual beneficiaries. In many of the asentamientos service cooperatives were established for supplying credit and other needs,<sup>1/</sup> and the government has generally been more active in providing public institutional support to beneficiaries than in Mexico or Bolivia. In terms of farm productivity, however, these programs have been rather ineffective--see discussion in the next chapter.

Table 9: VENEZUELA, CHANGES IN SIZE DISTRIBUTION OF LANDHOLDINGS, TOTAL LAND IN FARMS

|                                     | Number   |            | Area          |           | Average size<br>in hectares |
|-------------------------------------|----------|------------|---------------|-----------|-----------------------------|
|                                     | 000      | %          | 000 Has.      | %         |                             |
| <u>Pre - Reform, 1960</u>           |          |            |               |           |                             |
| A. Private Farms &<br>Reform Benef. |          |            |               |           |                             |
| Less than 5                         | 126      | 54         | 267           | 1.3       | 2                           |
| 5 - 100                             | 95       | 41         | 1,651         | 7         | 17                          |
| 100 - 1,000                         | 10       | 4          | 2,806         | 13        | 281                         |
| Over 1,000                          | <u>4</u> | <u>1.5</u> | <u>17,403</u> | <u>79</u> | <u>4,351</u>                |
| Total                               | 238      | 100        | 22,127        | 100       | 93                          |
| B. Of which, Land<br>Reform Benef.  | 0        |            | 0             | 0         | n.a.                        |
| <u>Post-Reform, 1973</u>            |          |            |               |           |                             |
| A. Private Farms &<br>Reform Benef. |          |            |               |           |                             |
| Less than 5                         | 122      | 43         | 274           | 1.0       | 2                           |
| 5 - 100                             | 136      | 48         | 2,664         | 10        | 20                          |
| 100 - 1,000                         | 20       | 7          | 5,864         | 22        | 293                         |
| Over 1,000                          | <u>4</u> | <u>1.4</u> | <u>17,688</u> | <u>67</u> | <u>4,422</u>                |
| Total                               | 283      | 100        | 26,490        | 100       | 94                          |
| B. Of which, Land<br>Reform Benef.  | 115      | 41         | 5,748         | 22        | 50                          |

Source: See Appendix A.

<sup>1/</sup> See next page for footnote.

E. Peru

Agriculture and land tenure in Peru are strongly affected by contrasting physical conditions. (1) Along the west coast is a very dry strip of land which is highly productive when irrigated, largely by rivers and canals, and where most of the food and cash crops are grown. The best coastal lands, pre-reform, were held by large modernized sugar and cotton plantations, and by rice and potato estates; corn and other vegetables are grown on smaller farms in the fringes and hilly parts of irrigated areas. (2) In the relatively dry and mountainous highlands of the Andes, there were some large estates, predominantly livestock ranches but also mixed farming haciendas, along with traditional Indian communities. Most of the highland crop land, however, was in small subsistence farms. (3) The vast tropical rainforests behind the Andes: these are too little populated to include in this discussion, although there has been some increase in homesteading there. Most of the country's wealth and its main cities are found on the coast, which has a predominantly urban population,<sup>1/</sup> while the highlands are largely rural and poor. As of 1972, the population was distributed as follows: coastal areas 43 percent, highlands 47 percent, with 10 percent in the "selva" back of the Andes.

Land reform had entered the political dialogue as early as the 1956 election, but without results. In 1963, when organized peasants occupied estates in the central and southern highlands, the Belaunde government decided to purchase some estates from their owners and transfer them to the peasants. In 1964 a land reform law was adopted <sup>2/</sup> which called for the redistribution of estate lands in excess of 150 hectares of irrigated farmland or the equivalent in other types of land, and transfer of property rights over usufruct plots to the hacienda colonos. This law was not implemented aggressively, however, and by 1969 only about 4 percent of the country's land had been redistributed among 1 percent of the rural families. Nevertheless, expectations had been aroused by the existence of the law; in some areas peasant unions began to agitate for land, and many owners perceived a threat to their properties.

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<sup>1/</sup> 32% of Peru's population were living in the six largest coastal cities in 1972.

<sup>2/</sup> No. 15037

Footnote 1 of previous page:

In general, the cooperative credit program has not functioned well. In 1974 Venezuela's Agricultural Development Bank (Banco Agricola y Pecuaria) cancelled the debts of all small farmers as a result of cumulative delinquencies in repayment of loans. According to officials of the Bank and of the Ministry of Agriculture, land reform beneficiaries often join credit cooperatives solely for the purpose of receiving loans which they do not expect to repay.

In 1969 the new military government of Velasco enacted a second land reform law;<sup>1/</sup> and it dramatically initiated a new phase of accelerated land redistribution by expropriating and collectivizing the 12 coastal sugar plantations,<sup>2/</sup> which were Peru's most prominent agricultural enterprises. Under this law, all large estates and all estates not managed directly by their owners are to be expropriated irrespective of size. Estates are expropriated in their entirety; no reserves are left to the former landowners.

Peru's land redistribution program has specified a target for completion; by 1976 the government plans to have redistributed half of the country's farmland among one-third of the rural population. By August 1973 this process was about half completed, with approximately one-quarter of the country's land redistributed among one-fifth of the rural population. Compensation for crops in the field, livestock and installations is made in cash; bonds are given for land. Under the law, beneficiaries are to reimburse the government for assets received over a twenty year period. Peasant organizations have contended, however, that such payments should not be made, and it seems likely that the government will cancel the agrarian debt.

From the outset of the Velasco government's reform program a strong emphasis was placed upon cooperative organization.<sup>3/</sup> Estates have been transformed either into agricultural production cooperatives called CAPs (Cooperativas Agrarias de Produccion), or into mixed cooperative institutions known as SAISs (Sociedades Agrarias de Interes Social). In the CAPs, all land and capital assets are owned collectively by the estate workers. The new enterprises operate most of the lands as collective units; however, the rights of members to farm individual plots of land for themselves and to pasture their livestock on estate lands are continued where they existed before the reform. Expropriated estates in the coastal areas and in most highland areas have been reorganized into CAPs. In highland areas where peasant communities had traditional claims to the lands of livestock ranches, SAISs have been established. These are intended as transitional entities which will in time become CAPs; operations are managed under SAIS committees representing both the workers of the ex-estates and the members of neighboring peasant communities. In both types of organization, management is hired by the cooperative and responsible to its elected officers. The entire operation is subject to extensive government supervision.

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<sup>1/</sup> No. 17716

<sup>2/</sup> These plantations had been exempted from expropriation under the previous law.

<sup>3/</sup> This military regime clearly espoused a very different ideology from that of any other military government in the region. How far this orientation will be shifted after the ouster of President Velasco in 1976 remains to be seen.

In addition, highland estate lands have been distributed in some cases directly to peasant communities; and in isolated instances estate lands have been subdivided into family-sized parcels. The 1976 targets for distribution of land into different forms of organization are shown in Table 10.

Table 10: ORGANIZATIONAL GOALS OF THE PERUVIAN LAND REFORM FOR 1976

| Type of Organization and Ownership | Percent Area Transferred | Percent Beneficiaries |
|------------------------------------|--------------------------|-----------------------|
| Individual titles                  | 4                        | 18                    |
| Peasant Community titles           | 15                       | 17                    |
| SAISs                              | 39                       | 13                    |
| CAPs                               | <u>42</u>                | <u>52</u>             |
|                                    | 100                      | 100                   |

Source: Background Paper No. 24.

By the end of 1973 the largest and most economically important estates had been expropriated and transformed into CAPs and SAISs which occupied 27 percent of Peru's farm land. By 1976 this figure is targeted to rise to 49 percent (Table 11). The government has already begun a number of special training, technical assistance, and credit programs for the reform sector.

#### F. Chile

The absence of indigenous inhabitants in most of the agricultural regions of Chile at the time of Spanish settlement <sup>1/</sup> differentiates this country and its land reform experience from others described here. Chilean haciendas never had as complete a "feudal" relationship with farm workers as was found elsewhere. By 1800 much of Chile's best farm land was consolidated into large cattle estates; properties above a particular size could be passed from one generation to the next in a family without subdivision, whereas smaller farms had by law to be divided among heirs--leading to minifundia. Later big owners began to shift from cattle to wheat, and they established a labor force of tenant farmers known as "inquilinos." As rural population grew, the status of inquilinos gradually declined; some continued

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<sup>1/</sup> The most important indigenous group was the Mapuche Indians of Cautin province in the south, not a major agricultural area.

Table 11: PERU, CHANGES IN SIZE DISTRIBUTION OF  
LANDHOLDINGS, TOTAL LAND IN FARMS

|  | Number     |           | Area         |           | Average Size<br>in Hectares |
|--|------------|-----------|--------------|-----------|-----------------------------|
|  | 000        | %         | 000 Has.     | %         |                             |
| <u>Pre-Reform, 1961</u>                |            |           |              |           |                             |
| A. Private Farms                       |            |           |              |           |                             |
| Less than 5                            | 700        | 83        | 1,036        | 6         | 1.5                         |
| 5 - 100                                | 132        | 16        | 1,841        | 10        | 14                          |
| 100 - 1,000                            | 9          | 1         | 2,574        | 14        | 286                         |
| Over 1,000                             | 2          | 0.2       | 12,271       | 69        | 6,136                       |
| B. Land Reform Beneficiaries <u>/a</u> |            |           |              |           |                             |
| Independent                            | 0          | 0         | 0            | 0         |                             |
| In Groups                              | <u>0</u>   | <u>0</u>  | <u>0</u>     | <u>0</u>  |                             |
| Total                                  | 844        | 100       | 17,722       | 100       |                             |
| <u>Mid-Reform, 1973</u>                |            |           |              |           |                             |
| A. Private Farms                       |            |           |              |           |                             |
| Less than 5                            | 700        | 66        | 1,036        | 6         |                             |
| 5 - 100                                | 132        | 12        | 1,841        | 10        |                             |
| 100 - 1,000                            | 9          | 0.8       | 1,994        | 11        |                             |
| Over 1,000                             | 1.5        | 0.1       | 7,509        | 42        |                             |
| B. Land Reform Beneficiaries <u>/a</u> |            |           |              |           |                             |
| Independent                            | 39         | 4         | 480          | 3         |                             |
| In Groups                              | <u>179</u> | <u>17</u> | <u>4,862</u> | <u>27</u> |                             |
| Total                                  | 1,062      | 100       | 17,722       | 100       |                             |
| <u>Target, 1976</u>                    |            |           |              |           |                             |
| A. Private Farms                       |            |           |              |           |                             |
| Less than 5                            | 700        | 59        | 1,036        | 6         | 1.5                         |
| 5 - 100                                | 132        | 11        | 1,841        | 10        | 14                          |
| 100 - 1,000                            | 9          | 0.7       | 1,514        | 9         | 168                         |
| Over 1,000                             | 1          | 0         | 3,621        | 20        | 3,621                       |
| B. Land Reform Beneficiaries <u>/a</u> |            |           |              |           |                             |
| Independent                            | 61         | 5         | 960          | 5         | 16                          |
| In Groups                              | <u>280</u> | <u>24</u> | <u>8,650</u> | <u>49</u> | <u>31</u>                   |
| Total                                  | 1,185      | 100       | 17,722       | 100       | 15                          |

/a "Independent" - land reform beneficiaries receiving individual land titles. "In groups" - number of beneficiaries in cooperatives and SAIS.

Source: See Appendix A.

to rent land as sharecroppers, but most became wage earners with rights to farm estate plots of 0.5 to 2.0 hectares, and pasture rights for 2 to 5 animals. Nevertheless, they had a position superior to that of the (predominantly Indian) colonos in Mexico, Bolivia or Peru. In the 20th century the large owners introduced mechanization, and tended to reduce the number of inquilinos and rely more extensively on hiring temporary non-resident labor from outside the estate, whose status was clearly below that of the resident inquilinos. It was the latter who constituted the bulk of land reform beneficiaries.

Land reform appeared in Chile at a later stage of economic development than in other countries surveyed here, as indicated by the fact that agricultural families were only 26 percent of the total workforce by 1955. Following the 1958 extension of voting rights to rural workers, the country's first major land reform law was enacted by the conservative Alessandri government in 1962.<sup>1/</sup> This law was difficult and costly to implement, and provided for expropriation only where very low productivity or virtual abandonment of estates could be proved. In 1967, after two years of debate in Congress, a new land reform law <sup>2/</sup> was passed under the Frei administration, along with a constitutional amendment allowing for expropriation with payment to owners. The 1967 law created a new unit of land measurement known as the Basic Irrigated Hectare (BIH), and stated that with some exceptions no farms could hold over 80 BIH. <sup>3/</sup> In most cases owners whose estates were affected by the land reform were allowed to retain a "reserve" of 40 to 80 BIH. Estates which were severely underutilized, which employed "anti-social labor systems," which failed to comply with legal minimum wage rates or the country's social legislation, or on which severe labor problems jeopardized production could be expropriated in their entirety. Whereas the few estates redistributed under the 1962 law were paid for in cash, most land owners expropriated under the 1967 law received for their land 10 percent in cash and the remainder in 25 year agrarian bonds. <sup>4/</sup> All cattle, machinery, and houses were to be paid for in cash.

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<sup>1/</sup> No. 15020

<sup>2/</sup> No. 16640

<sup>3/</sup> The country was divided into zones on the basis of an aerial survey, and "coefficients of equivalents" were devised for each zone. The standard for a BIH was "one hectare of high quality irrigated land, on the Maipo river basin." A very fertile farm of 50 hectares with plenty of water might be judged expropriable (equivalent to more than 80 BIH), whereas a farm of several thousand unirrigated hectares in an arid zone might fall below the legal limit.

<sup>4/</sup> Eighty percent of the estates expropriated under the 1967 law during the Frei administration qualified for this treatment. The remaining twenty percent, which were poorly exploited or abandoned, were paid for with 5 percent cash and the remainder in 30 year bonds.

Under the Frei administration the land reform agency, CORA, 1/ established semi-collective interim management units known as "asentamientos" on expropriated estates. The greater part of the estate land was to be worked as a communal unit for a period of three to five years under the management of an elected workers' council, with CORA supervision; most of the inquilino plots continued to be farmed by individuals. At the end of this period the "asentados" (members of the asentamiento) were to decide by vote whether to continue collective production or to parcel all of the lands into individual farms.

The asentamientos did not function well for several reasons. Government credits and "advances" against year-end profits were provided quite liberally without relation to enterprise productivity or profitability; thus, asentados had little incentive to work hard or manage asentamiento production well. Asentamiento accounts were poorly kept and fell behind events; most loans were not repaid. But production increased (see discussion below).

The Frei government's formal land redistribution goal had been to distribute land among 100,000 peasant families, but in fact it reached only about one-fifth of this number. Some 1,400 estates, with one-fifth of the total area in farms and one-eighth of the cropland, were expropriated and redistributed among 5 percent of the rural families. 2/ By the end of 1969, 568 asentamientos had been established 3/ with 18,618 families on over 2 million hectares of land. Of these, 246 had completed the statutory period before definitive land title distribution, but definitive titles had been provided for only 109 of these by 1970;4/ 73 more were processed in 1971-72.

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1/ Corporacion de Reforma Agraria.

2/ This relatively small number of beneficiaries reflects the capital intensity of estate farming (compared to the labor intensity on farms outside the reformed sector), and the exclusion of most non-resident estate workers from beneficiary status.

3/ The number of asentamientos established falls short of the number of estates expropriated for two reasons: in many cases lands from several estates were fused into a single asentamiento; more importantly, there was an administrative lag between expropriation and the establishment of asentamientos.

4/ The time lag in title distribution resulted in large part from conflicts between land reform beneficiaries and CORA over the form of definitive adjudication: CORA wanted the asentamientos to be transformed into production cooperatives, but land reform beneficiaries usually wanted individual parcelization. Of the 109 asentamientos for which definitive land titles had been distributed, only 14 were assigned in ownership to a cooperative.

When the Allende government came to power in 1970 the pace of land redistribution was increased sharply, although it continued to operate through CORA under the Frei legislation. Peasant organizations spread and many were "radicalized" by government supporters; estate lands were occupied forcibly by peasants in several parts of the country, frequently to bring about expropriation. 1/ From the beginning of 1971 until mid-1973, 4,000 estates were taken over for land reform, and the share of the reform sector increased to nearly half of all land in farms and two-fifths of the cropland distributed among 14 percent of the rural families.

In August, 1973 the Allende regime was replaced by a military government, which has been reversing the distribution process. Asentamientos which have been unable to pay for the land they were awarded under previous governments are required to return it to previous owners. Asentamientos which can pay for their land must divide it all among members into individually owned parcels, and the asentamiento then ceases to exist. There are no hard data on the speed or results of this reversal process.

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1/ Between 1967 and 1969 peasant unions and organizations took possession of 183 estates. Once occupied, these estates could be legally expropriated under a provision of the 1967 land reform law which permitted expropriation when "social unrest" threatened the operation of the estate. After the election of Allende, estate invasions increased sharply; in 1970-1971 over 2,000 farms and estates were occupied. In most cases peasant occupations of estate lands were organized by the peasants themselves, or by local leaders without direct intervention on the part of the government, but in some cases public officials encouraged occupations.

Table 12: CHILE, CHANGES IN SIZE DISTRIBUTION OF LANDHOLDINGS, TOTAL LAND IN FARMS /a

| Size Categories in Basic Irrigated Hectares (BIH) | Number    |           | Area                |           | Average Size in BIH |
|---|-----------|-----------|---------------------|-----------|---------------------|
|   | 000       | %         | 000 BIH             | %         |                     |
| <u>Pre-Reform 1965</u>                            |           |           |                     |           |                     |
| A. Private Farms                                  |           |           |                     |           |                     |
| Less than 5                                       | 190       | 81        | 200                 | 10        | 1                   |
| 5 - 20  | 27        | 12        | 263                 | 13        | 10                  |
| 20 - 80   | 12        | 5         | 460                 | 22        | 38                  |
| Over 80   | 5         | 2         | 1,145               | 55        | 229                 |
| B. Land Reform Beneficiaries                      | <u>0</u>  | <u>0</u>  | <u>0</u>            | <u>0</u>  | <u>n.a.</u>         |
| Total   | 233       | 100       | 2,068 <sup>/a</sup> | 100       | 9                   |
| <u>Post-Reform 1972</u>                           |           |           |                     |           |                     |
| A. Private Farms                                  |           |           |                     |           |                     |
| Less than 5                                       | 190       | 66        | 200                 | 10        | 1                   |
| 5 - 20  | 27        | 9         | 270                 | 13        | 10                  |
| 20 - 80   | 18        | 6         | 806                 | 39        | 45                  |
| Over 80   | 0.2       | 0         | 60                  | 3         | 300                 |
| B. Land Reform Beneficiaries                      | <u>54</u> | <u>19</u> | <u>732</u>          | <u>35</u> | <u>14 /a</u>        |
| Total   | 289       | 100       | 2,068 <sup>/a</sup> | 100       | 7                   |

/a In this table all land area figures are in BIH (Basic Irrigated Hectares) rather than actual hectares. The 2 million BIH total corresponds to about 20 million hectares; the average of 14 BIH per reform beneficiary corresponds to 164 hectares.

Source: See Appendix A.

CHAPTER III

EMPIRICAL FINDINGS FROM CASE STUDIES IN MEXICO, BOLIVIA, PERU, CHILE AND  
VENEZUELA

Introduction

This chapter will outline the findings from field work in the five countries studied, and assess the evidence on the economic results of land reform in each case. Economic results with which we are concerned here are mainly such changes in agricultural production and in the welfare and incomes of the affected parties as can be attributed to land reforms on the basis of available data.

In the search for useful empirical generalizations, it is desirable to organize the land reform experiences in a typology reflecting the most significant aspects of reform. There are a great many variables which have a bearing on production and incomes and which should, under ideal conditions, be given consideration in any effort to analyze causes and distinguish the effects of land redistribution. Among the more significant variables would be the following:

Type of pre-reform lands distributed--whether traditional haciendas, modern commercial estates, or uncultivated lands.

Type of farming--crop vs. livestock production, or mixtures; presence or absence of irrigation; land quality and rainfall; technology (use of chemicals and machines for crops, or specialized livestock production such as dairy or poultry); relative capital intensity of methods; monocropping vs. mixed farming; etc.

Socio-economic characteristics of beneficiaries--colonos; wage earners (resident or casual); or indigenous villagers.

Expropriation model--taking whole estates; taking most of land but leaving reserves and other resources to owners; or taking only colono plots.

Organization of beneficiaries--Individually owned family farms (variable sizes); collective ownership with family farming or mixed farming; or collective production units.

Public support policies--provision of credit; extension services; marketing and input supply arrangements; infrastructure investments; product price supports.

General economic conditions--growing or stagnant markets, non-agricultural employment trends, population and economic growth rates.

Typologies could in principle be built around various combinations of these variables; but when there is a limited number of cases and much imperfect information, an elaborate formal structure of variables would not be justified by the amount of data within each narrowly defined category. What seems most useful is the following. (1) For sequence of presentation, we will group national examples of land reform by the type of pre-reform lands distributed: traditional haciendas, modern commercial estates, or uncultivated lands. (2) In drawing summary conclusions, a major distinction will be made between post-reform cultivation, whether with small family farming by reform beneficiaries (whether land titles are individual or collective), or in larger scale collective production units. Within each category, i.e., within each case of a national experience with one type of reform, the pertinent experiences in the countries studied will be examined in an effort to sort out the major causes for what is found, and to assess the reliability and scope of the available evidence.

#### A. Land Reform on Traditional Haciendas

1. Ejidos and estate reserves in Mexico. Close to 80 percent of the ejidos established in Mexico by 1970 had obtained their land from traditional haciendas, and over 90 percent of this land was allotted to family farms with some communal reserves. (The transfer of commercial estates to collective ejidos, and the organization of ejidos on newly irrigated land, will be treated in separate categories below.) For analysis of production, the biggest change was the shift from hacienda farming into small family farms (the ejido communal reserves were not made into producing enterprises.) At the same time the Mexican policy of leaving relatively large land reserves to estate owners, guaranteed against further expropriation, was also significant for production.

Since this land reform process has by now affected two thirds of the farmers and half of the crop land in the country, and since the major redistribution had been accomplished by 1940, we are dealing with a nationwide shift which has had time to exhibit its effects on the country's agricultural sector. And postwar Mexican agriculture has been one of the larger success stories: from 1940 to 1960 output rose by an average annual rate of 4.6 percent (compared to 2.7 percent for Latin America), a sustained growth which is not only high for so large a country but which is notable for having taken place after a period of very much slower increase. However, the specific effects of land reform on this expansion of Mexican agriculture are difficult to isolate. The evidence cited here derives principally from the work of Shlomo Eckstein; 1/ a basic source for statistical materials should be noted. 2/

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1/ Background Papers Nos. 19 and 21--see list of Background Papers prepared for this land reform study in the introduction.

2/ The source for a variety of statistical materials on Mexico throughout this report was: Estructura Agraria y Desarrollo Agricola en Mexico (abbreviated in reference to Estructura Agraria), Fondo de Cultura Economica, Mexico, 1974.

The creation of ejido farm units was not centrally planned or guided by economic criteria. Adjacent villages put in their claims to estate lands, which were then declared eligible for expropriation. Whatever land the beneficiaries got (i.e. the area not retained by owners) was then allotted to existing village families by localized criteria for equity. Since estate owners retained their best lands, and since nearby village population numbers had no necessary relation to the quantity or quality of the remaining lands, there were both wide variations in the resulting values of the family plots and a general tendency for many of them to be relatively poor in quality and/or small for the support of a family. The villagers who received land had up to then been largely subsistence farmers or non-resident estate workers, and they had few resources to invest in their new farms.

The large increases in Mexican agricultural output were about half attributable to increased productivity, 1/ due in large measure to increased use of "modern" inputs; for most farmers these had to be purchased with bank loans. There was also a considerable national increase in cultivated area; in some regions there were extensive new irrigation works, largely state financed. Improved roads and transport assisted greatly in the growth of marketing. All of these inputs received extensive government support under policies giving priority to farm production rather than equity per se, that is, inputs were directed to those who could make most productive use of them; these tended to be the larger farm units. Ejidatarios, who were generally unable to obtain private bank loans due to non-possession of individual land titles, were served by the state Ejido Bank which was able, with its limited resources, to reach less than a quarter of the ejidos; its policies directed loans toward the more prosperous ejidos producing for the market.

The result of all these policies and conditions was a massive growth in aggregate output, in which the larger private farms and the minority of commercially oriented ejidos have contributed the major share. The minifundists and the majority of ejidatarios tended to lag behind the former groups in the increments to their output and incomes. Though the latter did not decrease their output, there was a cumulative element in the growth process which gave the more successful farms a growing access to further funds and facilities with which they could add to their productivity over time, leading to increasing dualism in the overall structure. This description is, of course, simplified: some of the benefits of new roads, improved seeds and extension services, etc. went to smaller farms; and there was some upward mobility of small private farms and poor ejidos into higher income/output categories making them

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1/ During 1940-61 crop production increased at an average annual rate of 5.1%, cultivated area at 2.4%, and average yields at 2.5% (Estructura Agraria, op. cit., p. 112).

eligible for more credit. But these offsetting trends appear to have been considerably weaker than the predominant ones making for dualism.

This is illustrated in Table 13, which gives the proportionate shares in incremental output of different sized farms (both ejido and private farms) classified by mean value of annual output. The two largest farm classes (D and E), which could be called multi-family farms, accounted for 54 percent of 1960 production and 80 percent of the output growth from 1950 to 1960, although they represented less than 4 percent of total 1960 farm units. The numbers of farm units in 1950 and 1960 indicate some net upward mobility of farms from one category to another, which explains a part of the incremental growth dominance of the upper groups. But the net shifts in farm numbers among categories below the top two groups were relatively modest (one cannot know how much additional upward mobility of some farms was offset by downward mobility of others). Considering that aggregate production rose by 80 percent from 1950 to 1960, its concentration in a small fraction of the total farm units is striking. During the 1960s the number of farm units increased by 20 percent with the creation of almost half a million new ejidos, most of them in the middle and lower size groups. ("Farm units" here refer to ejido members, most of whom were operating family farms, rather than to ejidos per se.)

Table 13: MEXICO: PERCENTAGE SHARES IN 1960 AGRICULTURAL OUTPUT AND 1950-60 OUTPUT GROWTH OF FARMS CLASSIFIED BY VALUE OF OUTPUT; NUMBER OF FARMS 1950-70

| <u>Farm Classes:</u><br>Mean value of<br>annual output<br>(1960 US\$) | <u>Percentage shares in:</u>       |                                       |   | <u>No. of farm units,</u><br>thousands |               |               |
|---|------------------------------------|---------------------------------------|---|--|---------------|---------------|
|   | <u>No. of<br/>farms<br/>(1960)</u> | <u>Value of<br/>output<br/>(1960)</u> | <u>Growth in<br/>output<br/>(1950-60)</u> | <u>(1950)</u>                          | <u>(1960)</u> | <u>(1970)</u> |
| A. Less than 80   | 50                                 | 4                                     | -1  | 1312                                   | 1241          | 1358          |
| B. 80 - 400   | 34                                 | 17                                    | 10  | 800                                    | 821           | 966           |
| C. 400 - 2000   | 13                                 | 26                                    | 11  | 289                                    | 307           | 468           |
| D. 2000 - 8000  | 3                                  | 22                                    | 35  | 27                                     | 67            | 85            |
| E. Over 8000  | <u>0.5</u>                         | <u>32</u>                             | <u>45</u>                                 | <u>8</u>                               | <u>12</u>     | <u>14</u>     |
| Totals  | 100                                | 100                                   | 100                                       | 2437                                   | 2448          | 2911          |

Source: Estructura Agraria, op. cit., pp. 197 ff.

Mexican statistics on income of the larger farm units do not distinguish those which were affected by land reform from those which were unchanged, but a few inferences may be attempted. An important fraction of the lands remaining in relatively large holdings after the reform consisted of the land reserves retained by expropriated estate owners. The policy of leaving owners with generous reserves guaranteed against further expropriation transformed, on a significant national scale, a class of owners of very large traditionalist latifundia, accustomed to easy income without innovation, into a group suddenly reduced in their holdings but still able to muster substantial resources and recover their economic position by improvement in their farming methods. The shock of expropriation would surely provide a new incentive for them to attempt to do this; and the growth in output resulted in large measure from just this kind of innovation by larger landholders. Thus, it may be said that the land reform reserves policy in conjunction with the policy of active support to commercial agriculture must have made a major contribution to the overall outcome--even if the size of the contribution by expropriated owners cannot be isolated and measured.

As for the ejidatarios' family farms created by the reform, it cannot be said that these became progressive, innovating enterprises for the most part. Of the 2.5 million farm units tabulated in the 1960 census 1.4 million were ejido farms, formed largely in the smaller size brackets where the postwar gains in agricultural production were lower. During 1950-60 the average product of ejidos in class A rose by 2.5 percent from 508 to 522 pesos; but in 1970 it was back down to 500 pesos (1970 was a bad crop year, and class A farms suffered worse than others). The situation of class B ejido farmers is somewhat better, though their gains in production and income have been slower than those of larger farmers. Generally, the rate of increase in output on ejidos as a group has been similar to that on small farms (see Table 35 below).

It must be recognized, however, that these relatively stagnant averages for value of product of the majority of ejidatarios does not mean that the incomes of land reform beneficiaries have failed to benefit from reform. The acquisition of new lands (40 percent of cropland) by 54 percent of the nation's agricultural families as of 1940 was clearly a major gain to the greater part of the lowest-income population when it occurred. And these gains were secured for the future by communal ownership with no possibility of sale to non-ejidatarios. This condition may not be ideal in all ways (discussed below) but it has provided a security that was previously lacking, even if the value of this security has been somewhat eroded over time by relatively stagnant agriculture and rural population increase.

Recent field surveys have shown that most of the cash incomes of ejidatario families in classes A and B are derived from off-farm work. Nevertheless, the average of \$40 for 1960 annual farm production of the lowest bracket (Class A, Table 15) is equivalent to almost a ton of maize plus some beans: this provides a minimum supply of family food, independent of market scarcities and fluctuations in employment opportunities. The

ejidatario has been better off than the landless workers with whom he often competes in the labor market. At 1960 minimum wage rates, a fully employed rural worker (250 days per year) would earn \$175; the average rate of rural employment has been estimated at 50 percent or less; this indicates an average income of perhaps \$85 from this source. Ejidatarios obtain some of this income, and in addition have their farm produce which may often mean more to them than its relative money value suggests. Their ties to the land provide not only security in food supply but also a social status clearly above that of the landless worker--i.e. the "peon de campo" which the ejidatario used to be before land reform.

Some of the effects of reform may be seen in trends in the output of maize, which is the staple food of Mexico and particularly for the poor. Up to the 1950s, 60 percent of all cropland was planted to maize; from 1925 to 1940, increases in the areas devoted to maize equalled and in some years exceeded the increases in total cropped land. There had been a clear decline in the yield trend for maize throughout the 1920s and up to the late 1930s, when land distribution reached its climax; and production barely kept pace with population growth. An immediate result of land redistribution was an increase in maize output, as the new owners planted more of their land than old owners in this subsistence food crop. After 1940, however, increases in maize output came chiefly from yield improvements rather than area expansion, and these were considerable.

The 1960 values for ejidatario farm produce in averages for the same farm size groups as those in Table 13 are shown in Table 14. It is apparent that ejido farms, like individually owned farms, have a small minority of highly productive farmers. The top group (D) consists mainly of ejidatarios settled on newly irrigated land; they use far more machinery and derive several times the output per hectare obtained by their poorer equivalents. Group C, though well below group D on all measures except the area of cropland, is reasonably well off: together, they may be termed the "modern" ejido sector, in comparison with the "traditional" sector (groups A and B) which includes 84 percent of ejidatarios. The Ejido Bank reaches mainly the "modern" sector. The average productivity per hectare increases consistently as one moves up from A through D (last column, Table 14). This trend reflects in part the importance of access to irrigation water (average yields per hectare on irrigated land are 4 to 6 times those in rainfed areas). But the productivity trend cannot be attributed only to irrigation; it also indicates the great importance of access to services, credit, etc. in Mexico in the postwar years, and the relative neglect of the traditional sector among ejidos.

The trend toward increasing dualism within the ejido sector may be seen in Table 15. Thus, during the decade 1950-60 the average output per ejidatario farm increased only 20 percent in the traditional group, an annual rate of 1.8 percent (less than population growth), while in the modern group the gain was three times as large; and in 1970, when output decreased as a result of bad weather, the traditional sector suffered more. From supplying about half the total ejido production in 1950, the "modern" farms were producing nearly two-thirds of it ten years later and three

Table 14: MEXICO: OUTPUT, AREA, INPUTS AND YIELDS OF EJIDO FARMS, AVERAGES FOR SIZE CLASSES, 1960  
(money values in 1960 US dollars)

| Farm classes:               |                           | Average per Class |                      |                 |                 |                |                       |  |
|-----------------------------|---------------------------|-------------------|----------------------|-----------------|-----------------|----------------|-----------------------|--|
| Mean value of annual output | No. of Ejido farms (000s) | (%)               | Value of Output (\$) | Crop-land (ha.) | Irrigated (ha.) | Machinery (\$) | Productivity (\$/ha.) |  |
| A. < 80                     | 670                       | 46                | 45                   | 2.8             | 0               | 8              | 16                    |  |
| B. 80- 400                  | 530                       | 38                | 270                  | 7               | 0.2             | 25             | 39                    |  |
| C. 400-2000                 | 200                       | 14                | 900                  | 15              | 4               | 200            | 60                    |  |
| D. > 2000/a                 | 35                        | 2                 | 3500                 | 17              | 16              | 1200           | 206                   |  |
| Totals                      | 1435                      | 100               |                      |                 |                 |                |                       |  |

/a Note that Group E is not broken out from Group D as in Table 13.

Source: Estructura Agraria, op. cit. pp. 197 ff.

Table 15: MEXICO: MAIZE OUTPUT ON EJIDOS, 1950-60

| Farm Class               | Thousands of Ejido Farms |              |              | Percent of Output |      |      | Increase in Output per farm |         |
|--------------------------|--------------------------|--------------|--------------|-------------------|------|------|-----------------------------|---------|
|                          | 1950                     | 1960         | 1970         | 1950              | 1960 | 1970 | 1950-60                     | 1960-70 |
| Traditional (A+B) /a (%) | 1146<br>(87)             | 1200<br>(84) | 1492<br>(78) | 48                | 36   | 26   | 20%                         | -15%    |
| Modern (C+D) /a (%)      | 180<br>(13)              | 235<br>(16)  | 422<br>(22)  | 52                | 64   | 74   | 62%                         | - 7%    |
| Totals                   | 1326                     | 1435         | 1914         |                   |      |      |                             |         |

/a See groupings of ejido farms in Table 14.

Source: Estructura Agraria, op. cit. pp. 197 ff.

quarters by 1970. In short, the newly created ejidatarios quickly surpassed the basic food output of the pre-reform haciendas when they first obtained land; but since then the majority of them have made little progress. The "green revolution" has largely bypassed the traditional sector in its country of origin: the new fertilizer-responsive wheat and corn varieties have been developed for irrigated areas, and in any case they require credit for the additional input purchases by small farmers. It may be added that some of the ejido resources that were obtained from Ejido Bank loans have sometimes been badly wasted by ejido managers who were inexperienced, dishonest or both.

In any attempt to estimate the effects of land reform on the affected haciendas in Mexico, some kind of comparison of what occurred with what could be assumed to occur in the absence of land reform is implied. Any such assumption is hazardous, however, and rather artificial. It is hard to imagine that Mexican agriculture could remain today the way it was in 1910, with grandchildren of the hacendados and land-grabbers of the early 1900s still owning most rural property, paying their colonos very little and resisting changes of all sorts. Under such conditions, farm output and incomes would surely be far less than they are now. But if one relaxes the rigid no-change assumption and compares the actual with what might have occurred under other policies selected with hindsight, the reform can look less beneficial. Thus, one might assert that land reform had a negative impact on production by the widespread creation of "non-viable" ejido family farms. (This raises some questions: if haciendas had been cut up into fewer but still numerous potentially "viable" units, how many of these could have been supplied with inputs? And what would have happened to the larger numbers of the landless?) It may be more reasonable to assume that there was a Mexican revolution and a land reform and to consider probable directions of influence of particular policies, rather than pretending to judge the impact of the entire reform per se. From this perspective, the landowners' reserves policy probably raised agricultural output in the longer run; while the creation of small ejido family farms increased food production and ejido incomes in the short run, but kept them at a very modest rate of growth thereafter. Such statements are imprecise because the referents are still undefined: Raised output above what? Kept growth more modest than what? Yet these may be the clearest conclusions possible.

At a minimum: land reform did not prevent the rapid development of agriculture in Mexico, as reform opponents often claim will happen in other cases when prospective reforms are contemplated. Rather, the coincidence in time of the concentration of widespread land redistribution with the beginning of the upward growth trend suggests a positive, if undefinable, association between the two. In any case, land reform undeniably brought short run gains and an enduring, if circumscribed, security and status to 2 million depressed families. At the same time the reserves policy, in conjunction with the policy of freezing beneficiaries into farm units protected from exchange by communal ejido ownership, served to launch the nation on a dualistic path of growth.

2. Redistribution of Hacienda Lands in Bolivia. In Bolivia, as in Mexico, the redistribution of hacienda lands to small-farmer reform beneficiaries was a major nationwide change; and it occurred sufficiently long ago that its effects have had time to be worked out in the nation's agricultural evolution. Unlike Mexico, however, the statistics on Bolivian output and incomes are relatively sparse and unreliable, and they do not distinguish production by reform beneficiaries. We will first explore the inferences that can be derived from available national data, and supplement these with findings in a case study of one reformed estate. Our principal source is the work of Jeff Dorsey. 1/

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1/ Background Papers Nos. 16, 17 and 18.

Prior to World War II, Bolivian agricultural statistics were very limited. Although there have been estimates of harvests of major crops beginning around 1949, available estimates of the same crop in a given year may differ so greatly that they are of questionable value. However, a relatively substantial Agricultural Census was undertaken in 1949/50, using systematic samples by crop and area, and this can serve as a pre-reform base for comparisons. Data for the 1950s are somewhat suspect; but during the 1960s the available estimates for given crops began to resemble one another more closely, so that one may view these figures with more confidence.<sup>1/</sup> There has been no comparable Census since 1950, however.

During the period of estate takeovers and turmoil in the early 1950s, when the redistribution of lands was far more concentrated in time than at any period in Mexico, there may well have been a transitional decrease in farm production. The best evidence of shortfall was in the long waiting lines and short supply of foodstuffs in the cities; but these could also be explained by rapid inflation with price controls, drought in some of these years, plus probable increases in farm consumption levels. By the late 1950s, however, the production of basic foods was clearly above the pre-reform levels of 1950, and the increases continued strongly into the 1970s (Table 16). The implied annual growth rates are 6.3% for potatoes and 4.8% for maize and rice--all high by Latin American standards. Potatoes are the main food staple of the highland or altiplano region, where the largest population is found; maize (along with potatoes) is grown largely in the valleys of intermediate altitude; and rice is the main food crop of the tropical lowlands, having the least population of the three regions. Barley and wheat are secondary but important highland crops.

Over a 20-year period production of potatoes, maize and rice had about tripled; wheat and barley rose by a third. The decrease in wheat production in 1958-61 is explainable by strong disincentives resulting from extensive PL-480 imports. Barley might have increased further but for government policies encouraging imports (barley is used in making beer, an important source of excise tax revenue). Among crops not included in the table, there were large increases in vegetable production in areas having good transport facilities, e.g. in the highlands around Lake Titicaca (displacing potatoes in some cases) and the lower Cochabamba Valley. Of the lowland crops, sugar cane increased steadily from a small base while yuca rose more moderately and sweet potatoes changed little in these years. <sup>1/</sup>

It is apparent, despite some uncertainty about individual estimates, that basic food production has been growing substantially since the land reform. It is not possible, however, to find in the production estimates for provinces, considering those where land redistribution was more extensive than elsewhere, any clear relationship between this variable and production trends; thus the statistics do not permit even this rough kind of estimate of reform impact (and there are no figures on reform beneficiaries as a separate category of producers). Nevertheless, it is possible to find indirect evidence on the subject.

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<sup>1/</sup> See Appendix Table B-3 for more detail on Bolivian production estimates.

Table 16: PRODUCTION OF MAJOR FOOD CROPS  
IN BOLIVIA, SELECTED YEARS 1950-72  
(thousands of metric tons)

|                               | Potatoes | Maize | Rice | Barley | Wheat |
|-------------------------------|----------|-------|------|--------|-------|
| 1950                          | 189      | 129   | 26   | 44     | 46    |
| Average<br>1957/58 to 1960/61 | 351      | 221   | 30   | 49     | 27    |
| Average<br>1968 to 1972       | 643      | 320   | 67   | 61     | 59    |

Sources: For 1950: Agricultural Census. For other years, the averages of available estimates for each crop in each year were combined to obtain the averages for the two periods, based on Table 17 of Background Paper No. 16 by Jeff Dorsey, pp. 78-81. Original sources were: FAO; U.S. Department of Agriculture; U.S. AID Mission in La Paz; Bolivian Government.

In the case of potatoes, Bolivia's largest crop by volume and an important item in the national diet, they are grown more by campesinos than landlords due to the great intensity of labor required. The data on potato yields by size of farm obtained in the 1950 Census, prior to reform, indicate a clearly higher level of yields on the smaller farms (Table 17). When hacienda lands, and particularly crop lands, were extensively redistributed to small farmers in the early 1950s, one would certainly expect that: 1) the area planted to this subsistence food crop would be increased; and 2) the output per hectare would rise appreciably as the size of farms decreased, especially when one considers that the new farm owners could retain all the benefits of their labor time rather than working with standardized obligations to the hacienda. These two changes could account for the doubling of potato output found in Table 16 for the decade of the 1950s, which could thus be logically attributed to land reform.

However, one might expect that such a shift would be a one-time change and that, as in Mexico, the land reform beneficiaries might settle into a new routine with only slow progress in the absence of government support to agriculture. And the Bolivian government, with its limited resources, was unable to provide anything like the Mexican investments in infrastructure or extension service to any of its farmers, large or small. But the output of potatoes nearly doubled again in the 1960s; and the major reason for this continued growth appears to be the application of up to 90 percent of the chemical fertilizer in Bolivia to the potato

Table 17: POTATO PRODUCTION AND YIELDS IN BOLIVIA BY SIZE OF FARM, 1950

| Farm Size<br>(Hectares) | No. of<br>Informants | Hectares in<br>Production | Total Prod.<br>in Kilos | Yields, Kilos/<br>Hectare |
|-------------------------|----------------------|---------------------------|-------------------------|---------------------------|
| Less than 1             | 7,760                | 847.03                    | 3,654,247               | 4,314                     |
| 1 - 2.9                 | 8,321                | 2,006.87                  | 6,759,920               | 3,368                     |
| 3 - 4.9                 | 4,269                | 1,869.35                  | 4,958,376               | 2,652                     |
| 5 - 9.9                 | 4,546                | 3,134.44                  | 7,287,863               | 2,325                     |
| 10 - 19.9               | 2,917                | 2,869.23                  | 6,587,158               | 2,296                     |
| 20 - 34.9               | 1,863                | 2,526.28                  | 6,356,670               | 2,516                     |
| 35 - 49.9               | 927                  | 1,990.11                  | 3,826,837               | 1,923                     |
| 50 - 74.9               | 1,060                | 2,882.88                  | 6,116,516               | 2,122                     |
| 75 - 99.9               | 593                  | 2,577.79                  | 5,148,786               | 1,997                     |
| 100 - 199.9             | 1,323                | 6,561.27                  | 13,993,970              | 2,133                     |
| 200 - 499.9             | 1,450                | 14,768.65                 | 21,163,871              | 1,433                     |
| 500 - 999.9             | 846                  | 13,812.81                 | 22,053,080              | 1,597                     |
| 1,000 - 2,499.9         | 952                  | 17,660.46                 | 24,530,127              | 1,389                     |
| 2,500 - 4,999.9         | 526                  | 13,913.31                 | 19,662,970              | 1,413                     |
| 5,000 - 9,999.9         | 302                  | 11,410.29                 | 15,564,001              | 1,364                     |
| 10,000 or more          | 274                  | 13,427.36                 | 19,320,038              | 1,439                     |

Source: Agricultural Census of 1950.

crop. 1/ Almost no chemical fertilizer was used as of 1950, although sheep manure had been used on fields for many years. Imports of the three major nutrients began slowly in the 1950s and by the late 1960s amounted to over 1,000 tons of nitrogen, perhaps 1,000 tons of phosphate and a few hundred tons of potash per year (data are extremely sparse). A study of 1973 production on farms using fertilizer in an ex-hacienda 2/ indicated that fertilizer application and land area accounted for 97 percent of the variation in potato output, with a high benefit/cost ratio of over 10 to 1 for fertilizer use at current prices. There is also scattered evidence of increased sales and higher prices of sheep manure post-reform. The average potato yield in the 1950 Census figures was 1,674 kilos per hectare;

1/ D.A. Russell, R.J. Ballen, J.I. Bucy and D. Waitzman, "Report on fertilizer usage in Bolivia for U.S. Agency for International Development" (Tennessee Valley Authority, Muscle Shoals, Alabama, June 1970), page 54. See also Jeff Dorsey, "The Bolivian Fertilizer Market and the Goal of Domestic Production," unpublished.

2/ Background Paper No. 17, pp. 46-49 (The Toralpa Case Study).

this may be compared with FAO yield estimates for 1968-70 (Production Year-books) of some 5,900 per hectare--an increase that could hardly have been attained with labor intensity alone.

Considering these pieces of evidence in the total absence of information on changes in the area planted to potatoes, it is likely that increase in yields was at least as important and possibly much more so than increases in area in producing the 240 percent rise in output of potatoes from 1950 to 1958-72 (Table 16). This was a compound growth rate of nearly 7 percent a year for 20 years. If the increased area planted and the improved yields from labor intensity by better motivated small farmers can be attributed to land reform, what can be said of that (unknown) portion of the yield increase due to fertilizer application? This too may be attributed to reform, though with less certainty, for the following reasons. First, potatoes are a campesino rather than a landlord crop, the labor intensity of which is not reduced but increased with fertilizer use (unlike some other modern inputs). Second, in Bolivian conditions it is likely that fertilizer imports were mainly a result of cultivator demand rather than of government arrangements for distribution and credit, which were minimal; and if the demand had originated with big landowners, the fertilizer would have gone to other crops (sugar cane, wheat, cotton, etc.). Thus small farmers, of whom reform beneficiaries were the great majority, able to reap the benefits of their inputs and observing the very high payoffs from fertilizer-responsiveness of potatoes in Bolivian conditions, drew their own conclusions and exercised their initiative within the severe constraints of limited resources and underdeveloped infrastructure in difficult mountainous terrain.

The case for successful stimulus to output from reform is perhaps strongest with potatoes, but may also be argued with respect to other crop increases noted in Table 16. Increases over 20 years of 148 percent for maize and 158 percent for rice are substantial, although 38 percent for barley and 28 percent for wheat are less impressive. Increase for sugar cane on the lowlands cannot be attributed to reform beneficiaries, nor can the newly introduced growing of alfalfa, as both are estate crops. But the great increase in production of a variety of vegetables in highland and valley areas does appear to have resulted from market-oriented campesino initiative in provinces where land redistribution had been extensive. It should be noted that the 1950 Census figures on yields as related to size of farm show the same tendency for higher yields on the smaller farms in maize, rice, barley and wheat that was found for potatoes. The scattered data on yield estimates for various crops by FAO and others in the 1960s as compared to 1950, 1/ although none show the gains that were found for potatoes (which attracted most of the fertilizer), do indicate improvements of 25 to over 100 percent for such crops as wheat, maize, peas, carrots, tomatoes, peppers, cabbage and sweet potatoes. Yield decreases, however, may be noted for barley, oats, cotton, and some types of beans; and little change was found in

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1/ See Appendix, Table B-4.

yields of rice and sugar cane. On the whole it appears that, while there are exceptions to the general upward movement in output and productivity, most of these decreases were in relatively minor crops and were outweighed by the positive trends in major crops and in vegetable growing.

Turning from national data in which producers are not identifiable, we may illustrate the impact of reform with a study of the ex-hacienda of Toralpa <sup>1/</sup> in the upper Cochabamba Valley (altitude 9700 feet). Before reform, this hacienda had some 700 cultivable hectares (of a 8,000 total); of these, the owner cultivated 60 hectares in a centrally managed core, and 26 hectares were cultivated by 20-30 colono families (see Table 18). Output in 1950/51 was 492 tons of produce from the core, and 58 tons from colono plots. Ninety percent of the owner's produce and 10 percent of the colonos' were marketed. A few years earlier the owner had evicted 35 colono families "for refusing to exchange the use plots they had been granted for other plots of lower productivity." In exchange for use of plots, colonos were obligated to: work 6 days of unpaid labor per week on the hacienda (the ex-owner claimed it was only 5 days); transport hacienda products to market on colono animals; weave 4 bags a month for crop transport; provide the hacienda with manure from colono sheep; give the hacienda a tithe from lambs born in colono flocks; and respond to requests for domestic service in the owner's house.

During the reform period the ex-owner was officially allotted 200 hectares for retention as a reserve; but the campesinos never allowed him to return, and all the land was redistributed--as occurred with other estates in this region. By 1965/66, 88 campesino families were living within the ex-hacienda boundaries, including the 35 evicted families plus new households of colono relatives. The cultivated land had increased from 86 to 296 hectares (Table 18). Overall production had doubled, from 550 to 1,167 tons; and while the proportion of market sales had dropped from 76 to 71 percent of output, the volume marketed had grown from 418 to 829 tons. Produce consumed on the hacienda rose from 132 tons to 338 tons, more or less in proportion to the increased number of residents.

Potatoes continued to dominate the composition of output, but production of other crops grew six-fold. Potato yields had remained about the same; the average yield for other crops had improved a little, perhaps because of shifts in composition. Methods of cultivation had changed very little. A later study of Toralpa in 1973, however, revealed some examples of technical innovation: 18 farmers were buying chemical fertilizer; three farmers had bought metal plows; and one campesino had hired a tractor for land preparation. Indications of increased investment were a 70 percent increase over 1966 in sheep numbers, and three times the number of pigs; and the average value of a family house in 1973 was 2.5 times the value in 1966.

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<sup>1/</sup> Background Paper No. 17.

Table 18: PRODUCTION AND RELATED DATA FOR  
THE AREA OF TORALPA HACIENDA

|                               | Pre-Reform (1950/51) |                   |           | Post-Reform<br>(1965/66) |
|-------------------------------|----------------------|-------------------|-----------|--------------------------|
|                               | Owner's<br>Core      | Colono<br>Plots   | Total     |                          |
| Crop Production (tons)        | 492                  | 58                | 550       | 1167                     |
| Potatoes                      | 467                  | 33                | 500       | 831                      |
| Other Crops <sup>a/</sup>     | 25                   | 25                | 50        | 336                      |
| Cultivated Area (has.)        | 60                   | 26                | 86        | 296 <sup>b/</sup>        |
| Potatoes                      | 40                   | 6                 | 46        | 72                       |
| Other Crops                   | 20                   | 20                | 40        | 224                      |
| Market Sales (tons)           | 412                  | 6                 | 418       | 829                      |
| Potatoes                      | 390                  | 3                 | 393       | 658                      |
| Other Crops                   | 22                   | 3                 | 25        | 171                      |
| Yields: Potatoes<br>(tons/ha) | 11.7                 | 5.6 <sup>c/</sup> | 10.9      | 11.5                     |
| Average,<br>other crops       | 1.25                 | 1.25              | 1.25      | 1.5                      |
| Number of sheep               | 900                  | (?)               | ca. 2,000 | 2200 <sup>d/</sup>       |

- <sup>a/</sup> Other crops, in order of tonnage in 1965/66: barley, wheat, broad beans, oca (a root like parsnips), maize. In terms of value, non-potato crops increased from 5 to about 30 percent of total production in the two years.
- <sup>b/</sup> Much of the increase in cultivated area resulted from decrease in the traditionally long fallow periods (which have no value in raising soil fertility, according to Richard D. Powell of the University of Wisconsin). Extension of cultivation also involved lands which the ex-owner had not used. (The owner's gross income from sales at 1950 prices must have been at least the equivalent of \$50,000.)
- <sup>c/</sup> Low yields on colono plots may be attributable to the pressure of work obligations for the hacienda.
- <sup>d/</sup> Consumption of animal products was about 10 percent of total income. Somewhat more animals were consumed than sold.

Income distribution had clearly improved after the reform, not only by the rise of owned production per cultivator from 2.3 to 13.3 tons, but by spreading the benefits to three times the number of campesinos. All their burdensome obligations to the hacienda, listed above, had ended. The effects of improved farmer incomes were widespread. Before reform almost all campesino consumption was home produced; in 1967, 43 percent of income went for

cash expenditures on cloth, beds, bicycles, radios, sewing machines, kerosene burners, wheel barrows, metal pots--items seldom found on small farms in pre-reform days. Long run improvement in housing was evident also, as noted above. This kind of increase in consumer goods purchases by farmers in Toralpa has been observed in other areas as well.

In conclusion, the grounds for judging Bolivia's redistribution of hacienda lands a net benefit to farm production and campesino incomes appear firm, even allowing for weaknesses in the data. Not only were the gains in production quite widespread, but the evidence suggests that small farm operation was also a stimulus to productive efficiency and innovation, notably in the use of fertilizer and the crop diversification into vegetables. This last conclusion contrasts with the findings from Mexico. One cannot be certain what would have resulted in the absence of reform; but it seems quite unlikely that technological improvement on the Mexican scale could have been expected among hacienda owners in Bolivian conditions, given the lack of state resources, the remoteness and backwardness of most haciendas, and the probable weakness of market stimulus in a hypothetical non-reformed Bolivia. Small islands of progress among a few owners of estates near cities seems a more probable projection.

This favorable view of land reform impact is not shared by some who have written on the subject, for both political and economic reasons. No one today fights the Mexican revolution; but memories persist of the lawless disruptions in Bolivia in the 1950s, when some landowners were forced to flee their estates (as in Toralpa and elsewhere) while in other places peasant organizations were forcibly repressed. Weak administration and litigation over land ownership still continue. On the economic side, memories of urban food shortages in the 1950s combined with a lack of definitive statistics have suggested a negative reform impact on output; and the continuing backwardness of agricultural methods does not indicate exemplary achievement in the post-reform period. And Bolivian leadership and rhetoric have sometimes swung contrary to prevailing political fashion--whether to the left or the right. While Latin Americans may be willing to find lessons from land reform (or other experiences) in a country like Mexico, it is difficult to accept the possibility of learning from Bolivia and still harder to expect a model for emulation. Yet Bolivia does supply important evidence on the benefits of land reform in the absence of government support programs.

It seems to us that the available production and yield data do justify a positive conclusion on the direction of influence of land reform, but this conclusion must be tempered with a recognition of the low base from which the country started. Bolivian agriculture was very backward in 1950, and despite some progress it is largely so today in any Latin American or global comparison. Very little fertilizer is used nationally; farm implements are predominantly traditional, with relatively few exceptions; crop and livestock varieties are principally the traditional ones; and there is little evidence of the sophisticated combination of inputs and management found in the other countries examined here. It might be argued that this is a price Bolivia has paid for avoiding the extremes of dualism in agriculture

found in much of Latin America. But even this point must be qualified, since Bolivia still has big percentages of its upland pasture and marginal lands and its lowland croplands in large, even very large private holdings. Nevertheless, from the standpoint of our typology for analysis of land reform impacts, Bolivia can be clearly cited as a case where redistribution of hacienda lands has brought about some important increases in production and yields from the highland and valley croplands, where most of the population live, and even more significant gains in income and welfare for the thousands of low-income individuals concerned.

3. Land Reform on Haciendas in the Highlands of Peru. The results of redistribution of traditional estates in the Peruvian highlands (estates on the coast were more modernized and are taken up later) must be dealt with quite differently from the Mexican and Bolivian cases. The changes have occurred since 1969, so that only their short run effects can be examined; and their scope is limited, so that inferences cannot be drawn from nation-wide agricultural data. The principal information which is 1/ pertinent is based on 14 case studies by Douglas Horton, prepared in 1973, and these must be assessed in light of their temporal and spatial limitations. A further dimension for reform assessment is the need to judge the effectiveness of the government's efforts to organize collective management methods with the participation of elected bodies in production cooperatives, i.e. the CAPs and SAISs described in the last chapter.

The evolution of land reform in Peru was not the outcome of one violent revolution. It was, on the one hand, a centrally designed process with ideological rationale, but on the other hand was also a long drawn out and highly contentious process locally. Because owners perceived a threat to their property rights under the reform law of 1964, many began to sell off livestock herds and farm equipment, or failed to maintain investments, and sometimes sold off pieces of land. Although few estates were actually expropriated prior to 1969, the economic performance of haciendas in the late 1960s was frequently not characteristic of normal estate operation. Once the more stringent law of 1969 went into effect, estates were subjected at various dates to initial "intervention", when it was officially determined that they were to be expropriated. Then followed a waiting period of one to four years, during which estates were administered by interim committees, until the final "adjudication" was announced. Adjudication determined the form of cooperative enterprise (whether CAP, SAIS or other) and the boundaries thereof, which could incorporate a number of estates and/or communities in one unit in some cases, one or a few in others, or possibly a separation of the estates of a single owner in still others. (Cases 1-3 below involved separation, while most of the others were consolidations.) Following adjudication, there ensued an uneasy process of implementation which, owing to the novelty of the cooperative arrangements and the complexities of both the production needs and the means of gearing production to governmental requirements and the joint action of producers, was still in flux by 1973. Thus, the 1973 studies could not reveal tidy comparisons of performance

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1/ Background Papers Nos. 22, 23 and 24.

before and after land reform, but rather a view of stages in a transition which had begun 10 years earlier and was still incomplete by the time of observation.

It should also be noted that there was a considerable diversity in the findings on economic performance of different post-reform enterprises and in the conditions they confronted. In most cases the hard facts on total production, even in the latest year, were incomplete, but some general tendencies can be reported--although a summary account cannot fully capture the interplay of conflicting forces in these examples. Among the reformed haciendas, a major difference in performance and conditions was found between enterprises engaged in crop production, some having a major or minor cattle component, and those with sheep as the major product. These two will be described separately.

a. Crop Producing Enterprises

Table 19 gives the major features of seven crop/cattle enterprises that were studied.

All enterprises were officially designated as production cooperatives (CAPS, or a communal cooperative in Quehuar). But they had all been cultivated with a combination of individual plots and hacienda lands (or communal land in the Quehuar-purchased estate, see Table footnote b); and the new designation did not change this method of working but only shifted ownership from the hacendado to the cooperative membership. In principle the government favored 100% unitary operation and wage labor; but peasants' opposition to giving up their rights to individual colono plots in favor of the cooperative was so strong that these rights were continued. The same was true of individually owned livestock which had grazed on hacienda lands along with the hacienda-owned animals; these too were officially recognized, though reluctantly. Consequently the new cooperative enterprises were faced with managing a dual system in which the cooperative enterprise's agricultural needs competed with those of individually cultivated croplands. Individually cultivated plots and individually owned livestock represented roughly one third to one half of the total activities involved (based on hectares cultivated and animal numbers). When the weather indicates a time for seeding or harvesting of a cooperative crop, this is just the time when individuals have the strongest incentive to work on their crops. In Peruvian highland conditions, the timely performance of such operations is extremely important for output, and enterprise production suffers when individuals do not appear for work when it needs to be done. Generally the cooperative managers, whether they were hired technicians or elected officers and committees, have lacked the authority over farm workers possessed by former hacienda owners.

To be sure, the owners' ability to enforce work obligations had deteriorated on many estates after 1964; and during the interim periods from intervention to adjudication, work discipline tended to erode much further.

Table 19: CHARACTERISTICS OF SEVEN CROP/CATTLE HIGHLAND ENTERPRISES

| Enterprise Name            | Province                 | Principal Products | No. of Members | No. of Hectares | Dates inter-vention | Adjudi-cation |
|----------------------------|--------------------------|--------------------|----------------|-----------------|---------------------|---------------|
| 1. Espinal                 | Lambayeque <sup>a/</sup> | rice               | 163            | 8,212           | 6/69                | 1/73          |
| 2. Monteseco               | Lambayeque               | coffee             | 272            | 1,960           | 6/69                | 1/72          |
| 3. Udimá                   | Cajamarca                | cattle/crops       | 512            | 39,500          | 6/69                | 12/71         |
| 4. Quehuar <sup>b/</sup>   | Cuzco                    | potatoes           | 280            | (small)         | n.a. <sup>b/</sup>  | 1973          |
| 5. Tupac Amaru II          | Cuzco                    | cattle/potatoes    | 2800           | 37,351          | 1969                | 6/71          |
| 6. Tahuantinsuyo           | Cuzco                    | cattle/wheat       | 187            | 11,017          | 2/70                | 6/73          |
| 7. Mariscal Ramon Castillo | Cuzco                    | wheat/potatoes     | 82             | 2,331           | 9/69                | 6/73          |

a/ All enterprises were located in highland terrain (including Monteseco) except Espinal, on the coast. It is included here because it had been an hacienda employing colono labor (unlike the wage labor of coastal estates treated elsewhere).

b/ All other enterprises were adjudicated as CAPs, since they were based on former haciendas. Quehuar had been an official "community" with communal organization but individually allocated lands; in 1973 it was declared a "community cooperative", incorporating a nearby 14 hectare estate purchased in 1969 by community leaders jointly.

Source: Background Paper 23, pp. 33 and 35.

After adjudication, the new managers and leaders had to establish authority in a situation of great confusion and uncertainty. Peasants had been told by the government that they were to control the cooperatives they now owned, and should elect various committees to perform functions of the ex-owners. Training courses in cooperative methods were widely given, largely by inexperienced young ideologists of urban background from the land reform education and supervisory agency with the initials SINAMOS. At the same time the officials of the Ministry of Agriculture have been very active in guiding production plans, both in the interim periods and after adjudication, and their approval is important in obtaining credits from the Agricultural Development Bank (BFA). The Bank, in return, cannot by its rules lend to enterprises that lose money and are delinquent in repayment; but at the same time it is under pressure to support rural development. SINAMOS, the Ministry and the Bank did not always agree on particulars; conflicting views and promises, and delays or shifts in decisions were reportedly common. Within enterprises, the technical employees were frequently at odds with the cooperative members and their committees, who were quick to criticize those to whom they were previously subordinated. There is a rapid turnover of managers and technicians, but qualified men are hard to find. More fundamental as a source of problems is that most of the campesinos entered land reform with a profound distrust of the cooperatives. Partly this was because what they wanted most was the security of their own land, and they felt little confidence in the ability of the new enterprises to perform reliably for their benefit. Partly it reflected a generalized distrust of outsiders based on adverse experiences of exploitation, on linguistic and ethnic differences, etc.

With such a mix of elements it is small wonder that successful performance has been difficult, especially in enterprises adjudicated only recently when they were studied in 1973. All seven enterprises reported decreases since land reform in levels of enterprise production, except one reporting no change in level (Table 20). Concerning changes in the area cultivated or improvement in methods, three reported declines, three had no substantial change, and one a modest gain. Four reported financial enterprise losses, and three recorded profits. In sharp contrast, production by cooperative members on their own lands had increased in all enterprises, and in all but one case these increases were reportedly large. Since the farmers were freer than before to work on their own lands, this is not surprising. Whether such increases were large enough to offset decreased enterprise production and bring about a net increase in total output cannot be judged. Government efforts were directed at mobilizing labor for enterprise activities, using both negative and positive incentives: the time spent by farmers on individual production was seen by officials as a "major problem" or cause of "failure"--not a source of economic gain.

The causes for weakness in enterprise production that were listed above were not universal. There were also instances of good cooperation, of superior performance by some individuals; and farmers' working morale was better in some enterprises than others. Over time, a learning and

adjustment process may lead to improved performance if present arrangements are not subjected to further disruptions. But some of these enterprises took too large for efficient crop production under any kind of organization, notably Tupac Amaru II, hastily pieced together from some 50 properties to serve as a showcase for the regime and now virtually unmanageable. Such an unwieldy size presents problems of communication; because of weather, cropping in highland conditions requires localized decisions and timely actions best taken with a minimum of hierarchical approvals. Adjudication policy, however, has tended to favor consolidations of estates into larger enterprises to achieve scale economies, particularly to provide surpluses for hiring expert managers and technicians.

Technical assistance and planning by officials of the Agriculture Ministry has increased since land reform; this may be a suitable substitute for resident technicians in some cases. The Ministry has actively supported the new reform enterprises (curtailing its assistance to small farmers as a result), and these efforts might show more results in future than were apparent in 1973. One consequence of the Ministry's activities is that the 1973 record of enterprise investment is somewhat better than that for production: four enterprises reported large or moderate increases in productive investment, although three registered declines (Table 20). The value of these investments, however, may or may not be greater than those existing before land reform; it has been necessary for most enterprises to recover from the effects of decapitalization by owners prior to intervention.

The welfare results of land reform were somewhat more favorable than those in enterprise production. Three enterprises reported increased social investment, i.e. in community facilities. Before reform, the median daily wage rate 1/ for the seven cases had been 9.25 soles; the post-reform median had risen to 35 soles. (Three enterprises also supplied rations in kind, both before and after reform). It was clear that the higher wage rates, supplemented in some cases by distribution of enterprise profits to members (in cash or kind), had produced higher income for cooperative members, even though employment levels had decreased in all but one case. Such decreases reflected in part the increased time spent on individual production, and thus individuals' choices for their own welfare. In several enterprises there was clearly more work the managers wanted done than persons willing to do it; and labor was generally a greater constraint on output than was the availability of cultivable land. Thus, production could often have been increased by adding to the work force with increases in the cooperative's membership. But the prevailing view among cooperative members was that they wanted to keep what they had to themselves, rather than bring in more members to grow more crops when the proceeds would be diluted by wider sharing. This seemed to be another reason for the reported negative employment trends.

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1/ Hacienda labor had been partly based on colono obligations, partly on wage payments. After reform only wage labor was used.

Table 20: PERFORMANCE INDICATORS FOR  
SEVEN CROP/CATTLE ENTERPRISES,  
PERUVIAN HIGHLANDS  
(number of cases)

|  | <u>Increase</u> |          | No<br>Change | <u>Decrease</u> |       | Yes | No              | No<br>data |
|--|-----------------|----------|--------------|-----------------|-------|-----|-----------------|------------|
|  | Large           | Moderate |              | Moderate        | Large |     |                 |            |
| Enterprise Output                              |                 |          | 1            | 3               | 3     |     |                 |            |
| Individual Output                              | 6               | 1        |              |                 |       |     |                 |            |
| Change in crop area or<br>intensified methods  |                 | 1        | 3            | 2               | 1     |     |                 |            |
| Employment                                     |                 | 1        |              | 3               | 2     |     |                 | 1          |
| Profitability                                  |                 |          |              |                 |       | 3   | 4               |            |
| Productive<br>Investment                       | 1               | 3        |              |                 | 3     |     |                 |            |
| Social Investment                              | 1               | 2        | 4            |                 |       |     |                 |            |
| Professional Manager                           |                 |          |              |                 |       | 2   | 5 <sup>a/</sup> |            |
| Member support of<br>cooperative <sup>b/</sup> | 1               |          | 2            | 2               | 2     |     |                 |            |

a/ Two of the enterprises without professional managers in 1973 had been trying to find qualified men.

b/ For this variable; column 1 = active member participation in management; column 3 = ambivalence; columns 4 and 5 = moderate or strong opposition.

Source: Background Paper 24, p.111.

b. Livestock Enterprises

Turning now to seven case studies of livestock enterprises, we find much more positive reform results, as well as very different conditions of production. The enterprises concerned are essentially sheep ranches (two also had cattle herds comparable in value to their sheep). All are located in puna areas, high and arid zones where rainfall and soils do not permit commercial crop growing but can support grazing areas for sheep. Individual cultivation is confined to small subsistence plots; enterprise cultivation includes pasture improvement plus some growing of feedstuffs. Most of these

enterprises had been built around a core of profitable sheep raising on professionally staffed haciendas, which exercised centralized management over relatively large areas. Progressive technology was evident in breeding practices, feeding methods, disease control, fencing and pasture management. Labor was largely paid in wages, though colono-type work obligations were also imposed in some estates. However, estate workers were not pure wage laborers, since they also had rights to pasture significant numbers of their own sheep on the hacienda's lands. On haciendas paying higher wages, rentals had been charged for such pasturage (at a flat rate per sheep); on other haciendas, low wages and/or unpaid work corresponded to zero or minimal charges for pasture rights.

The reform adjudications in the seven cases studied had extensively shuffled the boundaries of existing estate ownership, bringing widespread consolidations in some cases and splits in others. But because of the core activity involved, there remained a central staff of technical, supervisory and clerical employees (unlike the cropping enterprises), ranging from a few in the smaller enterprises up to 66 (in Cahuide). Many of these were experienced ex-hacienda employees. The members of the new cooperatives were of two types: ex-hacienda shepherds and laborers, and members of adjoining peasant communities. The reason for this mixture was that the sheep ranches which grew up over the last century had taken over extensive tracts of traditional community lands, and redress was felt to be in order (as in Mexico). But since these ranches were by far the most productive activities in their regions, it was decided that they should not be broken up; instead, their profits should be shared with the neighboring communities. This is the concept of the SAIS (Sociedad Agraria de Interes Social), one which has been applied with some variability (even the name was applied erratically--see footnote c of Table 21). The concept calls for two classes of cooperative participation. Communities are to be treated as units within the overall cooperative, rather than having their inhabitants simply become individual members: they are represented as units in the cooperative Assembly, although in principle given a strong voice in management of the enterprise. If profits are made and distributed, communities will be given theirs in funds for communal improvement--not as income to individuals like the enterprise workers' profits.

In most cases studied, the numbers of community families were several times the numbers of enterprise employees. Some of these cooperative enterprises had distributed profits to their members and communities, while others had reinvested all earnings in enterprise projects. The general tendency in management matters was for the communities to play a minor role, if any. A strong managerial staff, typically supported by Ministry of Agriculture officials and BFA funds, usually had the determining voice; and if accommodations to cooperative member views were made, it was more often the enterprise workers than the community members who were heeded. The institution may in time evolve toward a greater integration of community inhabitants into their enterprises--which is the government's policy objective.

Table 21: CHARACTERISTICS OF SEVEN LIVESTOCK ENTERPRISES STUDIED IN PERU, 1973

| Enterprise Name <sup>a/</sup> | Type               | No. of Coop Members | Families in communities | Area (hectares) | Date          |               |
|-------------------------------|--------------------|---------------------|-------------------------|-----------------|---------------|---------------|
|                               |                    |                     |                         |                 | Inter-vention | Adjudi-cation |
| 1. Cahuide                    | SAIS               | 536                 | 3,664                   | 268,182         | 10/69         | 4/71          |
| 2. Yocara                     | SAIS <sup>b/</sup> | 56                  | 0                       | 9,421           | 1969          | 12/70         |
| 3. Santa Lucia                | CAP <sup>b/</sup>  | 235                 | 956                     | 74,115          | n.d.          | 10/72         |
| 4. Buena Vista                | SAIS               | 750                 | 1,300                   | 49,383          | n.d.          | 12/72         |
| 5. Micaela Bastidas           | CAP <sup>b/</sup>  | 586                 | 1,586                   | 60,250          | n.d.          | 8/72          |
| 6. Posoconi                   | CAP                | 75                  | 0                       | 1,769           | 11/69         | 1971          |
| 7. La Union de Soratira       | CC <sup>c/</sup>   | -                   | 87                      | 6,539           | n.a.          | 9/66          |

Source: Background Paper #23, pp. 33 and 35.

a/ Location: All enterprises were located in Puno province except for Cahuide, in Pasco province. Sheep were the main activity of all enterprises; Posoconi had a cattle herd larger in value (but not numbers) than its sheep; Cahuide had cattle close to but less than the value of its sheep.

b/ The terms CAP and SAIS were used inconsistently in several cases. Yocara was called a SAIS but had no attached communities; Santa Lucia and Micaela Bastidas were called CAPs but did have associated communities.

c/ La Union de Soratira was formed as a Communal Cooperative in 1966, after some members of Soratira community had gained possession of La Union estate under the 1964 law. Cooperative members also include ex-estate workers.

n.d. - no data.

But as of 1973, the effects of the SAIS structure seemed neither to be complicating the job of management nor reducing the considerable socio-economic distances between estate/enterprise workers and the associated neighboring communities.

The economic performance scores (Table 21) and indicators (Table 22) are in every respect more positive than those shown above for the crop/mixed enterprises. In most cases the livestock enterprises had increased production (both enterprise and individual output), employment, and investment--both productive and social; and several had improved methods of production. All had achieved profitability. Members' support of their cooperatives was found to be either positive or ambivalent, i.e. there was not the opposition found among many crop farmers. Basic wage rates had risen from 25 to 40 soles (median values for the sample before and after reform); together with increased employment and increases in social investments, the achievement of welfare gains for ex-estate workers is clear. As for the attached peasant communities, the result is smaller but seems positive on balance: a few cases of cooperative profits distributed, plus some increase in employment opportunities. One cooperative, Santa Lucia, had made special efforts to establish workshops producing rugs and sweaters (from coop wool), metal work, and carpentry; these employed 30 people, and were growing. But this kind of initiative was unusual.

Several factors explain the differences in land reform impact as between crop/mixed and livestock enterprises, both created under similar legislation from haciendas in highland Peru. First, the sheep ranches were better managed organizations, before and after reform; their technical staffs remained on the job (with some replacements), and were not seriously undermined in their authority by the shifts in ownership. Second, the technology of sheep raising yields more economies of scale (pasture rotation and improvement, technical staff), without the diseconomies and vulnerabilities noted in Peruvian highland crop cultivation. This is largely because localized decisions and timely actions are less important for wool and meat production because changes in weather are not significant; bureaucratic delays in supply of inputs are therefore less harmful in their impact, as are poor decisions on the location of activities. Third, the labor force was already accustomed to working for wages, and had less temptation to work on individual production. The ex-hacienda workers clung to the security of owning their sheep with the same tenacity as crop farmers had shown toward working their own lands, but this did not create as much conflict with enterprise interests in the allocation of their time. On all these ranches the managers tried persistently to reduce the numbers of member-owned sheep, which produced about half the wool per animal but occupied as much pasture as the others, and which interfered with breeding and disease control programs for the enterprise sheep. All enterprises raised their pasture fees, and some introduced progressively higher fees per animal for the larger flocks; but these were rather ineffective in reducing numbers of non-enterprise sheep. Such animals ranged from 20% to 50% of the numbers of enterprise sheep.

Table 22: ECONOMIC PERFORMANCE INDICATORS FOR SEVEN  
LIVESTOCK ENTERPRISES (IDENTIFIED IN TABLE 23)  
(number of cases)

|  | Increase |          | No<br>Change | Decrease |       | Yes | No | No<br>data |
|--|----------|----------|--------------|----------|-------|-----|----|------------|
|  | large    | moderate |              | moderate | large |     |    |            |
| Enterprise Production                              | 1        | 3        | 2            |          |       |     |    | 1          |
| Peasant Production                                 | 6        | 1        |              |          |       |     |    |            |
| Employment   | 5        |          | 1            |          |       |     |    | 1          |
| Intensified methods<br>of production               | 1        | 2        | 4            |          |       |     |    |            |
| Profitability                                      |          |          |              |          |       | 7   | 0  |            |
| Investment:  |          |          |              |          |       |     |    |            |
| Productive   | 5        | 1        | 1            |          |       |     |    |            |
| Social   | 4        | 3        |              |          |       |     |    |            |
| Professional Manager                               |          |          |              |          |       | 5   | 2  |            |
| Member support of<br>the cooperative <sup>a/</sup> | 2        | 1        | 4            |          |       |     |    |            |

Source: Background Paper 24, p. 112.

<sup>a/</sup> For this variable, column 1 = active membership participation in the cooperative; column 2 = moderate participation; column 3 = ambivalent attitudes. Columns 4 and 5 would mean opposition.

Other reasons for the greater success of the sheep ranches, compared to cropping enterprises, stemmed from the nature of investments. In both cases, hacienda owners had decapitalized while they could; they sold off sheep,<sup>1/</sup> as opposed to removing equipment. But recovery was much easier; investments could be made without outside funds simply by retaining more sheep for breeding, and all enterprises had increased their flocks back to or above pre-reform levels. (Cropping enterprises were far less successful in obtaining BFA loans to replace equipment.) In addition, the government had undertaken a large program for seeking and importing superior breeding stock, and lending to the new cooperatives for its purchase. Further, the Ministry of Agriculture's post-reform policy of monopolizing the marketing of sheep products, and thus enforcing quality specifications, contributed to its ability to induce up-grading of cooperative products--a policy with no comparable counterpart in crop marketing.

To summarize: land reform on haciendas in highland Peru, judging from our 1973 representative sample, had the following results: increased peasant production generally; increases in welfare for ex-hacienda workers; mixed or negative results for enterprise production on crop farms, but positive results on sheep ranches. These are observations during a period of transition.

#### B. Redistribution of Lands from Modernized Commercial Estates

We are separating the examination of land reform impact on traditional haciendas from that on modern, commercially oriented estates. The differences between the two categories are relative. There are various degrees of "modernization" in agricultural technology; and it could be said that the Peruvian sheep haciendas just discussed were relatively modern in their methods, or that the crop growing haciendas in the Peruvian highlands were somewhat more modern than those in Bolivia. Concerning traditional practices in the status of labor, i.e. colono rights and obligations as opposed to the more modern practice of wage payment, there are also differences of degree and mixtures of practice in the cases considered. Again, the Peruvian sheep haciendas could be regarded as an intermediate case; and the same might be said of the Chilean and Bolivian estates discussed below. Nevertheless, the haciendas covered above may be distinguished from the commercial estates to be taken up next in that the latter, in pre-reform conditions, clearly utilized capital-intensive methods of farming. Generally their farm workers depended on estate wages for their incomes, relying very little if at all on colono incomes in cash and kind, and estates provided more services and rations to their workers.

1. Land Reform on Cotton Estates in Laguna, Mexico. In 1936 President Cardenas decided to shift the land reform policy of Mexico by expropriating some 450,000 hectares of land (130,000 of it irrigated) in Laguna district belonging to efficient, highly capitalized estates producing 50% of Mexico's cotton. Owners were allowed to retain 150 hectares each, along with

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<sup>1/</sup> In the Province of Puno, the Censuses in 1961 and 1972 showed a decrease from 6 to 4 million sheep; much of this decrease occurred before 1969.

their irrigation equipment and machinery. These reserves, plus the pre-reform small holdings (some 2,000 private farms in all), then occupied one third of the area; two thirds were occupied by 38,000 ejidatarios, with an average of 4 hectares each. Initially most of these were organized into some 300 "ejidos colectivos," i.e. production cooperatives; but there were always some ejidatarios preferring to farm individually. Over time the production cooperatives tended to split up: about half of them shifted to individual farming; among the others, some ejido ownership units subdivided their collective farming operations into smaller sub-units, while others had mixtures of group and individual farming. By the 1960s there was an intricate mosaic of private and ejido holdings of various sizes, all intermingled. Because of its importance, Laguna district has often been studied; the findings reported here are from a 1967 sample survey by Shlomo Eckstein.<sup>1/</sup>

Cotton production in Laguna suffered a transitional decline but by 1941 it had recovered to its pre-reform level and it has been growing in most years since then. <sup>2/</sup> The dualistic growth pattern of Mexican agriculture is found here also; but this was less extreme in Laguna, partly because the government favored cotton production, so that credit was made more generally available to farmers, large and small. Another possible reason was the maintenance of large scale operations in ejido collective farming. The objective of the 1967 survey was to distinguish the effects of different forms of land tenure and farming scale on various measures of productivity, using a sample of 208 farmers broken down as follows: private farms, large and small; individual ejido farmers; and collective ejido farmers. The "individual ejidatarios" work on their own with private credits, mostly from wholesalers. Collective ejidos are eligible to receive credit from the Ejido Bank. The collective ejidos are divided into three groups, based on the Ejido Bank's evaluations of creditworthiness: "good" ejidos, the best producers--about 15% of those in the area; "bad" ejidos, the 15% of worst producers; and "regular" ejidos, the remaining 70%. Similar numbers of farmers in each category, selected to represent a range of typical farm sizes in each sub-group, were questioned on the values of their outputs and inputs.

Table 23 spells out some of the characteristics of the farmer sample. Each category is distributed by farm size in hectares cultivated in 1966/67 (for the collective ejidos this means an average area per ejido member). All the ejidatarios, and half the private farmers (i.e. those with less than 10 hectares) worked on relatively small average areas. Yet almost all farmers in the sample produce more than 5,000 pesos worth (at

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<sup>1/</sup> Background Paper No. 20.

<sup>2/</sup> Output of cotton in Laguna began to fall in the late 1950s as the area planted decreased. But after 1960 it resumed its upward trend with little change in area. The yield average has risen quite steadily since 1938. See Appendix B, Chart 4.

**Table 23: FARMER SAMPLE IN LAGUNA, MEXICO: TENURE TYPE AND AVERAGES FOR FARM SIZE, LAND VALUE, IRRIGATION TYPE, COTTON YIELDS**

| Tenure Type and Farm Size     | No. of farmers | Product class <sup>f/</sup> | Cultivated hectares | Land value <sup>a/</sup> | % Pump Irrigation <sup>b/</sup> | Share of Cotton <sup>c/</sup> | Cotton yields <sup>d/</sup> |
|-------------------------------|----------------|-----------------------------|---------------------|--------------------------|---------------------------------|-------------------------------|-----------------------------|
|                               |                | 1                           | 2                   | 3                        | 4                               | 5                             | 6                           |
| <u>Private Owners</u>         | <u>71</u>      |                             | <u>50.8</u>         | <u>6.6</u>               |                                 |                               |                             |
| 0 - 1.9 hectares              | 5              | C                           | 1.4                 | 10.9                     | 17 <sup>e/</sup>                | 75 <sup>e/</sup>              | 2554 <sup>e/</sup>          |
| 2 - 3.9 "                     | 12             | C                           | 3.0                 | 6.5                      | 17 <sup>e/</sup>                | 75 <sup>e/</sup>              | 2554 <sup>e/</sup>          |
| 4 - 9.9 "                     | 17             | D                           | 5.1                 | 4.0                      | 53                              | 32                            | 3090                        |
| 10 - 99.9 "                   | 26             | E                           | 46.8                | 7.2                      | 80 <sup>e/</sup>                | 39 <sup>e/</sup>              | 3860 <sup>e/</sup>          |
| 100 plus "                    | 11             | E                           | 205.2               | 7.1                      | 80 <sup>e/</sup>                | 39 <sup>e/</sup>              | 3860 <sup>e/</sup>          |
| <u>Individual Ejidatarios</u> | <u>35</u>      |                             | <u>2.2</u>          | <u>10.2</u>              |                                 |                               |                             |
| 0 - 1.9 hectares              | 16             | B                           | 1.1                 | 13.4                     | 0 <sup>e/</sup>                 | 86 <sup>e/</sup>              | 2290 <sup>e/</sup>          |
| 2 - 3.9 "                     | 13             | C                           | 2.4                 | 8.7                      | 0 <sup>e/</sup>                 | 86 <sup>e/</sup>              | 2290 <sup>e/</sup>          |
| 4 - 9.9 "                     | 6              | C                           | 4.9                 | 4.9                      | 17                              | 83                            | 1930                        |
| <u>Good Ejidos</u>            | <u>38</u>      |                             | <u>2.9</u>          | <u>4.9</u>               |                                 |                               |                             |
| 0 - 1.9 hectares              | 2              | C                           | 1.0                 | 6.5                      | 0                               | 100                           | 2800                        |
| 2 - 3.9 "                     | 28             | C                           | 2.6                 | 4.7                      | 47                              | 86                            | 2740                        |
| 4 - 9.9 "                     | 8              | D                           | 4.4                 | 5.4                      | 69                              | 64                            | 2890                        |
| <u>Regular Ejidos</u>         | <u>33</u>      |                             | <u>2.4</u>          | <u>6.7</u>               |                                 |                               |                             |
| 0 - 1.9 hectares              | 12             | C                           | 1.7                 | 5.8                      | 44                              | 77                            | 1620                        |
| 2 - 3.9 "                     | 21             | C                           | 2.8                 | 7.1                      | 48                              | 83                            | 1760                        |
| <u>Bad Ejidos</u>             | <u>31</u>      |                             | <u>2.2</u>          | <u>7.1</u>               |                                 |                               |                             |
| 0 - 1.9 hectares              | 9              | B                           | 1.2                 | 6.8                      | 85                              | 90                            | 1600                        |
| 2 - 3.9 :                     | 22             | C                           | 2.6                 | 7.2                      | 52                              | 95                            | 1290                        |

Source: Background Paper No. 20, Appendix Tables 1, 2 and 3.

a/ In thousands of pesos per hectare cultivated.

b/ Percentage of total area irrigated from tubewells rather than water from the river.

c/ Percentage of cotton in value of total production.

d/ Kilograms of raw cotton per hectare.

e/ For private owners and individual ejidatarios, averages in columns 4-6 are for groupings of: 0 - 3.9 hectares, 4 - 9.9, and over 10 hectares.

f/ See classes of farm by value of product in Table 13.

1960 prices) which puts them in the upper brackets nationally--see column 1. The availability of irrigation water is most important for production, but could not be simply defined. The pre-reform estates had their own tubewells, and many of the ejidos later built tubewells. This water had a real cost of around 1000 pesos per hectare. Later the government built a dam and distributed river water at a subsidized price of 100 pesos per hectare; it supplied this by quotas--25% of available land to ejidos, 15% to private farms. In Table 23, average land values (column 3) reflect chiefly the availability of irrigation water. Column 4 in Table 23 shows the extent to which irrigation water originated in tubewells at high cost as opposed to the cheap river water. It appears that the smaller private and individual ejidatario farms, which were the most intensively irrigated (see land values), had better access to river water; and the big private farms along with many collective ejidos depended more on their own tubewells. The table also shows the share of cotton in total production (column 5); only the large private farms and large collective ejidos had diversified their output very far (into cattle, vineyards and other crops).

Column 6 shows cotton yields per hectare. For the private farms, these clearly increase with farm size; but among ejidatarios in all groups this tendency is minor or contrary. The differences among tenure groups are more significant: yields are highest on large private farms, followed in order by good ejidos, small private farms, individual ejidatarios, regular ejidos, bad ejidos. These differences do not relate consistently with the indicators reflecting irrigation (columns 3 and 4), and other kinds of input must be considered.

A comprehensive analysis of productivity data, giving (weighted) averages for the six tenure groups, is shown in Table 24. Both gross and net productivity values are given for land, capital and labor (gross product being a simple output/input ratio, net product being the value of output less costs of other inputs divided by the input being measured). Then total factor productivities are calculated in three ways: including all labor as cost; excluding imputed owner and family labor as a cost; and excluding all labor (i.e. a shadow wage rate of zero, assuming zero opportunity cost). 1/ In addition, Table 24 has a few income measures: farm owners' income, and their consumption, and labor income (income of owners plus their hired labor). Capital formation is also shown: net additions to physical capital, net change in financial position (i.e. indebtedness), and the two added together--constituting change in net worth. Percentages of farm product going into physical investment (appropriate for social/economic analysis with transfer payments omitted), and into physical-cum-financial investment (for financial analysis) are given.

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1/ A fourth measure for labor cost, using imputed values for owner family labor corresponding to the actual daily cost of hired labor in each group (rather than the minimum wage), was tried; it had almost no impact on total factor productivity in comparisons.

Table 24: Productivity and Income Measures for the Farm Sample in Laguna, Mexico: Group Averages for Tenure Types (money values in 1967 Mexican pesos)

|   | Private Farms      |                    | Individual Ejidatarios | Collective Ejidos |         |        |
|---|--------------------|--------------------|------------------------|-------------------|---------|--------|
|   | Large <sup>a</sup> | Small <sup>a</sup> |                        | Good              | Average | Bad    |
| 1. Value of Product <sup>b</sup> /farm <sup>c</sup> (VP)                | 732,612            | 30,635             | 10,345                 | 24,692            | 12,033  | 7,652  |
| <b>Inputs</b>   |                    |                    |                        |                   |         |        |
| 2. Cultivated Hectares/farm (H)   | 93.9               | 3.8                | 2.2                    | 2.9               | 2.4     | 2.2    |
| 3. Value of Land/hectare (VH)   | 7,200              | 5,900              | 10,200                 | 4,900             | 6,700   | 7,100  |
| 4. Capital <sup>d</sup> invested/farm (C)                               | 824,932            | 23,809             | 4,128                  | 23,900            | 14,950  | 8,030  |
| 5. Labor in mandays/farm (L)  | 5,659              | 661                | 242                    | 428               | 253     | 245    |
| a. Mandays of Hired Labor/farm (HL)                                     | 5,351              | 289                | 81                     | 250               | 87      | 97     |
| b. Value of Hired Labor <sup>e</sup> /farm (VHL)                        | 114,150            | 4,607              | 1,002                  | 2,511             | 872     | 970    |
| c. Mandays owner's family labor/farm (OL)                               | 308                | 372                | 161                    | 178               | 166     | 147    |
| d. Value owner's family labor <sup>e</sup> /farm (VOL)                  | 3,080              | 720                | 1,610                  | 1,780             | 1,660   | 1,470  |
| 6. Purchased Inputs <sup>f</sup> /farm (PI)                             | 452,926            | 15,202             | 4,651                  | 11,797            | 8,237   | 8,265  |
| 7. Capital Charges <sup>g</sup> /farm (CC)                              | 179,986            | 4,883              | 1,987                  | 4,679             | 3,406   | 2,110  |
| 8. Total Inputs <sup>h</sup> /farm (TI = PI + CC)                       | 632,912            | 20,095             | 6,708                  | 16,476            | 11,643  | 10,375 |
| <b>Land Productivity</b>  |                    |                    |                        |                   |         |        |
| 9. Gross Product/Hectare (VP/H)   | 7,804              | 7,977              | 4,620                  | 8,540             | 5,100   | 3,450  |
| 10. Inputs/Hectare (TI <sup>i</sup> /H)                                 | -6,373             | -4,878             | -2,540                 | -5,460            | -4,610  | -4,320 |
| 11. Net Product <sup>j</sup> /Hectare (VP - TI <sup>i</sup> /H)         | 1,431              | 3,099              | 2,080                  | 3,080             | 490     | -870   |
| 12. Net Product <sup>j</sup> /Land Value (VP - TI <sup>i</sup> /H x VH) | .20                | .53                | .20                    | .63               | .07     | -.12   |
| <b>Capital Productivity</b>   |                    |                    |                        |                   |         |        |
| 13. Capital/Hectare (C/H)   | 8,787              | 6,200              | 1,876                  | 8,241             | 6,229   | 3,650  |
| 14. Gross Product/Capital (VP/C)  | .81                | 1.31               | 2.51                   | 1.03              | .80     | .95    |
| 15. Net Product <sup>j</sup> /Capital (VP - TI <sup>i</sup> /C)         | .27                | .65                | 1.22                   | .55               | .26     | -.07   |
| <b>Labor Productivity</b>   |                    |                    |                        |                   |         |        |
| 16. Mandays of Labor/Hectare (L/H)                                      | 64                 | 176                | 110                    | 148               | 105     | 111    |
| 17. Capital/Manday (C/L)  | 146                | 32                 | 19                     | 56                | 59      | 33     |
| 18. Gross Product/Manday (VP/L)   | 129                | 47                 | 43                     | 58                | 48      | 31     |
| 19. Net Product <sup>k</sup> /Manday (VP - TI + VHL/L)                  | 28                 | 21                 | 21                     | 25                | 5       | -7     |
| <b>Total Factor Productivity</b>  |                    |                    |                        |                   |         |        |
| 20. Productivity all factors <sup>l</sup> (VP/TI + VOL)                 | 1.15               | 1.29               | 1.24                   | 1.35              | .90     | .65    |
| 21. Productivity excl. owners' labor <sup>m</sup> (VP/TI)               | 1.16               | 1.53               | 1.54                   | 1.50              | 1.03    | .74    |
| 22. Productivity excl. all labor <sup>n</sup> (VP/TI - VHL)             | 1.41               | 1.99               | 1.81                   | 1.77              | 1.12    | .81    |
| <b>Income Measures</b>  |                    |                    |                        |                   |         |        |
| 23. Farm Income <sup>o</sup> /farm (VP - PI)                            | 279,686            | 15,431             | 5,695                  | 12,896            | 3,795   | -613   |
| 24. Owners' Consumption <sup>p</sup> /farm (VP - PI - dC)               | 145,625            | 10,269             | 4,653                  | 8,482             | 9,084   | 7,035  |
| 25. Labor Income <sup>q</sup> /farm (VP - PI + VHL)                     | 393,835            | 20,039             | 6,697                  | 15,405            | 4,667   | 2,450  |
| 26. Labor Income/Hectare (VP - PI + VHL/H)                              | 4,194              | 5,273              | 3,044                  | 5,312             | 1,945   | 1,114  |
| <b>Capital Formation in 1966/67</b>                                     |                    |                    |                        |                   |         |        |
| 27. Additions to Physical Capital <sup>r</sup> /farm (dPC)              | 168,231            | 4,158              | 864                    | 5,386             | 2,615   | -2,171 |
| 28. Net Reduction in Debt <sup>s</sup> /Farm (dFC, Financial Capital)   | -34,170            | 1,004              | 178                    | -972              | -7,904  | -9,819 |
| 29. Net Investment <sup>t</sup> /farm (dC = dPC + dFC)                  | 134,061            | 5,162              | 1,042                  | 4,414             | -5,289  | -7,648 |
| 30. % of Product Invested: Physical Capital <sup>u</sup> (dPC/VP)       | .230               | .135               | .084                   | .218              | .217    | .284   |
| 31. % of Product Invested: Physical and Financial <sup>v</sup> (dC/VP)  | .183               | .167               | .101                   | .179              | -.440   | -.999  |

Source: Background Paper No. 20, Annex Tables 3, 4, 5, 6, 7, 8, 11, 12, 14, 15.

- <sup>a</sup> Large farms over 10 hectares, small farms under 10 hectares.  
<sup>b</sup> Value of Product (VP): includes all farm production - crops, livestock, forestry; includes changes in inventory.  
<sup>c</sup> Units for all values "per farm" are: individual farm operations in first 3 columns; averages per farmer for collective ejidos (columns 4 - 6), i. e. ejido total divided by no. of ejido members.  
<sup>d</sup> Capital (C): value of livestock, equipment and plantations, excluding land, but including half the value of purchased inputs (PI) as estimate of working capital.  
<sup>e</sup> Hired labor (VHL) at actual cost; owners' family labor (VOL) valued at current minimum wage of 10 pesos per manday.  
<sup>f</sup> Purchased Inputs (PI): payments for rental of land or equipment, hired labor (VHL, line 5b), irrigation water, and non-agricultural goods such as fertilizer and pesticides; plus interest on loans.  
<sup>g</sup> Capital Charges (CC): imputed annual costs of owned capital - 5% of land value, 8% of other capital (line 4), plus 10% depreciation on equipment.  
<sup>h</sup> Total Inputs (TI): all items in lines 6 and 7 (PI + CC), which excludes imputed value for owners' family labor (VOL).  
<sup>i</sup> Net productivity of land calculated by deducting from the value of product (VP) all input costs other than land (i. e. TI minus land rent or imputed cost of owned land).  
<sup>j</sup> Net productivity of capital calculated by deducting from value of product (VP) all costs of inputs other than capital (i. e. TI minus interest and equipment rental payments).  
<sup>k</sup> Net productivity of labor calculated by deducting from value of product (VP) all costs of inputs other than labor (i. e. TI minus value of hired labor - VHL).  
<sup>l</sup> Productivity of all factors of production including an imputed cost for owners' family labor (VOL).  
<sup>m</sup> Productivity of all factors other than owners' family labor (TI).  
<sup>n</sup> Productivity of non-labor factors of production (TI - VHL), i. e. with labor given a zero opportunity cost.  
<sup>o</sup> Farm Income: owners' income from the farm in cash and kind minus cash outlays; excludes off-farm earnings of owners.  
<sup>p</sup> Owners' consumption: farm income minus amounts invested (see dC, line 29).  
<sup>q</sup> Labor Income: owners' farm income (line 23) plus income generated by the farm for its hired labor (VHL).  
<sup>r</sup> Change in Physical Capital (dPC): net increase in value of livestock, grapevine, alfalfa and fruit plantations, and purchases of machinery and equipment during the year.  
<sup>s</sup> Net reduction in debt = net increase in financial capital (dFC) during the year.  
<sup>t</sup> Net investment = change in net worth, sum of changes in physical and financial capital position (dC = dPC + dFC).  
<sup>u</sup> Percentage of product invested in physical capital (dPC/VP); net investment for social/economic analysis.  
<sup>v</sup> Percentage of product invested taking both physical and financial capital into account (dC/VP); net investment for financial analysis.

The large private farms, cultivating nearly 100 hectares on average, stand out from other groups in several respects. The gross value of their product per hectare is high; but so also are their purchased inputs per hectare, so that their net product per hectare is below that of smaller farms. Their capital per farm and per hectare is high; consequently their productivity of labor (gross and net) is the highest of any group while productivity of capital (gross and net) is low. When these factors are brought together in the measures of total factor productivity, the large farms fall below the smaller farms on all three measures, though above the "average" collective ejidos. Large private farms, not surprisingly, provide much the largest average incomes, and also the largest rate of investment--both absolutely and as a percentage of farm product.

The small private farms would seem to be a "middle class" group, applying more capital and purchased inputs to a somewhat larger average land area than most ejidatarios, and obtaining larger incomes. Their productivities are generally high, in either first or second place for most categories, and they appear in first rank (or tied to it) in total factor productivity measures. They are also strong in producing total labor income, and reasonably so in percentages of product invested.

The individual ejidatarios, on the other hand, are relatively poor; their farms are small (lower-middle sized by national standards--classes B and C by the table 13 classification), although the value of land per hectare is high. Capital per farm, per hectare, and per man-day of labor are the lowest, as is the level of purchased inputs per hectare; and they have the least access to bank credit. Yet they do well with what they have: highest productivity (gross and net) per unit of capital and relatively high net values for output per hectare and per man-day. It might be objected that these results are biased because the ejidatario farms in this sample benefitted more than others from cheap canal water; the net productivity per unit of land value (which reflects irrigation water and its cost) shows them about equal to the big farmers but well ahead of the "average" collective ejidos. In total factor productivity, the individual ejidatarios are only slightly below or equal to the small private farmers.

Together these two groups, which have small individually operated farms, are clearly above the larger farm operations--private or collective--on all measures of total factor productivity, i.e. in general economic efficiency. There are some important differences between the two types of small farmers, however. Individual ejidatarios have 90% of their farms irrigated by canal water as against 50 - 80% for small private owners and much less for others; this water is low in cost (subsidized), and is supplied without requiring farmers to invest in pumping equipment. If these farmers had had to pay the alternative cost of about 1,000 pesos per hectare for their water, their total factor productivity values would be brought down closer to those of the larger farm units, though still above them.

Secondly, the individual ejidatarios (like the collectives) have kept more than 80% of their output in cotton, unlike the private farms (larger private farms have diversified the most). Thus individual ejidatarios are conservative farmers, producing a safe product under secure protected conditions, as compared to the more technically progressive small private farmers.

The collective ejidos as a group come out rather poorly in most of these comparisons. The "average" or representative collectives are below all three groups mentioned earlier on all productivity, income and investment measures except: Gross product per hectare (third place), gross product per man-day (second place), and percent of product going into physical investment. The latter, and the fairly high level of purchased inputs, reflect a relatively good access to credit from the Ejido Bank; but the low levels of productivity indicate that these resources tend to be used with less efficiency than that of the small farmers, and somewhat less than the big farmers who tend to use still more inputs and capital per hectare. However, the small minority of "good" ejidos have evidently achieved a "middle class" status like that of the small private farmers, and like them a relatively high level of general efficiency. But the "bad" collective ejidos, in contrast, are lowest of all in every category, and show negative values for net product of each factor and for income--a reflection of financial losses covered by non-repaid debts to the Ejido Bank. Generally, all three collective groups use more inputs and capital per hectare than do individual ejidatarios, but less than the large private farms; the "good" collectives are highly capitalized and well prepared to buy and use modern inputs.

In conclusion, if one is seeking the tenure form most conducive to efficiency in the use of society's resources, it would seem to be the smaller farms--whether privately owned or managed by ejidatarios as individuals. There is room for debate over what form of efficiency measure is most appropriate: whether the owners' family labor should or should not be included as a cost; and whether labor, as a factor in excess supply, should be given a shadow price below cost to reflect low opportunity cost, and at the extreme valued at zero. But in the Laguna sample, the shift from one to another of these measures of total factor productivity does little to affect the relative rankings of the tenure groups: first is small private farms, closely followed by individual ejido farms; large private farms are in an intermediate position; with "average" collective ejidos in last place. The favorable showing of the "good" collectives, comparable to that of small farm groups, may be noted; but these should not be compared with the average values for other tenure groups (and there are no other selected "best" farms in other groups from which a proper comparison with "good" ejidos could be made.) What may be concluded from the productivity figures for the "good" farms is that some collective ejidos can outperform most other farms; but this must be noted along with the record of waste and losses on the "bad" collective farms.

Overall, these results point to the efficiency of smaller farms operations; and this suggests that economies of scale are not decisive in the context of cotton growing in Laguna, given the degree of government support and infrastructure available to most farmers. The main respect in which large size showed its advantages was in facilitating diversification of product (see column 5 of Table 23, and note the differences by farm sizes within the larger categories). At the same time the virtues of the rich private farmers in capital formation, and in gross product per hectare and per man-day of labor, should also be remembered. The experiment with collective farming as a means of capturing economies of scale while eliminating landlords seem not to have proved more useful for output than was the alternative land reform process of subdividing holdings, even where modern sophisticated methods were in use.

This judgment is based on static comparisons after 20 years of experience. In the early stages of the Laguna land reform transition, when public irrigation on a large scale had not been organized and farmers were inexperienced, their grouping into collective units built around the old estates was more necessary and useful as an aid to production than it became later. It can also be argued that the ability of the "good" collective ejidos to perform well is more significant than this summary verdict against collectives would suggest, particularly when economies of scale might be more important elsewhere than they appeared to be in Laguna in 1967. The "good" collectives were not differently structured than others at the beginning; it appears that they became differentiated by a history of cumulatively good performance, rewarded by Ejido Bank loans, leading to improved facilities, and better performance, etc. The ways in which good work performance and good management were attained in these "good" collective ejidos in Laguna may well merit a special micro study. Nevertheless, the analysis of this particular 1967 sample does indicate the probability of higher efficiency on small farms than large estates, and a lower probability in the same terms for the collectives as a group.

Finally, Laguna illustrates on a regional level what happened to Mexican land reform as population grew. In 1940 there were 38,000 ejidatarios whose income had risen appreciably above pre-reform levels, and about 6,000 landless workers whose incomes had risen somewhat with increased legal minimum wages. By 1960 there were 42,000 ejidatarios: some had made great progress, most had remained nearly stationary since the 1960s, and some had to be steadily subsidized. At the same time, however, there were by then over 40,000 landless rural workers dependent on employment which had hardly increased. This implies that in the average ejidatario family there is perhaps one adult son "stuck in agriculture next to his father," and 2-3 children who have "escaped." The agricultural resources of Laguna cannot fully absorb even this residual population increase.

2. Production Cooperatives on Modern Estates of Coastal Peru.

Along the coast of Peru, where the climate is hot and dry year-round but irrigation water is available, a number of estates had developed profitable and mechanized production of sugar cane, cotton and other commercial crops on a relatively large scale, usually in conjunction with processing plants. Scale economies are important, especially in cane crushing; and the even climate reduces the importance of timeliness in planting and harvesting (which creates diseconomies of scale for crop cultivation in the Peruvian highlands). Estate employees are wage earners, and many have a history of union organization; colono plots and worker-owned cattle are found in some cases but not on a significant scale. These estates were expropriated and transformed into production cooperatives under laws described above. We will examine the findings on nine such enterprises in case studies in 1973 by Douglas Horton.<sup>1/</sup>

The conditions in which this transformation occurred may be illustrated by the case of the large Pomalca sugar estate, one of Peru's most advanced agricultural enterprises. Half of its 3,300 employees were field workers, while the others lived in the company town and worked in the sugar mill, the company offices, or as field supervisors. There were 30 college-educated technicians, and an elaborate hierarchy of supervision with four echelons in the fields and a more complex structure in the factory. The company provided houses, schools, medical services, electricity and a significant volume of food rations. Although these features were more elaborate in Pomalca than in the smaller estates of the other case studies, they were also found in the latter.

Pomalca had been run in a highly autocratic fashion for years, with harsh punishments for disobedience rather than work incentives; but its workers had much more income and amenities than the nearby farmers. Union organization, established with struggle in the 1960s, resulted in occasional strikes but little change. When the estate was abruptly expropriated in June, 1969 (sugar estates having been exempted under the 1964 law), the staff and workers continued on their jobs under interim administration without much disturbance. However, there was a considerable turnover in technicians and supervisors during 1969-73: generally younger people were hired, men not imbued with the old autocratic ways; but the level of technical competence was fairly well maintained. At the same time, cooperative committees and meetings were organized, and elected officers' voices were injected into management decisions. These have had only marginal impact on complex technical production and investment plans, or sales and final decisions. But the effect on supervisory practices and personnel has been considerable: supervisors must now seek worker support to maintain work discipline, an effort which seems to have been reasonably successful. There is also an indirect effect on technical decisions, in that mistakes which are noted by non-technicians are quickly criticized, and sometimes punished. As a result, technicians are now

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<sup>1/</sup> Background Papers Nos. 22, 23 and 24.

cautious about coming out in favor of any departure from past practice; and this may in time result in technological stagnation, since new proposals must be explained and "sold" to cooperative officials. These kinds of change have also been noted on the other estates/enterprises in the sample, but with considerable differences in degree depending on the competence of particular management people (those before and after reform), and their ability to achieve respect from workers and their elected officers. The element of "politics" in management has grown, and is still being worked out in various ways.

Table 25: CHARACTERISTICS OF NINE CROP ENTERPRISES STUDIED ON THE PERUVIAN COAST

| Enterprise Name <sup>a/</sup> | Principal Crops <sup>b/</sup> | No. of Members | No. of Hectares | Dates inter-vention | Adjudication |
|-------------------------------|-------------------------------|----------------|-----------------|---------------------|--------------|
| 1. Pomalca                    | Sugar                         | 3,300          | 16,662          | 6/69                | 10/70        |
| 2. Andalhuas                  | Sugar                         | 375            | 1,084           | 6/69                | n.d.         |
| 3. San Nicolas                | Sugar                         | 300            | 1,432           | 11/69               | 7/72         |
| 4. Cerro Alegre               | Cotton-potatoes               | 265            | 1,087           | 6/71                | 12/72        |
| 5. Santa Barbara              | Cotton-potatoes               | 137            | 443             | n.d.                | 6/72         |
| 6. Cerro Blanco               | Cotton-potatoes               | 150            | 532             | 8/71                | 12/72        |
| 7. Casa Blanca                | Cotton-potatoes               | 72             | 668             | n.d.                | 6/72         |
| 8. Caldera                    | Cotton-Miscel.                | 150            | 900             | n.d.                | n.d.         |
| 9. El Potao                   | Cotton-corn                   | 98             | 717             | 9/71                | 1/73         |
| n.d. - no data                |                               |                |                 |                     |              |

<sup>a/</sup> All these enterprises were CAPs (see earlier description).

<sup>b/</sup> Cotton enterprises were required by law to plant 40% of their area in other crops; sugar enterprises could specialize.

Source: Background Paper 23, pp. 33 and 35.

As of 1973, the record of production and investment in these sugar and cotton enterprises was reasonably favorable considering the changes involved. On three of them output had increased considerably, on five more moderately, and on one there was little change (Table 26). On six, increased productive investment was noted, and on five there were increases in social investments. There was less to report on methods of intensification of production, however, for reasons just noted. (Peasant production was thought to be unchanged, but that was insignificant in these enterprises.) Employment was moderately higher in five enterprises and lower in one. The median basic wage rate had risen from 55 to 75 soles, which was a major contribution to members' welfare. It may be noted that the salaries of technicians and office or skilled workers had increased much less than the base rate for field workers, so that there was a tendency toward equalization within the hierarchies.

Table 26: ECONOMIC PERFORMANCE ON NINE COASTAL PERUVIAN CROP ENTERPRISES  
(number of cases)

|                              | <u>Increase</u> |          | No<br>Change | <u>Decrease</u> |       | Yes | No              |
|------------------------------|-----------------|----------|--------------|-----------------|-------|-----|-----------------|
|                              | Large           | Moderate |              | Moderate        | Large |     |                 |
| Enterprise production        | 3               | 5        | 1            |                 |       |     |                 |
| Peasant production           |                 |          | 9            |                 |       |     |                 |
| Intensification of methods   | 2               | 2        | 5            |                 |       |     |                 |
| Employment                   |                 | 5        | 3            | 1               |       |     |                 |
| Investment:                  |                 |          |              |                 |       |     |                 |
| production                   | 4               | 2        | 3            |                 |       |     |                 |
| social                       | 2               | 3        | 4            |                 |       |     |                 |
| Profitability                |                 |          |              |                 |       | 9   |                 |
| Professional Manager         |                 |          |              |                 |       | 8   | 1 <sup>a/</sup> |
| Member support <sup>b/</sup> | 2               | 7        |              |                 |       |     |                 |

<sup>a/</sup> A professional manager was being sought.

<sup>b/</sup> In all cases there was active member participation, large or moderate.

Source: Background Paper 24, p. 110.

All these estates had used quite a lot of seasonal labor from the outside. These temporary workers had not become members of the cooperatives; their labor was still required by the cooperative enterprises, but they were not paid at as high a rate as members in many cases and they did not participate in profit distribution nor in the amenities of resident workers. Although there was discussion of letting non-resident workers join the cooperative, member sentiment was almost universally opposed. In the national income distribution of Peru, the resident workers on sugar and cotton farms on the coast are well into the upper-middle brackets. It would seem that land reform has indeed been beneficial to this group, but less so to the marginal participants in these highly productive enterprises.

In sum, the transition from estates to cooperative enterprises in coastal Peru has occurred with much less disturbance to production and investment than might have been expected. Most workers continued on their jobs at increased wages, and management employees either remained or were replaced without major problems. The boundaries of pre-reform estates were largely left intact on the coast (unlike many highland estates), and their commercial and financial needs were adequately met by new arrangements outside the enterprises. 1/ The labor unions, most having strong political affiliations, remain; but they have not played an active role under the new order. Technological stagnation may become a problem; and the continuation of a peaceful coexistence of groups within the enterprises may depend on the political evolution of the country. The results observed in 1973 could be precarious, given underlying tensions; some subsequent developments will be noted in the general discussion below.

3. Asentamientos created on modern estates in Chile. Of the various phases of land reform in Chile, our best information comes from the period of President Frei in 1964-70. The preceding actions under the 1962 land reform law were not very significant, whereas the land redistribution from 1965 to 1970 was moderate in scope but large enough to supply a substantial body of experience. Subsequent redistribution of lands under President Allende in 1970-73 was much faster, and reached nearly three times the number of estates that had been affected earlier; but many of the relevant data are unreliable, and it was a period of such rapid changes and conflicting forces that it is difficult to analyze with clarity. Also, it was a short time period followed by a sharp change of direction, so that the specific actions of the Allende regime had little chance to work

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1/ The arrangements outside the enterprises involve government subsidy, and this should be noted along with the profitability observed within the enterprise accounts. A full discussion is beyond the scope of this report.

out and display their effects. There has been almost no field research in the period of reversal of land redistribution since 1973. Two kinds of study on Chile are reported here: an account of the national reform process by Eduardo Cifuentes, 1/ documented from official sources; and a sample study of 105 estates in 1965 and 1970, i.e., through the Frei reform period, by David Stanfield with Stephen Smith and others. 2/

As noted earlier, estates expropriated under the 1967 land reform law were not immediately subdivided among those working on them, but were kept intact for organization of production in units called asentamientos, functioning as production cooperatives under the supervision of CORA, the land reform agency. 3/ This was intended as a temporary status, lasting three years from expropriation dates to the issuance of land titles to beneficiaries; but by 1973 less than 200 asentamiento groups out of over 5,000 expropriated units had received land titles. Even among these, not one had emerged from CORA supervision to operate on its own--the main reason being the deficiencies of the asentamiento book-keeping records. Thus, analysis of reform impacts must center on the analysis of asentamiento operation under CORA, along with such effects as can be seen in the remaining private sector.

Some estate owners retained substantial reserves of land outside of the asentamiento, along with the buildings and equipment of their estate; in other estates--usually those less efficiently run--the asentamientos took over all assets, leaving the new organization in a stronger position. In all cases a CORA supervisor was placed in each asentamiento, and a comprehensive plan for farming operations in the next year was drawn up and submitted to CORA for approval and for integration into a national plan. Once plans were approved, CORA undertook to finance the cash needs of the next year's operations; and pending calculation of that year's profits and the determination of the exact wages with which workers were to be compensated for their labor time (based partly on past enterprise earnings), CORA would continue to support the enterprise's financial needs with credits.

In practice, inexperienced bookkeepers lacking strong motivation kept the accounts poorly, and far behind the facts (2 or 3 years in most cases), so that asentamientos were in effect living off easy credits which flowed regardless of profit. They were ignorant of whether their activities were making or losing money and what the precise member incomes were. It hardly mattered: loans continued to be supplied from one year to the next at a negative real rate of interest (given the current inflation), and in most years no more than a quarter of them were repaid.4/ In 1966 and 1967

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1/ Background Paper No. 15.

2/ Background Papers Nos. 25 and 26.

3/ In most cases former tenant-farmers continued to cultivate their (rented) lands individually.

4/ During 1965-70 the highest annual repayment rate was 37% in 1968. Under Allende, the credit source was largely shifted from CORA to the State Bank, which increased collections to 44% in 1971-72.

the total value of CORA loans divided by asentamiento members was 5,187 and 4,464 escudos respectively per capita; these per capita values were over twice the minimum annual farm wage of 2,136 escudos (about US \$178). And there was little discipline enforced by CORA over loan uses; much of the money may have gone to cover family consumption, or to supplies of fertilizer, hired labor, etc. used on individual production rather than for asentamiento purposes. The extent to which this occurred is a controversial question. Certainly the asentados had stronger incentives to produce and sell what they could at uncontrolled black market prices on their own than they had to put in labor time for their enterprise, since CORA continued to provide advances of money to enterprises irrespective of recorded labor time.

Asentamiento production was sold through CORA channels, and subject to price controls. At first, under Frei, the controlled prices were quite generous to farm products, as a production incentive measure. After 1967, however, inflation accelerated and black markets with higher prices began. Under Allende, the pace of inflation speeded up much further, as did the volume of black market sales. Behind these inflationary pressures lay the incomes policy of raising wages for the poorer urban groups, first moderately under Frei and then more emphatically in 1971-73.

Whatever else it did, this policy was a major stimulus to demand for foodstuffs, and especially for vegetables and fruit. Farmers of all kinds responded: the relative responses of different tenure groups in a sample are examined below. Generally, it was the farmers most affected by reform (i.e. asentamientados and owners of estate reserves) who responded most strongly, but all groups shifted toward greater proportional cultivation of vegetables and fruits. The private plots of asentamientados, output of which is not recorded, must surely have produced more vegetables, a traditional type of product for tenant's plots having marketing channels that were more familiar than those for other products. Increases in the national production of agricultural crops and livestock may be documented during the Frei period up through 1970; but in the Allende period the facts become unclear. During 1971-73, shortages of particular foods, and high prices (in the context of rising inflation), could be observed at various times in the urban markets. But these could well be explained by the very great increase in demand, and in the numbers of consumers seeking foods they had not previously been able to afford. Clearly demand was tending to exceed supply; but it is difficult to know whether or not supplies were increasing in volume--though at a slower rate than demand.

In the 30 years prior to 1965, Chile's total agricultural output grew at only 1.8% annually, with agricultural imports increasing significantly. During 1965 to 1970 the growth rate rose to 3.0% a year, insufficient to keep pace with demand but a distinct improvement. After 1970, official data became quite unreliable, partly due to general confusion and a growth in non-recorded black market sales, but also in part because of shifts in estimates for particular years as governments changed (see Appendix Table B2, showing diversity and shifts in the figures for 1971-74). Whether the increasing production trend from 1965 to 1970 (and possibly to 1971) should be attributed more to good weather, land reform, or to urban income policies is a debatable question.

It can be said that the incomes policy, certainly by the time of Allende, had become so extreme that it was generating hyperinflation and would not have been sustainable under any circumstances. Land redistribution, on the other hand, should have been sustainable economically, although it became vulnerable politically.

Given an external market stimulus, it is probable that the asentamiento output response owed more to farmer initiative than to CORA guidance and assistance (whether farmer initiative is taken to be individual, collective, or a mixture of the two). CORA's staff was simply swamped with too many new and burgeoning functions to carry out strong or valuable supervision, although its permissive type of financial support was at least helpful to producers. The ex-inquilinos who made most production decisions in the asentamientos were probably better farmers than many of the land reform beneficiaries in other countries studied. Some inquilinos had managed share-cropping sub-farms on their estates; others were skilled with machines, acquainted with fertilizer use, or knowledgeable about a variety of crops, etc. Inquilinos were rather few in number relative to estate area, 1/ and well aware of their superior status vis-avis temporary and non-resident workers. 2/ The prospective distribution of land titles to asentamiento members would leave them quite well off, well above the level of surrounding minifundia; and they were not eager to allow any outsiders into asentamiento membership to share and dilute either their current or future benefits.

This aspect of land reform came under attack from groups of outside workers and small farmers, and when Allende came in the policy was shifted in some degree. First, owner's reserves were eliminated much more often than before (this was a matter of interpreting alternative provisions in the 1967 law); second, a new organization of reform beneficiaries with the initials CERA was favored, which would function like an asentamiento except that all estate workers, both resident and non-resident, would become members. Where estate workers could not agree to form a CERA, they were placed temporarily in a Peasant's Committee (Comite Campesino). The outcome of this effort to spread reform benefits more widely may be inferred from Table 27, which gives the status on June, 1973 of reform units from all the affected estates. It is evident from the number of Peasant Committees that less than one in six farmer groups had agreed to form a CERA once the new policy went into effect.

Turning to the sample survey of 105 estates in 1965/66 and 1970/71, these estates were chosen to represent the main types of land tenure situations on large properties in the Frei period. It was thought that the land reform

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1/ In Table 4 above, the average land area per reform beneficiary was 164 hectares in Chile as of 1973.

2/ On many estates there were also some temporary but resident workers, usually the children or relatives of inquilinos living in their houses; this was an intermediate group, better off than non-resident workers but without inquilino rights.

Table 27: MID-1973 STATUS OF CHILEAN FARM UNITS  
FORMED FROM ESTATES EXPROPRIATED DURING  
1965-73  
(number of units)

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|                                  |              |
|----------------------------------|--------------|
| Total Estates Expropriated       | <u>5,497</u> |
| Appropriation in process         | 1,198        |
| Asentamientos                    | 1,454        |
| Land titles distributed          | 181          |
| CERAs                            | 393          |
| Peasant Committees               | 2,209        |
| Production Centers <sup>a/</sup> | 62           |

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a/ State farms created from specialized estates, either growing improved seed or producing superior fruits or cattle on a significant scale.

Source: Corporacion de Reforma Agraria, June, 1973.

process was having effects outside the asentamiento sector that would also need to be examined. The nature of the sample, before and after reform, is shown in Table 28. It included estates remaining intact; estates completely turned over to asentamientos; estates divided into owner reserves, asentamiento lands and individual parcels; 1/ and estates voluntarily subdivided into individual parcels. 1/ Subdivision, and a few boundary shifts, resulted in 215 farm units on the same lands by 1971. The table shows mean area pre-reform and land quality in each post-reform category. The expropriated estates had generally larger total areas than those left intact or voluntarily subdivided. After reform, owners obviously kept their best lands for reserves when they could; asentamientos had the least productive land, and individual parcel owners had medium quality land; the non-affected estates were closer to the asentamiento level.

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1/ The 1962 law, effective until 1967, allowed owners to avoid expropriation by selling parcels of land; many such sales were to family members.

Table 28: TYPES OF LAND TENURE IN SAMPLE  
ESTATES SITUATED IN CENTRAL  
VALLEY OF CHILE

|                        | Before Reform (1966) |                                  | After Reform (1971) |                               |                        |
|------------------------|----------------------|----------------------------------|---------------------|-------------------------------|------------------------|
|                        | No. of<br>Units      | Mean Area<br>(BIH) <sup>a/</sup> | No. of<br>Units     | Land<br>Quality <sup>a/</sup> | % of Area<br>Irrigated |
| Undivided Estates      | 41                   | 288                              | 41                  | .51                           | 65                     |
| Fully Expropriated     | 19                   | 604                              | -                   | -                             | -                      |
| Asentamientos          | -                    | -                                | 22                  | .45                           | 55 <sup>b/</sup>       |
| Party Expropriated     | 18                   | 642                              | -                   | -                             | -                      |
| Reserves               | -                    | -                                | 16                  | .95                           | 67                     |
| Asentamientos          | -                    | -                                | 19                  | .51                           | 55 <sup>b/</sup>       |
| Parcels                | -                    | -                                | 20                  | .64                           | 79 <sup>b/</sup>       |
| Voluntarily Subdivided | 27                   | 350                              | -                   | -                             | -                      |
| Parcels                | -                    | -                                | 97                  | .71                           | 79 <sup>b/</sup>       |
| Totals                 | 105                  |                                  | 215                 | .54                           |                        |

a/ BIH (Basic Irrigated Hectares) is a measure of area weighted by product; one hectare of good soil fully irrigated might be 2 BIH; a hundred hectares of arid land might be one BIH. Land quality is indicated here by the ratio of BIH to physical hectares.

b/ Percentages for all asentamientos and all parcels irrespective of origin.

Source: Background Paper No. 25, Tables 2, 3 and 4.

Table 29 indicates the changes for each post-reform category in the value-added per BIH (defined in footnote a,) and in the percentages of land devoted to different crops and to pasture; average values for value-added/BIH in 1970/71 appear in the top rows. The changes in value-added/BIH were all positive: all types of farms responded to the expanding market, with the least improvement shown on the undivided estates. In that sense, the effect of land reform must be seen as favorable to output. The largest increase is found on owners' reserves, a large portion of which resulted from a shift into poultry raising by 11 farms. (If these 11 farms are removed from the sample, as in figures at the bottom of Table 29, then the gains on reserve lands are less impressive.) Asentamiento production did increase substantially, about one-third over pre-reform levels (and if the non-recorded production from individual plots

were included, the increase would probably have been greater). Poultry aside, all groups except reserve owners had shifted away from livestock, and even they kept less of their land in pasture. Generally there were increases in cropping intensity, though not increases in all types of crop.

The figures on relative shifts in land use indicate, not surprisingly, that undivided estates exhibited the smallest reactions to changing conditions. The increasing markets resulting from price/income changes were especially favorable to vegetables and fruits and to some livestock such as poultry, less to field crops, and least to industrial crops. Changes in production conditions led to more labor-intensity on asentamientos, since about half the sample had lost their ex-estate's equipment and cattle to the owner reserves; their value-added from livestock fell from 30 to 8 percent of the total, while area devoted to vegetables rose sharply and field crops moderately. Owners with reserves of good land greatly reduced in area, but with capital resources, turned to high-value capital-intensive products like fruits, vineyards and poultry; they also farmed more intensively the land they had, putting in vegetables rather than field crops, and shifted from pasturing to feedstuffs for their cattle. The parcel owners, facing less change than the expropriated estates, reacted more like the undivided property owners; but they too moved out of pasture and into vegetables. On the whole, these comparisons indicate that expropriation stimulated more active and positive responses to market opportunities, and greater increases in land productivity, than non-expropriation; and that the subdivision into parcels was more stimulative in the same directions than was an absence of change.

A regression analysis of the factors contributing to relative gains in value-added per BIH among the asentamientos in the sample was done, results of which may be briefly summarized. The average increase in VA/BIH for the group was 35.7 percent. The best equation, with  $R^2 = .84$ , had the following variables (see Table 30): 1) initial level of VA/BIH (in 1965/66); 2) initial percentage of land in the central enterprises (as against individual plots); 3) changes in this percentage; 4) changes in the percentage of land in fruits and vegetables; and 5) percentage of asentados with prior factory experience. Another variable, the increase in numbers of asentados (largely from *inquilinos*' sons admitted as members of the cooperative), had a high positive correlation separately but added little to the multiple regression. 1/ The components of the equation appear in Table 30.

Variable 1, indicating that increases in value-added were greater when initial (estate) values were lower, is an expected statistical relationship used here as a control variable. The reason for variable 4 showing a

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1/ The following variables had less or no significant correlation; initial tractors per BIH; date of expropriation; extent of CORA involvement; union membership; asentado participation in decisions.

**Table 29:** CHANGES ON LANDS IN CHILEAN FARM SAMPLE  
BETWEEN 1965/66 and 1970/71 IN VALUE-ADDED  
PER BIH AND IN LAND USE BY POST-REFORM  
TENURE GROUP

|  | Undivided<br>Estates | Reserves | Parcels | Asenta-<br>mientos |
|--|----------------------|----------|---------|--------------------|
| <u>Average VA per BIH<sup>a/</sup> in 1970/71</u>            |                      |          |         |                    |
| Crops  | 6930                 | 6412     | 6144    | 6611               |
| Livestock  | 1580                 | 2134     | 1732    | 422                |
| Total  | 8641                 | 8547     | 7902    | 7031               |
| <u>Changes in VA per BIH<sup>a/</sup></u>                    |                      |          |         |                    |
| Crops  | 1087                 | 3424     | 2128    | 2578               |
| Livestock  | -641                 | 769      | 679     | -991               |
| Total  | 431                  | 4192     | 2822    | 1702               |
| <u>Changes in % of hectares<sup>b/</sup><br/>devoted to:</u> |                      |          |         |                    |
| Field Crops <sup>c/</sup>                                    | 0.3                  | -14.0    | -2.5    | 7.3                |
| Industrial Crops<br>(sugar, veg. oils, etc.)                 | -2.7                 | -3.1     | -2.5    | -2.5               |
| Vegetables   | 1.5                  | 6.7      | 4.5     | 11.5               |
| Fruits, vineyards  | 1.6                  | 9.6      | 1.4     | 2.5                |
| Seed growing   | 2.2                  | -2.0     | -0.2    | -2.4               |
| Pasture  | -4.0                 | -16.1    | -8.2    | -19.6              |
| <u>Changes in VA per BIH Adjusted<sup>d/</sup></u>           |                      |          |         |                    |
| Crops  | 912                  | 189      | 2245    | 2578               |
| Livestock  | -682                 | 119      | -224    | -991               |
| Total  | 137                  | 309      | 2027    | 1702               |

a/ VA = Value-added in constant 1971 escudos. On the asentamientos this included only enterprise output sold through CORA, excluding individual output or sales in other channels. (See Table 28 footnote for definition of BIH). Costs of production subtracted from value of sales to obtain value-added included fertilizer, seed, pesticides and herbicides but not costs of land, labor or machinery. Value-added in enterprise production is divided by numbers of BIH controlled by enterprise, including non-cultivated lands, excluding lands rented out or farm workers' individual plots.

b/ Change from pre-reform percentage to post-reform percentage (not percentage change in area).

c/ Extensive crops, most prominently wheat.

d/ Excluding 11 poultry farms from sample.

Source: Background Paper No. 25, Tables 8 and 9; and Stephen Smith's Ph.D. dissertation (University of Wisconsin, 1974), Table IV-3 for 1970-71 VA per BIH.

positive contribution of shifts into vegetables and fruit, with their high values per hectare, is obvious; the mean percentage of area in these uses rose from only 7 to 23 percent. Variable 5, indicating a positive contribution to farming by men with factory work experience, though not a strong predictor, represents an interesting and suggestive finding. It may point to the high level of mechanization or work discipline on these Chilean farms.

Table 30: REGRESSION PREDICTING CHANGE IN VALUE-ADDED PER HECTARE ON CHILEAN ASENTAMIENTO SAMPLE, 1965/66 TO 1970/71

| Independent Variables   | Beta     | Standardized Beta | F     | Probability of Error | Mean Values |
|---|----------|-------------------|-------|----------------------|-------------|
| 1. Initial VA per BIH <sup>a/</sup>                           | -.35     | -.14              | 2.52  | .2                   | 5055.5      |
| 2. Initial % of land in central enterprise <sup>b/</sup>      | -29,300  | -.94              | 85.52 | .001                 | 85.4        |
| 3. Change in % of land in central enterprise <sup>b/</sup>    | -32,000  | -.63              | 38.16 | .001                 | 4.1         |
| 4. Change in % of land in vegetables and fruit                | 7,717.4  | .29               | 12.04 | .01                  | 16.1        |
| 5. Percentage of asentados with factory work experience       | 117.1    | .15               | 3.50  | .1                   | 6.0         |
| Constant  | 34,587.8 |                   |       |                      |             |
| <u>Dependent Variable:</u> Change in VA per BIH <sup>a/</sup> |          |                   |       |                      | 1806.6      |

N = 31; R<sup>2</sup> = 84; F = 27.6; p.e. = .001

a/ VA = Value-added, in constant 1971 escudos, by central enterprise production. For BIH see Table 28 footnote.  
 b/ Central enterprise means owners' estate operations in 1965/66, and asentamiento cooperative operations in 1970/71.

Source: Background Paper No. 26, pp. 15a, 18a.

Variables 2 and 3, with their high levels of correlation and strong negative impact, merit some attention. The average percentage of land in individual production outside the central enterprise (see footnote b, Table 30) was only 15% in 1965/66. It was reduced to 11% by 1970/71, in accordance with CORA policy. That the extent of individual farming on estates should relate positively with subsequent productivity in asentamientos can be explained by a contribution from the prior entrepreneurial experience in farm management of the former tenants among asentados. However, it is not obvious why the subsequent relative failure of enterprises to curtail individual farming should also contribute to enterprise production. (The initial levels and the percentage changes were negatively correlated.) We have noted earlier the greater incentives to work on individual production as compared to work for the enterprise in the Frei period. This might contribute to an increase in total output from both sources in an expanding market; but it would hardly explain relative gains in enterprise output alone if this conflicted with time spent on individual lands. Good farmers, of course, may wish to work harder in both activities after removal of the estate owner, since both would profit them in the end; and the asentamientos which were less repressive of individual activities may have elicited greater farmer support generally. This reasoning may be a bit tenuous, but something of the sort is needed to explain why the asentamientos which added more land to their central enterprises tended to produce less on it.

To summarize: most of what can be inferred from Chile's experiment in land reform, aborted though it was, seems to point to favorable effects on agricultural output, both in its quantity and its composition, resulting from the expropriation and reorganization of large estates. These effects were found in asentamientos, on owners' reserves, and in lesser degree on subdivided parcels in a representative sample from Chile's major agricultural region. The effects on distribution of rural incomes were selective, in that the major shift from large owners to inquilinos/asentados took place within an upper level minority of the agricultural work force; but the direction was toward equalization. The positive response in asentamiento production seemed to stem more from farmer initiative than from CORA's efforts at management of the collective enterprises. CORA's "degree of involvement" in asentamientos had no correlation with production increases, whereas prior experience as tenant farmers or factory workers were positive factors. This does not necessarily imply that production would have been still higher with individual farming, for these farmers were responding collectively for the most part and probably understood some of the values of large scale operation. But it does suggest limits on the capabilities of centralized bureaucracies when they enter into farm management--certainly under Chilean conditions.

4. Land Distribution on Two Modern Estates in Bolivia. Two case studies of land reform on Bolivian estates by Jeff Dorsey 1/ will be briefly described here because they represent some deviation from the traditionalism

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1/ Background Paper No. 18.

of most haciendas in that country. These estates would not fully qualify as modern by the standards of Laguna (Mexico), coastal Peru, or Chile: their pre-reform labor force was a mixture of colonos and wage earners; but production included such modern innovations as tractors, an alcohol distillery (based on corn), orchards, imported dairy cattle, and alfalfa cultivation from imported seed. Located in the lower Cochabamba Valley (at much lower altitude than the estate described above), a region favored by fertile alluvial soil and plentiful water for irrigation, it is also well connected (for Bolivia) by road and rail, and it has active local farm markets and some local industry--chiefly mining. The inhabitants consider themselves a cut above those in the altiplano, and traditional Indian communities have disappeared from the region.

The nature and process of land reform on the estates of Parotani and Caramarca are generally similar to those described above for Bolivian haciendas, and need not be repeated in detail. Sindicatos (peasant organizations) were very active in both cases, and on one estate organized a sindicato production cooperative which broke up after 2-3 years. Both estate owners were awarded a land reserve by the land reform authorities; but the owner of Parotani sold his portion to the colonos (under Sindicato pressure), while the owner of Caramarca continued to cultivate his reserve. Other than this reserve, lands were acquired in small units by the workers on the estates.

In both estates the gross value of farm production per hectare had increased more than fourfold on the distributed lands by 1967 (Table 31). The reasonably good output on the owner's reserve in Caramarca is attributable to the owner's strategy of assuring his profit by a shift to more extensive, mechanizable crops to reduce his dependence on too much labor. The peasant owners, on the other hand, reduced their land in forage and in subsistence crops, increasing chiefly the labor-intensive production of vegetables (carrots, onions, etc.) for the market. Employment had apparently risen substantially on both the ex-estates. <sup>1/</sup> Increased use of chemical fertilizers and hired tractor service was noted. These changes, along with the cessation of colono obligations to the haciendas, had clearly improved peasant welfare; increased consumption of goods such as bicycles and radios, along with improved quality of clothes and houses, were observed.

In short, land distribution to small owners on these relatively modern estates in Bolivia had produced significant increases in output, land productivity, employment, sales to the market, and welfare of a low income group.

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<sup>1/</sup> The data are imprecise. While ex-owners had been reducing the numbers of colonos, the new proprietors were keeping on the land almost all their growing families (of whom many would have migrated earlier) and were hiring more outside labor.

Table 31: VALUE OF GROSS FARM PRODUCTION PER  
HECTARE ON TWO ESTATES IN BOLIVIA  
(In Bolivian pesos at 1973 prices)

| Estate Names     | Pre-reform (1952) | Post-reform (1967) |
|------------------|-------------------|--------------------|
| Caramarca: owner | 5,754             | 4,228              |
| campesinos       | n.a.              | 24,530             |
| Parotani: owner  | 2,859             | -                  |
| campesinos       | n.a.              | 14,233             |

Source: Background Paper No. 18, p. IV-32.

C. New Land Settlements in Mexico and Venezuela

Organized colonization of unused lands is often proposed as an alternative to land redistribution. The cultivation of new lands has, of course, gone on for centuries all over Latin America as populations increased, and still continues in some places. Vast areas of Brazil, and extensive tracts east of the Andes mountains in Bolivia, Peru and Colombia could be brought into far more intensive use than the scattered, usually rather primitive cultivation that exists there today. There are ambitious development programs currently underway in the interior of Brazil, and officially sponsored colonization projects have been undertaken in several other countries. For the most part, however, the settling of the areas mentioned is taking place primarily by private initiatives, and relatively slowly in most cases due to the paucity of communications facilities. This kind of settlement is not a near-term alternative to land reform unless governments are prepared to invest large sums in the rapid development of infrastructure, and then must wait for some time for this to pay off. The experience with official projects points to a tendency to encounter greater problems, high costs and lower returns than sponsors had anticipated. Such an option remains available to a few countries, although it is not possible on a large scale in others.<sup>1/</sup> Further discussion of the question lies outside the scope of this report.

What will be considered here are two examples of relatively large-scale organized settlement in less remote areas, undertaken in conjunction with on-going land reforms in Mexico and Venezuela. We will not take on the geographer's task of estimating how far such a form of land distribution could be carried in other countries, but will confine our attention to the ways in which these particular colonization efforts related to the land reform

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<sup>1/</sup> A survey of settlement projects in Latin America is found in Michael Nelson, The Development of Tropical Lands (Baltimore and London: The Johns Hopkins University Press, 1973).

movements and affected their results. In Venezuela this method of land distribution did indeed become a significant alternative to expropriation of existing estates in a country which was already under pressure to carry out reform. In Mexico proportionally fewer farmers were affected, given the large rural population relative to areas opened for use by irrigation, but these settlements proved to be a highly successful way of establishing ejidos with favorable growth prospects. 1/

1. Public Irrigation in Mexico In the strong postwar growth of Mexican agriculture, noted earlier, public irrigation projects have played a prominent role, and they have been undertaken far beyond any such works in other Latin American countries. The major push to build irrigation works began with President Cardenas in the late 1930s, and has continued since. From 1940 to 1960 the nation's cultivated area was increased nearly 20% by new irrigation, the importance of which can be inferred from the fact that average output per hectare from irrigated land is 3 to 4 times that from rainfed areas. Over 70 percent of the irrigated area is in the dry but fertile northern region, previously thinly populated and poorly productive, where many of the most progressive and profitable farms of Mexico are now located. For the most part (over 80%) the irrigated land is government controlled, organized in 70 publicly financed irrigation districts with a total area of 2.26 million hectares (as of 1967).

Ejidos hold 46 percent of the land in these districts as a result of public policy. Initially local private owners were allowed to hold up to 100 hectares each, later reduced to 20, with ejidos getting the rest; since 1962 all newly irrigated lands go to ejidos. The ejidos formed in newly irrigated districts of the dry sparsely populated areas were new planned creations, unlike the majority which resulted from claims to land by local residents; and they were established with more ample cultivable area per ejido member. They were also well supplied with credit and other facilities, since their districts were considered key elements in the growth of national production. These ejidos did not form production cooperatives like those in Laguna; but even with individually farmed plots (averaging about 4 hectares) there were a number of jointly organized activities including management of water supplies. It is therefore of interest to see how the 250,000 farmers in these semi-communal units have performed in operating sophisticated, modern agricultural enterprises in comparison with the 100,000 private farmers in the same districts--the latter averaging 12 hectares apiece.

Such a comparison emerges from data collected in a survey of 313 irrigated farms in nine regions in 1967. 2/ The sample data, shown in Table

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1/ Irrigation projects may be treated as new settlements, even where there were a few previous settlers, because the change in numbers supported by the land was very great.

2/ This sample represents the larger farmers, i.e. those producing more than 6,000 pesos worth in 1966/67, out of a larger sample of 723 farms covered in Estructura Agraria, op.cit. pp. 236 ff. See Background Paper No. 19.

32, are grouped in private and ejido averages for three sizes of farm, 1/ since cropping patterns and inputs tended to vary with farm size. As in other Mexican data, the values for output per hectare increase with farm size, a stronger trend than the difference between ownership groups. Within size groups, the product per hectare is somewhat higher on the ejidos, most clearly for the middle group. Superior land productivity on the ejidos shows up more decisively in the averages for net product and gross income per hectare.

The private farms apply more capital per hectare than the ejidos, and obtain lower average product per unit of capital (both gross and net product) than ejidos in each size group. However, the differences between the two in labor intensity (man-days per hectare) is not great; it is a little higher for ejidos in the two larger size groups but lower on the small farms. Ejido operation thus does not consistently generate more employment than private farming; labor intensity does decline with farm size in both groups. When all factor inputs are considered, there are clearly higher values for efficiency in resource use on the ejidos in each size comparison. This shows up with either total product or value-added in the numerator; and it comes out even more strongly when imputed owner/ejidatario labor values are excluded from the denominator.

The conclusion would appear to be that ejidos have proved their ability to equal or outperform private farms in this type of modern commercial agriculture in Mexico, showing higher productivity ratios in terms of resources at their disposal--if the sample is reasonably representative. This finding seems to be strongly contrary to trends in the rainfed areas, where ejidos show lower efficiency than private farms of similar size. It raises the question of whether ejido operations in rainfed areas might not show up better in comparison with private farms if the former had been given equivalent access to credit and inputs, as they were in the irrigation districts. Production from the northern irrigation districts has been extremely important in national growth; government policy, in recognition of this importance, has been generous in such areas in supplying credit, marketing and technical services along with the water for irrigation. Both private and ejido sectors have performed well under these conditions.

2. Land Settlement in Venezuela. The settling of land reform beneficiaries on unused public lands was an aspect of the land distribution program that evolved within Venezuela's reform context; it was not a separate program, nor the result of any decisive shift in direction. Land reform has had some consequences for Venezuelan agriculture similar to those in Mexico: land distribution coincided in time with an acceleration in total farm production to a high growth rate; a dualistic structure was fostered; and the distributed

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1/ These three size groups, based on value of product, are comparable to classes C, D and E in Table 13 above.

**Table 32: COMPARISON OF AVERAGE PRODUCTIVITY AND RELATED VALUES FOR PRIVATE AND EJIDO FARMS OF THREE SIZES IN A SAMPLE FROM IRRIGATED LANDS IN MEXICO, 1967**

|  | <u>Small Farms a/</u> |       | <u>Medium Farms a/</u> |       | <u>Large Farms a/</u> |       |
|--|-----------------------|-------|------------------------|-------|-----------------------|-------|
|  | Private               | Ejido | Private                | Ejido | Private               | Ejido |
| No. of Farm Units                                | 41                    | 122   | 34                     | 43    | 78                    | 6     |
| <u>Land Productivity</u>                         |                       |       |                        |       |                       |       |
| Cultivated land (hectares)                       | 7.3                   | 6.0   | 19.0                   | 13.5  | 128.8                 | 47.5  |
| Product per hectare (pesos)                      | 2400                  | 2500  | 3200                   | 4800  | 7734                  | 8069  |
| Gross income <sup>b/</sup> /hectare (pesos)      | 573                   | 1257  | 610                    | 1462  | 2865                  | 3613  |
| <u>Capital Productivity</u>                      |                       |       |                        |       |                       |       |
| Capital per farm (1000 pesos)                    | 22                    | 12    | 111                    | 27    | 1040                  | 160   |
| Capital per hectare (1000 pesos)                 | 3.4                   | 2.1   | 5.5                    | 2.4   | 8.3                   | 3.7   |
| Product/capital                                  | .56                   | .93   | .47                    | 1.24  | .72                   | 1.16  |
| <u>Labor Productivity</u>                        |                       |       |                        |       |                       |       |
| Man-days per farm <sup>c/</sup>                  | 666                   | 468   | 1284                   | 989   | 8159                  | 3021  |
| Man-days per hectare <sup>c/</sup>               | 99                    | 82    | 70                     | 87    | 65                    | 69    |
| Product per man-day (pesos) <sup>c/</sup>        | 24                    | 30    | 46                     | 55    | 119                   | 116   |
| <u>Total Factor Productivity</u>                 |                       |       |                        |       |                       |       |
| Product per farm (1000 pesos)                    | 16                    | 14    | 61                     | 54    | 969                   | 352   |
| Gross income <sup>b/</sup> per farm (1000 pesos) | 4.2                   | 7.5   | 11.6                   | 19.7  | 369                   | 172   |
| Product per total inputs <sup>d/</sup>           | .69                   | .98   | .80                    | 1.10  | 1.17                  | 1.44  |
| Product per total inputs <sup>e/</sup>           | .95                   | 1.40  | .82                    | 1.27  | 1.18                  | 1.51  |
| Value-added per total inputs <sup>e/</sup>       | .62                   | 1.05  | .46                    | .80   | .69                   | 1.06  |

a/ Size groups based on gross value of output in pesos: small = 5,000 - 25,000; medium = 25,000 - 100,000; large = 100,000 and over.

b/ Value of product minus purchased inputs.

c/ Hired labor plus labor of owner/ejidatarios.

d/ Inputs include those purchased plus imputed values for land and owner/ejidatario labor.

e/ Same as d., but excluding imputed value of owner/ejidatario labor from the denominator.

Source: Estructura Agraria op.cit., Tables III-31 through III-51.

lands provided new security to a hitherto neglected group of low-income, low-skilled farmers. But the economic circumstances of the two countries were quite different, and Venezuela's land reform began at a much later stage of economic development than in Mexico. 1/

One special feature of the Venezuelan economy has been the existence of petroleum deposits, and the significant size of state revenues which flowed in from oil producers (first foreign, later national). Since the 1920s, these revenues have made possible a variety of activities that would have otherwise been limited or infeasible. However, this kind of capability had, for much of the time up to 1960, been used in ways which concentrated rather than diffused the wealth. Certainly this was true in rural areas, where agricultural land was concentrated in large holdings while minifundists and farm workers were on low levels of productivity and income. There has, however, been a reasonably rapid growth of urbanization and jobs outside agriculture. In the mid-1930s over 80 percent of the population lived in rural townships with fewer than 5,000 inhabitants; but by 1961 the rural population had fallen to 38 percent, and by 1971 to 24 percent. Total population has been growing at 3.4 percent a year; despite rural-urban migration, the rural numbers have increased, and rural poverty had persisted along with the urban progress.

The new Betancourt government installed in 1958 restored the electoral competition for political power, and the major parties began to seek votes in rural areas, partly with promises of land. In 1960, a new land reform law was enacted. (Its provisions were largely similar to laws enacted in 1945, 1948 and 1949; the earlier laws had not resulted in much land distribution, but the principles involved in the new law were familiar.) The basic procedure was that landless farmers, individually or in associations, would take the initiative in submitting a petition to obtain a specific piece of land by indicating that it was not "fulfilling its social function." 2/ When a petition had been processed and approved in the land reform agency (IAN), the IAN then acquired title to the land by purchase; the beneficiary farmers would then elect an administrative committee to represent their new community (called an asentamiento) in dealing with IAN.

This fairly simple formal process has received its impetus, in practice, by peasant associations organized by the Federation of Campesinos of Venezuela (FCV). In 1958 the FCV had 130 sindicatos with 4,586 members; by 1965 it had 3,500 units with 171,000 members (three fourths of the membership of all Venezuela's unions). There were complicated relationships

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1/ The information on Venezuelan land reform is less complete than would be desirable, owing in part to the non-completion of a series of case studies initiated for the World Bank. A principal source for the discussion here is: Jorge F. Schuster F., Rural Problem - Solving Policies in Venezuela with Special Reference to the Agrarian Issue (Madison, Wisconsin: University of Wisconsin, Land Tenure Center R.P. No. 46, 1972) a 100-page version of the author's PhD dissertation of the same title.

2/ See discussion of the social function criterion above.

among FCV, IAN, and the political parties. Hardly any land was awarded to farmers who had not been organized by FCV. Political parties, for obvious reasons, had much interest in the FCV, and in the activities of IAN; FCV and IAN were concerned with one another's actions. 1/ Thus, land distribution actions, although subject to legislative guidelines and budgetary limits, are: 1. formally determined by local peasant initiatives, not government planning; 2. behind these lie FCV decisions on what groups to organize where, and what lands to support petitions for (in some cases, of course, peasant groups would begin the agitation and seek FCV support); 3. behind those decisions lie a variety of political pressures, shifting through time.

Through this decision-making process the Venezuelan land redistribution program moved from an initial emphasis on expropriation of private estates further and further into the transfer of public lands. The percentages of public lands in the totals distributed to beneficiaries under three Venezuelan presidents were: 46% in 1960-63; 68% in 1964-68; and 88% in 1969-73. All along there was a strong demand for lands, indicated by an initial avalanche of 55,000 petitions in 1960 (of which 24,116 were approved in that year); slow-downs in the program from time to time resulted more from political or budgetary considerations than from a shortage of petitions. But there may well have been a growing shortage of private estates which could, under acceptable criteria, be judged as failing to "fulfill their social function"--at least, this is probable with the least "functional" getting expropriated as time passed. At the same time the resistance of large owners to losing land began to grow, and their support began to enter more into the political competition, which no doubt affected decisions on the "social function" criterion. For these and other reasons, it became easier for IAN to fall back on public lands to satisfy peasant petitioners. The supply of public lands is not great, nor are they necessarily to be found near to the places where petitioners want to have farms; but they will remain available for at least some years into the future. There are divergent estimates of public and private land; the best seem to be the following (Table 33).

Almost all the lands redistributed (from public or private origin) were either wholly unused or underexploited--e.g., arable lands used for pasture. This is, of course, the result of the priority given to the "social function" concept. Under the law, land in use, even if under-used, could not be taken unless unused land was insufficient locally to meet petitioners' needs. It may be said that this program pushed back the agricultural frontier inland from the coast, but not in a systematic fashion. The areas affected by reform were quite widely spread among the different regions of the country, 2/

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1/ At one point an activist president of FCV was on the IAN governing board.

2/ In low density interior areas of Zulia and the Llanos, nearly 40% of existing cropland was affected, compared to 21.1% in higher density coastal and mountain areas where land was more intensively in use.

Table 33: PRIVATE AND PUBLIC FARM LANDS  
LANDS IN VENEZUELA  
(in millions of hectares)

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|                          |            |                       |            |
|--------------------------|------------|-----------------------|------------|
| Total farm land in 1961: | 26.0       |                       |            |
| (of which cropland:      | 4.0)       |                       |            |
| Private Lands, 1961      | 23.3       | Expropriated by 1967: | 1.7        |
| Public Lands, 1961       | <u>2.7</u> | Given out by 1967:    | <u>1.1</u> |
| <u>Totals:</u> farmland  | 26.0       | Affected by reform:   | 2.8        |

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Source: L. Ratinoff and P. Rios, El Proceso de Adquisicion de Tierras  
(Caracas: CENDES/CIDA, Trabajo No. 8, 1969).

reflecting more the distribution of existing populations than a planned drive to colonize particular areas (a byproduct of the passive reliance of IAN on local farmer initiatives). Resistance of private owners to a loss of lands which they were not using intensively was softened by: 1. a generous policy of awarding owners reserves; 2. ample and prompt compensation by government, made easier by state oil revenues; 3. the superior attractiveness of investment opportunities in the growing urban activities. These factors, and the fact that IAN was increasingly resorting to public lands to satisfy peasant demands (only 6 percent of private farm land had been affected as of 1973), have allowed the land reform in Venezuela to benefit some 35 percent of the rural population without arousing the passions and political resistance found in other countries.

A 1967 survey 1/ gives some indication of the nature of the new farms created by the distribution program. It was estimated that 72 percent of such land was arable: of this, 2.1 percent was irrigated, 51.1 percent was in use for rainfed crops, and the remaining 46.8 could so be used. On that date there were 96,273 families receiving land, of whom 94 percent had individual plots, 4 percent were in production cooperatives, and 2 percent were in asentamientos not yet subdivided. 2/ Half the lots were under 10 hectares; 25 percent had 10-15 hectares, 18 percent had 15-25 hectares and 7 percent more than 25. The largest farms were found mainly in the thinly populated Llanos of the interior, where cattle raising is dominant; the smaller farms, below 10 hectares, were most common in the mountainous regions. The farm sizes in populous coastal areas were determined by local scarcities and land values, given IAN's current policies and budgets.

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1/ Survey by CENDES/CIDA - see Ratinoff and Rios, op. cit. (Source for Table 33).

2/ These figures refer to de facto distribution; only 13,161 families had obtained legal titles by then.

Table 34: NET FARM INCOME IN SAMPLE OF  
LAND REFORM BENEFICIARIES IN  
VENEZUELA, 1965  
(in Bolivares per family)

| Income range           | Under 1000 | 1-2000 | 2-4000 | over 4000 |
|------------------------|------------|--------|--------|-----------|
| No. of families        | 78         | 518    | 405    | 172       |
| Percentage of families | 6.6        | 44.2   | 34.5   | 14.7      |
| Average in range       | -445       | 1, 924 | 3,501  | 11,224    |

Source: CENDES/CIDA, Trabajo No. 15, 1965.

Farm incomes, tabulated for a sample of 1,173 in 1965, were relatively low (Table 34), with ammedian value of about 2,000 Bolivares-- compared to the current national average income of 3,554 Bolivares. On average, about a quarter of net income was derived from off-farm activities; similar results were found in other samples. Indebtedness was generally high--in one sample it was equal to 55 percent of average income; this was a result of relatively liberal credit policies of the state agricultural bank, which tended to be lax in enforcing repayment of loans. While no comprehensive evaluations of production and resource use are available except for very small samples, it appears that productivity was generally low, that in most settlements farmers were planting a few subsistence and traditional crops with little effective input from the extension service. It may be inferred that some of the credit received from the state bank probably went into current consumption. Nevertheless, these farmers were better off than they had been before they acquired land.

Despite low levels of productivity on these new farms, Venezuela's total agricultural production was rising at the very high rate of 6.4 percent a year from 1959 through 1967, an increase over preceding trends. The cultivation of new but poorly capitalized farms made some contribution to this growth, as indicated by an increase of 5.7 percent in national farm output per employed person in the same years in conjunction with a reduced value of capital per person in agriculture. But the composition of national farm production suggests that major growth originated with the larger producers, as shown by a sharp increase in the share of livestock and in non-traditional crops in the total. The large estate sector was hardly disturbed by the reform, certainly not in its more productive components; and it was better served than the small farmers with credit and extension work--even though there was a noticeable shift in the Ministry of Agriculture's budget toward service to small farmers during the 1960s. The large farmers were quite well organized in various producer associations for particular products, and these were active in seeking benefits from the government.

The resultant of these simultaneous changes may be described as an increase in dualism in agriculture. On the one hand, a large estate sector is expanding its resources and acquiring an increasing share in national production; on the other, the number of small farmers, 1/ who are--in the view of several observers--unlikely to break away from their low levels of productivity, has been growing. Since the large farmers generally emphasize cattle and land-extensive crops, while the small producers are relatively inefficient, it would appear that the nation is not developing in either sector the kind of farms that would use their land and labor with great intensity. But with the agricultural sector reduced to about 7 percent of GNP and 20-25 percent of employment, this need not be a priority consideration for a country with good prospects in other sectors. What land reform has accomplished for Venezuela is to provide a means of taking care of its still numerous and relatively backward rural poor, who are given a measure of security and some opportunity to produce for the market. Not much is expected from them by national planners, whose developmental aspirations lie elsewhere. But the welfare of the traditionalist members of society, who cannot readily find productive niches in a modernizing economy, is seen as a legitimate national concern.

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1/ Although the total numbers of the rural population have recently begun to decline, this is not true of small farm operators.

## CHAPTER IV

### RESULTS OF LAND REFORM WITHIN THE REFORM SECTOR

#### A. Output and Income Distribution

Reviewing the preceding examples of land reform impact on the volume and/or value of output from the lands affected by reform, and the income effects on producers who were directly affected, the following tendencies may be briefly summarized. Some of the issues involved in these summary statements will be more fully explored in the wider context of the next chapter.

1. Production. On the whole, the effects of land reform on production from the affected lands would appear to be positive in the countries where it was examined.<sup>1/</sup>The most unambiguous case is that of Bolivia, where the effects were positive on a national scale over a period of 15-20 years. The only qualifications here are that data are somewhat weak, and transitional decreases may have occurred; but the strong upward trend in available output figures after 1955, buttressed by a few case studies, is clear. Next in clarity, but more limited in significance, is the case of Chile. During the years of the Frei administration there was a definite stimulus to production; but the impact of land redistribution cannot be separated from the effects of incomes/price policies, and in any case the sequel cannot be assessed. In Mexico and in Venezuela, the land reforms evidently stimulated short run increases in staple food production; and they did not prevent a successful overall growth thereafter in national output, originating mainly in the larger farms. Reserves policy (and reliance on public land distribution in Venezuela), considered as an aspect of land reform, could be given some credit for this positive outcome. It would be difficult to argue that growth would have been still greater in the absence of reform in either Mexico or Venezuela.

The most difficult case for assessment is that of Peru. The production trend since 1970 has been moderately negative. But there was a limited scope of land redistribution as well as a limited time for observation, so the evidence centers on a group of case studies which were less fully documented than those in Chile, Bolivia, or in the Mexican sample surveys. We have noted the positive results for 1973 on the Peruvian coastal enterprises and the highland sheep ranches, along with a declining output record on the highland cropping enterprises, so that there were more pluses than minuses. But there were unsolved problems found in each of these categories, and more time is needed before the outcome can be stated in confidence.

Douglas E. Horton, who prepared the 1973 case studies and continues to work in Peru, has given us some mid-1976 views on subsequent developments. The attainment of 1976 redistribution targets seems to be on schedule, but the outlook for the new enterprises is less favorable than it appeared in

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<sup>1/</sup> Here we are speaking of production levels irrespective of composition; changes in product mix following land reform, which vary with the scale of beneficiaries' farm operations, will be taken up later. See Appendix Table B-1 and Chart 1 for FAO data on agricultural output in these countries.

1973. In all types of agricultural cooperative (not specifically the enterprises studied) profitability has been declining and the turnover in managers had increased--it is harder than before to hire and retain competent managers and technicians. In the coastal enterprises, internal conflicts have grown in severity and government intervention from outside to settle these differences has increased. This is not true in highland areas; but the trend toward increase in the time spent on members' individual croplands has been accelerating, and the number of individually owned sheep on the livestock enterprises has been growing--leading to severe overgrazing in some cases. These trends have held down enterprise profit and investment, and profit distribution to members has nearly ceased. On enterprises which included neighboring communities (the SAISs), some community members have been gaining influence in the cooperatives, placing sons and relatives in staff jobs, etc. But there have also been several "invasions" by SAIS communities taking over lands from "their" enterprises for community use. (Note: The increasing peasant production in the highlands could be raising total output from the ex-estate lands, even if production by the central enterprises was weakened; but there is no way to check on this question.)

2. Changes in Income Distribution. The effects of land reform on rural income distribution are universally that lower income beneficiaries have gained, while high-income landlords have lost. The extent of income equalization, however, has varied considerably, depending on the scope of the reform, the treatment of ex-landowners, and the economic status of beneficiaries before and after the change. The impact was greatest in Mexico and Bolivia where the scope of redistribution was large, relative gains for many low-income beneficiaries were great (certainly initially), and ex-landowners got no compensation--although land reserves were retained in Mexico and in parts of Bolivia. Next in impact was Venezuela, in that beneficiaries were relatively numerous and poor; but there was rather little loss of income-earning assets by wealthy or medium-scale private owners.

The equalization effects in Chile and Peru are less obvious. In Chile, the properties of at least some landowners are now being restored; but even without that, the reform was limited to an incremental equalization largely within the upper ranks of rural incomes. If the original design for reform had been followed to completion, the new owners of expropriated estates (whether as individual or communal owners) would now constitute a relatively prosperous group of farmers, numbering perhaps 15 percent of the agricultural work force.<sup>1/</sup> In Peru, the same condition is found in the coastal estates, that is, the rich ex-owners are displaced by a group of reform beneficiaries of upper-middle income level by national standards. In highland Peru this is not the case; but if the entire 1976

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<sup>1/</sup> The Allende regime tried, but unsuccessfully, to bring more low income workers into beneficiary status.

distribution target for the nation has been met, then reform beneficiaries are still somewhat less than 28 percent of agricultural families (given the population increase), and are largely in the upper ranks of rural income. (The Peruvian ex-owners have no land reserves, but have received compensation.) In both countries, then, land reform has accomplished an incremental equalization but has not reached most of the rural poor.

#### B. Individual Small Farms vs. Group Farming

A major difference between land reforms has been the creation of new small farm owners in Bolivia and Venezuela, as against communal owners on bigger properties in Peru, in Chile (during the period studied), and in Mexico. In terms of farm operation, Mexico should be classed with Bolivia and Venezuela since 95 percent of its ejido members are functioning as small individual farmers; in Laguna, however, commercial cotton estates were given to collective ejidos for group farming.

In general it is the traditional haciendas and the newly settled lands that have gone to small farmers, while more modern estates have been turned over to communal operation. The latter point must be qualified somewhat, both because some Peruvian estates were relatively traditional pre-reform, and because the Chilean cooperatives were subsequently abolished. Nevertheless, the relationship between pre-reform modernization and post-reform communal operation is fairly strong. While such decisions on land reform policy are widely debated in terms of political ideology, there is also an economic rationale.

The logic of this relationship is that a modern commercially-oriented estate has important advantages of scale in its integrated operation which would be sacrificed if it were broken in to small parts, whereas a traditional hacienda is loosely and inefficiently run and could be subdivided without important losses. To transform such a hacienda into an efficient integrated operation with modern technology would require more expertise and investment than may be available; but small farmers could be expected to make more intensive use of its land by familiar methods, which could raise the level of output without new skills or major capital requirements. We will briefly summarize the apparent results of experience with small farms and with group farming.

The break-up of Bolivian haciendas into small farms seems to have been an unqualified success from the standpoint of productivity, and this occurred with little or no support from government. In Mexico, however, the performance of small farmers in the ejido sector has been widely regarded as less than satisfactory. Perhaps this difference in judgment results from an application of different standards; less is expected from farmers in Bolivia, starting from low technological levels, than in rapidly modernizing Mexico where many examples of advanced technology are found and become implicitly incorporated into judgments on the ejidos. Ejido partisans state that lack of progress by ejidatario farmers is explainable by biases in the policies of commercial banks and government support programs which have directed them away from most of the ejido sector; and the superior performance

of ejido farmers given appropriate support in the irrigation districts can be cited to make this point. But a question which must be faced in a comparison across Latin American countries is: why should the small ejido farmers in Mexico, who have had some credits from a government bank and far more input supplies and marketing facilities available to them than those for reform beneficiaries in Bolivia, be so much more dependent on external support than the small Bolivian farmers? (The small-farm settlements in Venezuela are omitted from this discussion, due to inadequate information.)

There would seem to be somewhat more producing initiative shown by small Bolivian farmers than has been evident among Mexican ejidatarios. Perhaps this is not a justified inference; if it is, there are some possible explanations. There was probably more unused arable land available to reform beneficiaries in Bolivia than in Mexico. The new opportunities for reform beneficiaries occurred a decade or so earlier in Mexico; Bolivian beneficiaries may have exhibited an initial wave of increased production which will be followed by relative stagnation, as they reach the limits of their resources and capacity for finding practicable innovations. But there is another possibility: the possession of individual farms in Bolivia (de facto rather than sanctioned by land titles in many cases) provided stronger production incentives than the farmers had as tenants or colonos; and it may be that the institutions of the ejido have supplied somewhat weaker incentives than those affecting Bolivian beneficiaries. It is not possible to decide from a summary comparison of Bolivian and Mexican results which of the above explanation should be given most weight. Further discussion of the findings on farm size, productivity measures and tenure forms will be taken up in the next chapter.

Government support is clearly necessary for success of a land reform when beneficiaries are small farmers. The post-reform need for credits, marketing, inputs, etc., is commonly emphasized by reform advocates. It should be obvious that government support programs are of value in agricultural development irrespective of farm size, but especially for small farmers who cannot mobilize private resources as well as big ones. And when a land reform creates new and inexperienced small farmers on a large scale, there is clearly a special need to initiate support programs. But governments in all developing countries have limited resources for support to agriculture. What they can afford to do will inevitably be inadequate in many farming areas for some time. Given that large numbers of farmers simply cannot be supplied with the kind of support that experts would recommend through no lack of will on the part of governments, it can be argued from Bolivian experience that the production incentives provided by individual farm ownerships are the best way to elicit an active production response in face of limited opportunities.

Incentive questions bear on the interpretation of land reform experience with communal enterprises in Peru, Chile and Laguna (Mexico). In Peru, the strength of individualist farmer motivation was apparent in the

highland case studies, and its conflict with enterprise objectives was never resolved. In the highland cropping enterprises, the success of central cooperative programs was undermined by "selfish" peasant initiative. On the sheep ranches this conflict was less acute as of 1973, but has since become a stronger threat to enterprise production. In the factory-like enterprises of coastal Peru, farmer individualism was not a factor; but the possible weakness in communal incentives to technical innovation and product diversification was noted as a constraint on future--though not current--production. Success of growth in production by the cooperative enterprises in Peru appears to be inversely related to the scope for expression of individualist initiative: that is, growth of output was negative on highland cropping enterprises, more positive on sheep ranches, and most consistent on the coastal plantations. Reliance on group incentives may represent a viable substitute, exhibiting some favorable early results that will need further testing over time.

In Chile, the potential conflict of individual and group incentives was blurred during the brief period of observation. Reform beneficiaries apparently responded actively, both as individuals and as members of a team, to the favorable markets. It may be noted that on the 181 asentamientos which had passed through a trial period of group farming and were allowed to choose between its continuation and the division of enterprises into individual plots, almost all farmer groups voted to carve out privately owned plots, though not to the exclusion of central enterprise lands (the data here are not precise). As in Peru, it may be said that Chilean farmers have shown some positive responses to group incentives, but that the durability of such response has not been tested.

The history of collective ejidos in Laguna points to the durability of individualism in that communal setting, in that over half the collectives split up their operations into family farms. This is the only example of communal operation lasting as long as 30 years; the other cases have existed for less than a decade. In the Laguna sample the small farmers (ejidatario or private) were on average more efficient than the remaining collective ejidos--though not universally so, considering the record of the minority of "good" ejidos.

The general inference from these three examples, then, is that group incentives have not proved to be superior to the individual variety, but neither have they been clearly shown to be unworkable. It is possible that group farming under the "right" conditions (which will require further research to define) can be "successful" (again, definition problems). But certainly group farming is more problematical than individual farm management. One theme that emerges in these varying situations is that farmers almost everywhere want very much to work their own land, and to keep their own livestock. The only exception would seem to be the wage-workers of coastal Peru, who asserted their self-interest primarily through union organization (they were never offered any hope of obtaining their own land, to be sure). They are not the only farmers who have asserted themselves by forming peasant sindicatos, and some of these organizations were strongly combative

and often influential, especially in Bolivia and Venezuela but in the other countries as well. Once the hold of the landlords was broken and sindicato members' wishes could take effect, however, the desire of these farmers for their own land came to dominate. This was true even in the sindicatos that had formed production cooperatives, very few of which have remained long in operation. Whether it is advantageous to national economies for farmers to get what they want is a question involving more considerations than have been introduced up to this point. But the farmers' desire for land, whether for security, status, income, or other reasons, seems very clear.

### C. Further Investigations of Production Cooperatives

1. • The Reorganized Ejido Sample in Mexico. In 1970 the Mexican Government launched a major nation-wide reorganization drive to convert ejidos into cooperative or collective farms. By the end of 1975 close to 800 ejidos had been reorganized all over the country; non-collective ejidos were persuaded to form production cooperatives, usually around some new economic venture (tube-well, milk stable, etc.), with the assistance of "promoters" assigned by the newly formed Land Reform Ministry (SRA). In 1973 a sample survey of these new cooperatives was initiated by Shlomo Echstain, concentrating on cases with at least two years of observable joint activities. By mid-1975, data had been collected on 55 cases. 1/

The Mexican survey disclosed a great variety of organizational forms, in spite of the fact that all groups had been recently organized following the same "master plan." The original aim of the SRA was to create "collective ejidos" in which all the members of a given ejido should enter into a completely integrated production cooperative. However, this was fully achieved in only 9 of the 55 cases. Deviations from the pure model were encountered in two directions: not all the members of given ejidos were persuaded to join the group; and in most cases they opted for a mixed type of organization in the allocation of land and/or the performance of work. (See table 35) Clearly, the dominant forms were semi-collective or mixed, and with only part of the ejidatarios participating: 59% were of the mixed kinds (types 2a, b and c), 28% were functionally collective (type 3), and the remainder had service cooperatives with no pooling of land or labor (type 1). In only one third of the cases did all the ejidatarios participate; and in close to 50% less than half of the ejido members had joined the group.

On the whole, the economic results of the reorganized program were positive, and looked promising,2/ as can be seen in Table 36. Close to

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1/ Results of this survey will be published in Mexico early in 1978 under the title: Formas de Organizacion Campesina en Mexico.

2/ For each group, 36 variables were specified, designed to measure economic performance, institutional backing, social conditions, social issues and political involvement. Each variable was assigned scores ranging from 1 through 5, with 1 indicating the lowest or most negative, and 5 the highest rank within each category.

Table 35: TYPES OF COLLECTIVE ORGANIZATION CHOSEN BY REORGANIZED EJIDOS, AND  
EXTENT TO WHICH EJIDO MEMBERS JOINED RESPECTIVE ORGANIZATIONS  
MEXICO, 1973-75  
(Numbers of ejidos in categories) .

| Types of Collective Organization   | Percentages of Ejidatarios Joining Collective Enterprises |       |       |       |     | Total |
|--|---|-------|-------|-------|-----|-------|
|  | 0-25  | 26-50 | 51-75 | 76-99 | 100 |       |
| 1. Service cooperatives only   | 2   | 1     | -     | -     | 2   | 5     |
| 2. Mixed organizations:  |   |       |       |       |     |       |
| a. some tasks performed jointly<br>on individual plots of land                   | -   | 2     | -     | -     | -   | 2     |
| b. some land jointly allocated,<br>but tasks performed individually              | 7   | 8     | 5     | 1     | 5   | 26    |
| c. some land jointly allocated,<br>some tasks performed jointly                  | 1   | 1     | -     | 1     | 1   | 4     |
| 3. Collective: all land pooled<br>and worked jointly                             | 2   | -     | 4     | -     | 9   | 15    |
| 4. Union of ejidos; second level<br>marketing cooperative with several<br>ejidos | -   | 2     | -     | -     | -   | 2     |
| 5. Unspecified   | -   | -     | -     | -     | -   | 1     |
| Totals   | 12  | 14    | 9     | 2     | 17  | 55    |

Source: Compiled by Shlomo Eckstein in Special Farm Survey.

Table 36: ECONOMIC PERFORMANCE IN REORGANIZED EJIDO SAMPLE  
Mexico, 1973-1975  
(Percentages of Sample)

| <u>Economic Performance</u>  | <u>Large Decline</u> | <u>Moderate Decline</u> | <u>No Change</u> | <u>Moderate Increase</u> | <u>Large Increase</u>   |
|------------------------------|----------------------|-------------------------|------------------|--------------------------|-------------------------|
| Change in output             | -                    | 2%                      | 6%               | 45%                      | 47%                     |
| Change in income             | -                    | 2                       | 9                | 49                       | 40                      |
| Change in employment         | -                    | -                       | 18               | 36                       | 46                      |
| Employment of 2nd generation | 24                   | 5                       | 40               | 11                       | 20                      |
| <u>Technological Change</u>  | <u>None</u>          | <u>Very Little</u>      | <u>Little</u>    | <u>Significant</u>       | <u>Very Significant</u> |
| Change in crop mix           | -                    | -                       | 38               | 26                       | 36                      |
| New mechanization            | 4                    | 4                       | 26               | 27                       | 40                      |
| Improved inputs              | -                    | 2                       | 22               | 34                       | 42                      |

Source: Compiled by Shlomo Eckstein in Special farm survey.

50% of all groups visited had experienced a "large increase" in both their employment and output, and for 40% in their incomes. At the other extreme, only about 10% had made no progress in output or income, and 20% had failed to do so in employment. Only in the absorption of members' children into ejido jobs was the record generally poor. Economic progress was associated with technological change. SRA's announced policy was to relate the promotion of new cooperatives to some particular innovation or new activity: yet it seems this had not brought about appreciable technological changes in one quarter to one third of the cases. At the same time it must be noted that "significant technological change" was observed in two thirds of the cases, and in 35% to 40% it was considered "very significant."

Institutional support, including access to credit, technical and administrative assistance, was given in significant amounts to only half of these groups. This is an unexpected observation, since we are dealing with the groups reorganized by the special program of a new official agency, so that all of them should have been able to count on full public support. The degree of support supplied to these cooperatives was related to their economic and social performance records.

The extent of social participation of group members was encouraging, though not universal. Members' participation in group deliberations and decision making was "very significant" in 44% of the groups surveyed; but it was very little or non-existent in close to 50%. Members' "control" and "awareness" of group activities was somewhat stronger--"very significant" in 53%. It is important to note that social participation was not found to be associated with economic achievements.

On the whole, social conditions on these ejidos were better than average for Mexico, considering indicators such as housing standards, literacy, social services, etc. The very lowest strata had been avoided in this reorganization drive with rare exceptions (i.e., some poor Indian communities). However, internal social problems had started to make their appearance: undue paternalism was strongly felt to exist in half of the cases; internal conflicts were evident in about one third; and complaints about dishonesty and abuse by cooperative leaders were raised in 10%. These difficulties evidently had a strong impact on the social participation of group members, but much less on their economic performance--at least as it was observed during the first few years of the new organizations. Experience elsewhere in Mexico has shown that in the long run such social problems have undermined many economically successful cooperatives.

Finally, political involvement was widespread, but of a rather passive nature. Close to 90% of the groups were affiliated with some political party and peasant union; but only 16% of the leaders, and only 5% of the base members participated actively in political life. It seems that the divorce between politics and cooperation, advocated by many Western promoters of cooperatives, was unfeasible in Mexico. But, so far, this factor had had little impact on any of the performance indicators in the sample.

2. Multivariate Analysis of Production Samples in Mexico and Peru. The 23 cooperative enterprises in Peru, described in the last chapter, were joined with 31 of the 55 cases of reorganized ejidos in Mexico for a statistical exploration of the pertinent variables for the operation of production cooperatives, and of possible national differences.<sup>1/</sup> The analysis is based on evaluation of this joint sample of 54 case studies. A set of 19 socio-economic, institutional and political indicators was specified, and scores ranging from 1 through 5 (1 for the most negative, 5 the most positive) were assigned to each. The 19 variables, representing comparable information common to both country samples, were the following:

Economic:

- (1) Technological change (new machines or methods introduced);
- (2) Change in output;
- (3) Change in income;
- (4) Change in employment;

Institutional Support:

- (5) Access to credit;
- (6) Technical assistance (public or private)
- (7) Administrative assistance (advice and guidance on cooperative management, bookkeeping, etc.);
- (8) Official support (general backing of group by public agencies and officials);
- (9) Managerial personnel (professional managers, either hired by the group as in Peru, or by a public agency--more usual in Mexico);
- (10) Training (participation of group members in training courses);

Social Conditions:

- (11) Housing standards (type of construction, number of rooms, sanitary facilities);
- (12) Educational access (availability of primary, secondary or technical schools);

Social Issues:

- (13) Leaders' capacity (managerial capacity of elected leaders);
- (14) Members' control (involvement of members and group leaders in decisions and daily management);
- (15) Member participation (attendance at assemblies, support given to leaders);
- (16) Internal harmony (absence of friction or conflicts);
- (17) Honesty (of leaders and functionaries in fulfilling duties);

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<sup>1/</sup> Shlomo Eckstein, "Group Farming in Mexico and Peru: A Multivariate Analysis of Peasant Cooperatives." Discussion Paper No. 7620, Department of Economics, Bar-Ilan University, Ramat-Gan, Israel, December 1976. (Preliminary results of this study were presented at a seminar held in EDI in January, 1975.)

(18) Member admission (openness of group to new members);

Political:

(19) Unions (affiliation of members with peasant union or national organization).

Multivariate analysis techniques, specifically factor analysis and canonical correlation 1/ were used to examine the interrelationships among these variables in order to: arrive at some logical constructs of these diverse indicators; to test some generally accepted hypotheses concerning their interdependence; to suggest possible causal links among them, and locate strategic policy variables. Factor analysis disclosed that the development process of the 54 peasant groups, as designated by the 19 variables examined, is essentially composed of three main factors: Economic Performance, Social Participation, and Institutional Support. Each factor represents a cluster of interrelated variables such that the weighted combination explains a maximum of the variance among the cases. The general factor pattern was similar in both countries: but the relative weights of these three factors (in terms of total variance explained by each) and their composition varied somewhat. The most meaningful differences depicted by this analysis are the following:

Economic Performance depicts changes in output, employment and income, generated by technological change, based on access to credit and professional managerial services, with peasants living in acceptable social conditions. In short, it reflects Performance in the best development sense. Economic Performance in Mexico depends heavily on technical and administrative assistance provided by some public agency. This is unlike Peru, where the qualities of elected cooperative leaders, and of the professional managers hired by and responsible to the group, have a much stronger impact than the amounts of external government support. On the other hand, whereas in Mexico increases in income formed part of the Economic Performance Factor, this was not the case in Peru; there, income was associated with the Institutional Support Factor, since it derived more from minimum wage legislation than from production achievements on the farm.

Social participation includes member control of and participation in group activities, elected leaders' capacity, the honesty of leaders and functionaries, and internal harmony. Social Participation in Mexico is unrelated statistically to any of the economic indicators. In Peru, the degrees of technological change and progress in output were related to the purely sociological ingredients of group participation. This, in turn, reflects the greater involvement of Peruvian group leaders in the production sphere of the groups' life, mainly through the surveillance of the local manager.

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1/ For explanation of these techniques, see readings listed in *ibid.*, p. 56.

Institutional Support is made up of a minimum of three variables in both countries: technical and administrative assistance, and public support in general. In Mexico, it also comprises managerial personnel, access to credit, and technological change, all of which form part of the institutional package delivered by the reform agency, (SRA), to its clientele. In Peru, however, these services depend to a much larger extent than in Mexico on the group's (or its manager's) own initiative. Institutional Support in Peru also comprises member participation in group activities, reflecting the stress put by local reform agencies on the promotion of "auto-gestion," or self-management.

These three factors--Economic Performance, Social Participation, Institutional Support--emerged as basically unrelated to each other. 1/ This implies that the operation and performance of group farming must be measured and evaluated in three independent dimensions. Contrary to general belief, the three do not constitute one package with all elements in it growing or declining together; rather, high scores on, say, Economic Performance have not been generally observed to be associated with high scores on Social Participation or Institutional Support (the exception to this was some association of Institutional Support with Economic Performance in Mexico, but not in Peru). The lack of even more manifest in the statistical relationships within each country. This refutes the doctrinaire hypothesis postulated for many decades about the inseparable "twin objectives" of rural cooperatives, at least during the first few years of operation. This survey reports on short term results--about two years. Failure in some ingredients of the Social Participation factor, notably honesty and harmony, have been observed in other studies to obstruct the progress of otherwise successful cooperatives as the years went by (see also discussion below).

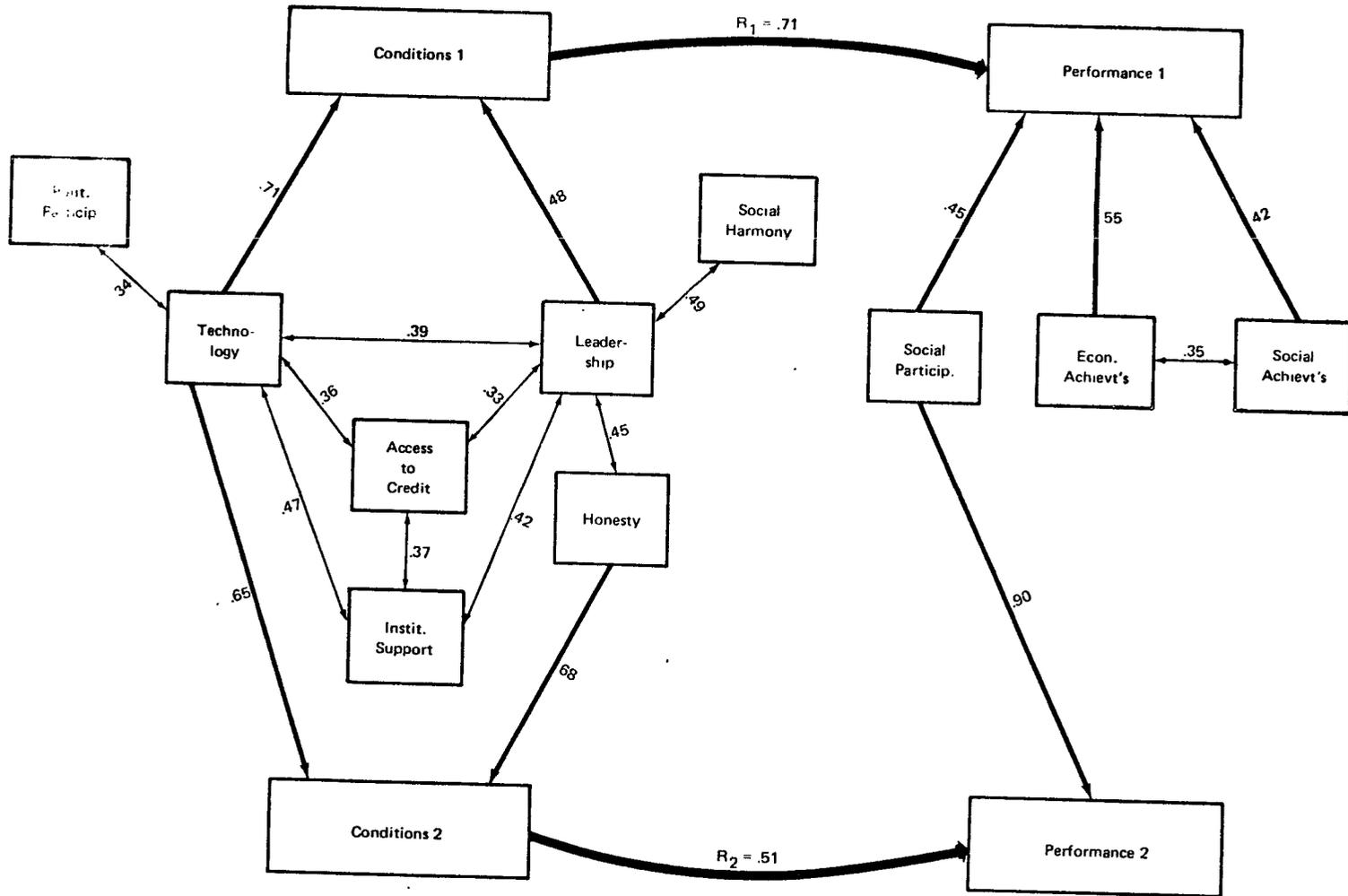
Performance of peasant groups is thus a multidimensional process, progressing along various routes at different speeds, often in opposite directions. How can success or failure, along these different paths, be explained in terms of economic, social and political preconditions? Canonical correlation 2/ disclosed that, when all 19 variables are considered jointly, performance "in general" must be interpreted in at least two dimensions. The model is illustrated in the path diagram of Figure 1. Arrows indicate hypothesized causal relationships. Double arrows stand for canonical correlations (analogous to multiple correlation coefficients); heavy arrows indicate canonical coefficients (analogous to multiple

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1/ The above results are based on the assumption of orthogonality (i.e., unrelatedness) of the factors; the method of selecting factor variables precludes the variables used in the first factor grouping from appearing in the next grouping for the second factor, and the third factor has still other variables. Thus, the crux of the study is not that factors were found to be independent of one another, but that the variables found to define the economic, social and support spheres did separate into different factor clusters under precisely these headings, rather than clustering in any other form. Factor titles were determined ex-post not ex-ante.

2/ See next page for footnote 2.

FIGURE 1: PATH DIAGRAM OF CANONICAL CORRELATION



$P(r > .33) = .01$

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regression coefficients); thin arrows depict simple correlations. Only coefficients significant at the 1% level are marked.

The first dimension (upper part of diagram), Performance is interpreted mainly in terms of economic achievements, but social conditions and group participation also carry significant weight. Among the conditions associated with this dimension of performance, 1/ two pre-condition indicators (out of seven considered) appear to be most significant: technological change, and capacity of local leadership. Of the remaining five indicators, two (access to credit, and institutional support) are also strongly correlated with the pre-conditions of success; but their net contribution after technology and leadership are accounted for is statistically insignificant. We can therefore consider technology and leadership as the two strategic policy variables for achieving progress in peasant group performance, when performance is given this first dimension.

In a second dimension (lower part of the diagram), performance is made up of only one indicator: social participation. 1/ Performance in this sense is determined by two pre-condition indicators: it is affected positively by honesty of leadership and functionaries, and negatively by technological change. There is a significant trade-off between honesty and technology in this dimension, reflecting the double role played by technology in the entire process. When performance is interpreted primarily in terms of economic achievements, technology affects it positively.

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1/ In this terminology, "Performance No. 1" (mainly economic) in one dimension has a set of "Conditions No. 1" which contribute to it; these are made up of "indicators," which are the original variables. Similarly in another dimension, "Performance No. 2," (social participation) has its "Conditions No. 2" made up of other indicators.

2/ That is to say, only one of the three dependent variables was found to statistically significant in this second dimension, after discounting the relationship depicted (variance accounted for) in the first dimension.

2/ of previous page:

Canonical Correlation can be thought of as multiple regression with several dependent variables. In our case, the 19 original variables were transformed into 10 composite variables, of which 7 were specified as independent or pre-condition variables, and the remaining 3 as dependent or performance variables. The hypothesis is that Performance, as measured by the latter three indicators (economic achievements, social achievements and social participation) is determined or explained by the seven Condition indicators (technology, credit, institutional support, leadership, honesty, harmony and political affiliation). Several sets of (analogous to regression) coefficients are obtained and tested to be significant, and each of them is interpreted as a different dimension of relationships between pre-Conditions and Performance. The two dimensions are unrelated, by definition.

However, when performance is interpreted in terms of social participation, technological innovation must be seen as simultaneously putting a heavy strain on the social texture of the group's behavior, unless the honesty of leaders rises sufficiently to offset this new challenge. The history of collective ejidos in Mexico, over the last three decades, offers many illustrations of this process. As collective groups progressed economically, the door was opened to corruption of leaders and functionaries-- the same leadership that was crucial in bringing about the economic change in the first place.

The conclusion would therefore be that, if performance in this second sense is valued, the two strategic policy variables noted above must be augmented by one: honesty of leaders and functionaries. Moreover, the stronger the impact of technological innovation, the greater must be the countervailing power of this honesty in order to maintain leadership with a proper balance of capacity, motivation, popularity and integrity.

Thus, the development of peasant group farms is a multi-dimensional process; the same socio-economic variables have been observed interacting in different and sometimes opposite ways in these various dimensions. What is good for performance in one sense may be bad for performance in another sense, and trade-offs are the rule. The end result is not appropriately measured as some weighted average of attainments in multiple objectives, but rather as a delicate equilibrium of opposing forces that span different dimensions.

#### D. Some Policy Issues in Land Reform Decisions

The experiences of five Latin American countries may be mobilized to provide tentative conclusions on some questions facing policy makers who must take decisions related to land reform. For the most part these will be conclusions of an economic rather than political nature, although the two clearly must interact in such a subject. But it should be made clear at the start that there are some political assumptions: unless a government has determined that it is prepared to expropriate at least some of its large landowners, there is no way that it can undertake actions requiring this initial step. We offer no further comment here on the considerations involved in such a decision.

Assuming that this basic decision has been taken, perhaps to avert unrest, or in response to organized pressure groups, or whatever, an important question might then be: is land reform economically harmful, however it may contribute to solving political problems? The general answer would be no. Following some transitional change-over effects, the strong evidence from 4 out of 5 countries is that agricultural growth began to rise soon after the periods of major land redistributions. It cannot be demonstrated that land reforms made positive contributions (nor were they designed for this purpose), but they certainly did not prevent increases in production. In the fifth country, where this is uncertain, the special nature of the Peruvian reform seemed to be creating additional problems by imposing new forms of organization.

Success of land reform in raising production is most assured when pre-reform estates are traditional haciendas, inefficiently managed and oppressively demanding in their labor practices. These lands may be taken over by small farmers who can be expected to produce more by working more intensively on the same area, even when they have had no prior experience with managing anything more than a colono plot. This kind of result does not require large sums for government credits or technical advice, nor will it create complicated management problems. Output may not include the most sophisticated products, nor will it necessarily respond quickly to market shifts. But this is a low cost form of land distribution, and it can reach a large number of the landless--as in Mexico and Bolivia. If the landless can be placed on nearby unsettled public lands, as in Venezuela, this may require somewhat more support costs; but these would be offset by an absence of ex-owner compensation costs; and the results are similar to those for subdivision of traditional haciendas.

When the estates under consideration are modernized, commercially oriented specimens of efficient agriculture, however, the problems are more complex. There is more to lose from any change than there is in changing the status of a traditional hacienda. This has led all governments to give some kind of consideration at one time or another to "social function" criteria. The owner of an efficient modern estate could escape expropriation entirely (Chile, 1962 law) or could be given reserves, or larger reserves (several countries), in preference to an inefficiently managed estate. The purpose of giving larger reserves is not merely as a reward for good behavior but to give a proven good producer more scope.

The social function criterion is a direct expression of a desired principle. The problems it poses are to draft a legal definition which is clear but not too complex, and to get the law justly administered and the distribution process completed without endless litigation. These are the familiar hazards. Where the reform impetus or the administrative machinery are weak, such problems can cause the reform to bog down, with only partial achievement. But governments which value the principle may nevertheless wish to employ it as a criterion for some aspect of the treatment of properties.

The second problem with modern estates is that of their disposition if they are to be expropriated. If there are economies of scale, then subdivision into small farms would cause these advantages to be sacrificed. But the formation of production cooperatives in order to preserve centralized operation is difficult, and the Latin American experience so far is not entirely reassuring. State farms are another possibility, not much tried in Latin America and not outstandingly successful in other areas.

A kind of compromise was initiated in Chile which never reached completion, but which may well provide a way out of the dilemma. Asentamiento farmers were given a trial period of centralized operation before deciding whether or not they wanted individual plots, and if so whether the central enterprise should also continue to have some lands and assets which the farmers would jointly own. Ideally, the jointly-owned items would include such machines and buildings as required a large scale for efficient

utilization; they could also include pasture lands, or land for specialized uses; while other lands, houses and smaller scale equipment could be allotted to individuals. Perhaps such allocation decisions might be considered so highly technical that they should be made by a more disinterested official of a ministry of agriculture. However, it is also possible that the interested farmers with their own future at stake may make more reliable decisions than outside technicians, decisions more grounded in concrete knowledge and less in current bureaucratic policy concerns. The main point here is that the questions of economies of scale, or the need for centralized facilities and equipment, ought not to be settled by all-or-nothing decisions. Therefore, a land reform design should allow scope for empirical judgments, and for mixed property arrangements appropriate to a variety of situations. The particular functions which a central enterprise should drop, or add, need to vary from one farm to another, and not be governed by dogmatic decrees.

We may say, then, that a country contemplating land reform should not hesitate for fear that its agricultural development will be held back by a redistribution program. But it should examine carefully the kind of farming that is performed on its large properties before designing the form of distribution to new owners. Traditional haciendas present the least problems and economic risks. Large estates practicing modern farming on some portions of their land are often underusing other portions, which could be subdivided to advantage. Some elements of modern technology are unrelated to scale, for example fertilizer, which can be used as well on a small farm as on a large one. Others which are scale-related, such as tractor service, may be manageable by small farmers who would not need to own machines individually but could organize a service cooperative to buy a tractor for the group, or might rely on private rentals. Some modern technologies may require high-cost inputs in order to obtain high value products (poultry, vineyards, dairies) but not necessarily a large area of operation; these may be suitable for an ex-owner's reserve land, or for medium-sized beneficiary properties if credit and other facilities are ensured. Some technologies, however, may be more demanding of land area (beef cattle, alfalfa, sheep) and therefore inefficient on a small plot; here there may be a choice between medium-sized beneficiary plots and medium-scale cooperatives. Finally there are the kinds of product where integrated operation on a large scale is truly significant, as with a sugar complex. In these cases the major choice would seem to lie between non-expropriation and a large cooperative or state farm--though less unitary forms of contractual arrangement are also possible.

What is implied by the foregoing is a type of land reform adjudication determined flexibly on technical grounds, a sort of technocrat's dream. Unused public lands might be settled in such a fashion, as in Israeli planning. But in settled areas the concept of rational use patterns must be married to a land reform law in which existing property rights are to be adjudicated on the basis of firm and uniform legal concepts; and the "social function" problems of definition and of applicability have shown how uneasy

such a marriage can be. This particular problem was eliminated in Cuba, and within limits in Peru, by wholesale expropriation decrees. But in Peru at least (we cannot comment on Cuba) technocratic decisions were complicated, if not wholly bypassed in many cases, by ideological policies and local political pressures. In Chile, technocratic ambitions within CORA never had much scope for fulfillment.

There are no easy answers to these conceptual conflicts, nor to the very practical political problem of getting any rationalized distribution scheme carried out with both popular and elite acceptance. Venezuela, fortunately endowed, may have come as close as any to combining economic rationale with viable legal norms and wide acceptability. The Mexican and Bolivian reforms, executed with economic rationale subordinated to social justice for poor farmers, may be seen in retrospect as having arrived at a useful economic outcome. But the planners of Chile and Peru, more highly aware of the complex issues and striving for an appropriate design, are still embattled and cannot as yet supply a clear model for emulation.

This section on policy inferences is best concluded by listing some points that seem to emerge from the findings, but do not necessarily combine to support a consistent approach to the method of redistributing estate lands. These could be the following.

The break up of large estates, modern or traditional, into small holdings is very likely to have these results: more of the land will be put into use; more family labor will be applied to it per hectare; more staple foods (subsistence crops) will be grown; and crops or forms of livestock requiring relatively large inputs of capital or a large scale of operation will be de-emphasized (unless government intervenes with a strong program in support of particular products). The effects of increased labor intensity on product mix, and on gross or net value of product per hectare, can vary widely under different conditions. Some effects, as observed in Bolivia for example, could be a shift toward vegetable growing where there was a nearby urban market, or increased investment in livestock manageable on a small scale, like pigs and sheep. These particular examples of greater labor intensity are less universal than the trend toward staples like potatoes, corn and beans.

If a large estate is taken over and turned into a production cooperative, on the other hand, this change is likely to be easier to accomplish without disturbance to the extent that its operations utilize wage labor for standardized jobs in estate-wide activities, i.e., to the extent that it resembles a plantation. Examples are the big sugar complexes of coastal Peru, and to a lesser degree the highland sheep ranches. In both cases, collective operation was more successful than on crop-growing estates in highland Peru or in Chile; this was partly because of the conditions of crop cultivation, but also because conflicts of individual versus enterprise interests arose among cooperative members. In either type of farming, the

shift from authoritarian owners to cooperative management has had the effect of politicizing management procedures and decisions; this may well improve the welfare of cooperative members, but the effects on output are more in question. It may be remembered that successful economic performance among two samples of production cooperatives was found to depend on: (1) technical innovation, and (2) leadership capability--so that the "political" challenge is to achieve and to maintain these qualities. Honesty is also an important factor. Group farming appears to be more demanding of the ability and honesty of local leaders than is the performance of small farms; technological progress requires active government support programs for either type of farm.

There is rather little to be learned from these studies about the subdivision of big estates into medium-sized parcels of say 15 to 100 hectares. The potential for this approach, as initiated in Chile, cannot be judged. The performance of the sample of medium-scale irrigated ejido farms in Mexico was generally good, and productivity increased with farm size. (These were good farmers, who got strong government support and favorable land conditions, and all of these factors contributed to the outcome). It may also be noted that the Laguna cooperatives had tended over time to split up into smaller units; one might infer that medium sized units are easier to manage than larger ones. None of this is very conclusive, as a basis for policy guidance.

To summarize: let us assume that a government has decided to take over its large estates and is considering how best to distribute them among land reform beneficiaries. Small individual beneficiary farms are attractive to policy makers for several reasons: they give farmers what they want; they are less problematical for governments to create, and less troublesome to keep in operation than producer cooperatives or other collective arrangements; small farms may well represent the best way to maximize numbers of beneficiaries (though not necessarily per capita beneficiary welfare); and they may be as productive of output as any alternative, depending on the types of farm product desired. On the other hand, there are limits to what can be expected of small farmers with limited resources in the absence of government support programs. Larger units have greater capabilities for some types of production, and present a better prospect for introduction of technological innovations in the absence of government support; and they may be more quickly responsive when there are support programs. A government may wish to combine some of these different attributes by awarding small farms to many landless, leaving medium sized parcels as reserves to estate owners, while making a few cautious experiments on plantations (if any) with collective enterprises to learn how to get them to work best. This approach pre-supposes a pragmatic view, as opposed to a stress on ideological consistency; when conditions vary in different regions of a country, and when the results of particular actions are not fully predictable and future needs are likely to differ from present ones, there is a case for trying out a mixture of activities rather than fencing in the future by a uniform policy.

CHAPTER V

RESULTS OF LAND REFORM FOR NATIONAL ECONOMIES

Introduction

To isolate the effects of land reform on a national economy from the many other contributing causes of economic trends is a well high impossible task. As noted earlier, to assert the existence of any reform effect, even in its direction (without estimating magnitude), is to imply that some non-observable difference from what was observed would have occurred in the absence of reform. Since nothing stands still, neither politics nor population size nor technology and markets among other variables, there can never be certainty as to what might have been. Land reform penetrates deeply into economies and societies when its scope is large enough, and nations where it has occurred can never be the same again thereafter. For any estimate of reform impact one must fall back on logical inferences; and usually there are choices among chains of logic with different outcomes. What will be attempted here is to offer some judgments for discriminating among logical inferences.

The sequence of this chapter will begin by considering land reform relationships with national agricultural output, short and longer term; followed by consideration of productivity, technology and scale of operation; of national income distribution; and finally, a review of land reform in conjunction with agricultural sector strategy.

A. National Agricultural Output

Much of what can be said about the relation of Latin American land reform programs to farm production at the national level has been introduced in the preceding discussions. Most of what was noted above has been in the direction of a positive association of reforms with an upward trend in output. But there are also some negative elements, transitional but not confined to the short run, which need to be recognized.

The adoption of a land reform law, and especially when it is preceded by a period of debate before the decision is reached, will cause the owners of potentially affected properties to act in order to avoid losses. Even when compensation is promised it rarely replaces assets with full value--it has come closest to this in Venezuela; and in any case the practice of compensation generally falls short of what the law seems to promise. Governments try to hold down their costs by low valuation of assets; bonds given to owners are often eroded in value by inflation: etc

Passage of a law does not end uncertainty, as many such laws have complicated and/or vague provisions affecting owner rights; extended litigations over the category of an owner's property or its value and treatment are common. All the affected properties cannot be dealt with simultaneously, so that most will remain under threat for some time after a law is passed and before action is taken. Sometimes one land redistribution law will be followed by another and more comprehensive law, so that the period of uncertainty and possible loss is drawn out and amplified. During extensive time periods the effects of land reform laws are negative for private investment in agriculture.

The most visible impact is the effort of owners to decapitalize, principally by selling or removing equipment and livestock from estates which they either expect to lose or fear they might lose. When owners can be sure of retaining substantial land reserves, and especially if these are guaranteed against further expropriation as in Mexico, they can simply shift moveable assets to the reserves, and these will not be taken out of productive use. But where the prospect of keeping reserves is zero, or is indefinite--for example, when expropriation depends on some "social function" determination--then moveable assets may well be removed from production. Equipment may later be sold to other producers, but livestock is more likely to be slaughtered for meat. Efforts by prospective reform beneficiaries to prevent such removal of assets by owners have often led to peasant take-overs of land; but the news of such invasions will stimulate still faster removals by other owners.

Less visible and measurable than asset removal, but probably more important in the longer run, are the private investments in agriculture that are not made after a land reform appears on the horizon. The prospect of owner losses, then the reality of them, and beyond that the atmosphere of disturbance and loss of owner status in rural areas can act as generalized deterrents to agricultural investment for an indefinite period, and can affect landowners who may not themselves be threatened under existing law. There is no way of knowing how important the cumulative results of this non-investment may have been. Governments already faced with new costs for owner compensation will also have to take on the burden of financing new investments to assist in recovery from an undefinable shortfall in private investment if the total agricultural capital of the nation is not to decline. Governments will not have to replace all of the missing capital of pre-reform owners, since the new land owners will be investing to the best of their ability; but their resources and their credit standing with private banks are generally less than those of ex-owners.

Other potentially negative aspects of land reform vis-a-vis production have to do with the quality of farming by beneficiaries. There are some transitional disturbances to farming caused by shifts in ownership and removal of assets; longer lasting are the effects of a lack of reform beneficiary experience in farm management. This deficiency is more prevalent in Latin America than elsewhere for reasons given earlier, and is generally characteristic of the countries examined here. It is least so in Chile, where there was some previous tenant farming by beneficiaries. It may be

recalled that, in the Chilean asentamiento sample, the percentage of farmers with prior tenant operations was significantly correlated with subsequent increase in enterprise output per hectare.

Although the quality of farming by Latin American reform beneficiaries falls short of standards found in many European or Asian areas after their reforms, the same can also be said of other types of Latin American farmers--and especially of the owners of traditional haciendas. Despite lack of beneficiary experience, almost all our post-reform findings in Latin America do point to increased output on affected lands insofar as this can be ascertained. In Mexico there was little direct evidence other than increased output of maize; and in Peru there was weakness in the high-land cropping sample along with increases in the other two samples. But in Bolivia and Chile the increases are clearly evident, and in Venezuela any output from newly settled lands was a gain. There is little reason to believe that the distribution of lands decapitalized by former owners to farmers lacking management experience has, in general, had as significant results for national farm output as might logically have been expected.

Additional types of negative reform impact could be expected in the repercussions on farmers other than the new reform beneficiaries. Discouragement of investment has been mentioned. Experienced estate owners reduced in their land area; non-affected owners who were discouraged from investment or possible innovation; and small farmers needing government support who find the state's resources diverted to reform beneficiaries--all these could be producing less than they would have without land reform. Furthermore, potential new farming ventures could have been discouraged.

These logical inferences cannot be tested directly, but the course of national production growth during and after land reform provides an indirect indication. And we have seen that in Mexico and in Venezuela there were strong and sustained upward trends (4.6 and 6.4 percent annual growth respectively in pertinent periods) which had risen along with the inauguration of land redistribution. The same is true of Chile up to 1970, though a movement up to 3.0 percent growth over 5 years is less decisive as evidence. If Bolivian output data had been more fully collected, the national totals could also have shown an appreciable increase in growth after 1955, judging from the scattered estimates for particular crops. Only in Peru, where overall farm output growth showed no net growth after 1970, is there much basis for supposing that land reform may have discouraged production outside the beneficiary sector.

Instead, there is a stronger case for inferring that land reform may have served on balance as a stimulus to national production; and certainly it has not prevented the observed growth accelerations in 4 of the 5 countries even if it did not necessarily bring them about. As against the preceding logical inferences on the negative side, there are such positive inferences as these: Estate owners reduced to their reserves

were jolted into improving their productivity to a degree that had seemed unnecessary to them before reform. Other owners of large and medium properties were stirred into adoption of more modern methods by the prospect of being judged on their fulfillment of the "social function" of land. Governments may have directed their support efforts more to small farmers including non-beneficiaries, and less to the big farms, than they would have done without having had to confront the problems of new beneficiaries. A point which emerges from the Chilean farm sample is that, among the private owners, those who had had to make some sort of adjustment to their lands because of reform did more to raise output per hectare than those who were under no pressure to change their ways.

In sum, there are reasons why land reform could have depressed national production, and reasons for its acting as a stimulus. The statistical record in four countries suggests the importance of the latter set of reasons.

#### B. Productivity, Technology, and Scale

A major change effected by land reforms which do not set up cooperative enterprises is to reduce the scale of operation from large estates to small farms. This affects both the selection of farm products and the methods of production. We have seen that the new small farmers on ex-hacienda lands have generally increased their cultivation of staple food crops (maize in Mexico, potatoes in Bolivia); and they have raised productivity of the land they farm, mainly by increasing the labor time applied to it and bringing unused land into cultivation. In some cases they have also shown increased readiness to plant cash crops of types appropriate to local markets--e.g. vegetables in Bolivia--which may be labor-intensive in their requirements. They have shown less inclination than former hacendados to grow extensive crops like wheat or alfalfa, or to stock cattle and keep land in pasture, although some kinds of livestock may be increased (e.g. sheep and pigs in Bolivia). Small farmers generally, including reform beneficiaries, are less likely than large farmers to purchase capital goods or inputs requiring major cash expenditures such as chemical fertilizer and pesticides. In the two sample studies from Mexico (Laguna; irrigated farms), the smaller farmers--both ejidatarios and private farmers--were found to be using less capital and fewer purchased non-labor inputs per hectare, but more man-days per hectare, than were the larger farm units.

This greater labor intensity of small farm operations, and the lesser use of costly inputs which small farmers are less able to buy than their richer neighbors who will have better access to credits and technical advice, and better ability to accept financial risks--these are familiar differences worldwide. Labor intensity may be measured in three ways: first, by annual totals for labor time per cultivated hectare, and second, by labor time per hectare owned. Both these measures are important, the latter being particularly relevant to land reform purposes. Thirdly, labor intensity is commonly used to mean the inverse of capital intensity. Speaking of alternative farming methods: some will employ more capital equipment per

unit of labor, and are therefore capital-intensive; this concept could be expanded to include less durable but costly inputs, e.g. chemicals, which usually require significant working capital. Labor-intensive methods would use less of all these inputs per unit of labor time, irrespective of the levels of labor input per unit of land. All three kinds of labor intensity are associated with small farm operations, but need to be distinguished for some analytical purposes.

Labor intensity in farming may be deplored or viewed with favor, depending on one's objectives. For farmers to put in long hours of hard work on small pieces of land with no modern inputs is usually seen as the essence of poverty and backwardness. The most general long run development objective may be defined as increase in per capita product or income, which normally implies decreased labor per unit of product. But if one has, as a shorter run objective, the search for the productive use of excess rural manpower which cannot be employed in towns and cities, then labor intensity takes on the virtue of employment generation (without state subsidy, as in public works). Another virtue of labor intensity in farming is that it can provide an economy with agricultural products in ways that use up fewer of those resources which, in developing countries, are generally more scarce than farm labor: financial capital, capital goods (often imported), and other manufactured inputs. In this sense labor-intensive methods may be more efficient overall as a use of society's resources, even though "efficient" farming is normally thought to result from the use of non-labor inputs to enhance the productive efforts of the farmer. We will return to these points in the discussion of policy implications; here we will indicate what can be inferred about relative efficiencies, first by farm size, and second by tenure categories, from the Latin American studies covered.

The most thoroughly documented studies for learning about relative efficiency are those on the two Mexican samples, both of which relate to relatively modern farming environments. Among cotton farms in Laguna, the product per cultivated hectare tended to increase with the size of farm, but not sharply; more striking were the higher levels of total factor productivity found on the smaller farms using three definitions of total factor inputs. Averages for both small private and ejidatario farmers were about 50 percent above the averages of total factor productivity for big private farms and (regular) collective ejidos. But the sample of irrigated Mexican farms shows quite a different result. Product per cultivated hectare rises strongly with farm size, being three times its small farm value in the larger farms, and this is true for comparisons of both ejidos and private farms. Product per man-day does the same; even product per unit of capital tends to increase with farm size. Consequently the large farms showed about 50 percent higher total factor productivity than the small ones within each category (i.e. comparing ejidos with ejidos, and private farm groups separately).

A nationwide estimate of average productivities of large and small farmers and ejidatarios for Mexico in 1960 is summarized in Table 37 (large and small private farms are divided at the 5 hectare line). Here the small private farmers are largely "minifundists," unlike those in the two samples studied; and neither they nor most of the ejidos had the credit access available to ejidos and small farms in both samples. Large private farms were highest in value of product per hectare, small farms were lowest, and ejidos were intermediate. But when total factor productivities are compared, the small private farms come out ahead in all cases. The relative position of ejidos and large private farms varies with the inclusion or exclusion of owners' family labor as an input cost. Ejido family labor is an even larger percentage of total inputs (when included) than is minifundia family labor--possibly because many small farms are too small to occupy owner families full time, and they tend to seek outside wage work even more than do the ejidatarios with somewhat bigger average plots. In any case, if owners' labor is shadow priced at zero, the ejido productivity value rises near to the small farm level; whereas if such labor is included as a cost, ejido productivity falls below that of the large private farms. These results are nearly the same with either value of product or value added in the numerator. 1/

The 1940-1960 comparisons of related factors at the bottom of Table 37 throw some light on the more refined measurements in 1960. In 1940, the ejidos were highest in value of output per hectare, with big private farms some distance below and small farms lowest. By 1960 all groups had made progress, but especially the larger farmers who emerged well ahead of the others, while ejidos were not far above the small farmers. In the data on physical yields, it appears in 1940 that large farms were superior in growing wheat, cotton and sugar, while ejidos excelled in coffee and beans and almost tied with small farms in maize. But by 1960, the ejidos were ahead in no crop, and the small farms had taken a lead with beans, cotton and coffee; average maize yields were virtually the same everywhere. Thus, ejidos fell behind their relative 1940 standing in both value per hectare and physical yields; but the big gain of large farms in value per hectare was, paradoxically, accompanied by a relative fall in position for yields, with small farms moving up in rank (all yields were higher in 1960 in absolute terms). Differences among groups in physical yields were rather small and more unstable in relative rank than averages for value per hectare.

It should be noted that the small farmers concentrated heavily on the cultivation of corn and beans, while large farms planted more of the high-value-per-hectare crops like sugar and cotton; ejidos were intermediate. Large farms used more irrigated land (the unknown average for small farms must be well below that for ejidos). Another way of looking at the question of efficiency, given the divergence between product per hectare and total

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1/ A detailed presentation and discussion of the findings on Mexican productivity by the three tenure groups appears in Part C of the Appendix. The high value for capital on small private farms results from livestock rather than equipment or working capital.

Table 37: AVERAGE PRODUCTIVITY OF THREE MAJOR FARM GROUPS IN MEXICO, 1960;  
AND RELATED FACTORS, 1940 AND 1960

| 1960  | Private Farms                         |                    | Ejidos | Private Farms                  |       | Ejidos |
|---|---------------------------------------|--------------------|--------|--------------------------------|-------|--------|
|   | Large <sup>a</sup>                    | Small <sup>a</sup> |        | Large                          | Small |        |
| <u>Value of Product per Farm Operator<sup>b</sup> (pesos)</u> | 37,090                                | 2,380              | 5,580  | 37,090                         | 2,380 | 5,580  |
|   | <u>Including owners labor as cost</u> |                    |        | <u>Excluding owner's labor</u> |       |        |
| <u>Total Inputs per farm Operator (pesos)</u>                 | 21,771                                | 1,107              | 3,515  | 18,890                         | 860   | 2,280  |
| <u>Inputs: Percentages of total</u>                           |                                       |                    |        |                                |       |        |
| Owners' family Labor (imputed) <sup>c</sup>                   | 13.2                                  | 22.3               | 35.1   |                                |       |        |
| Land (imputed) <sup>d</sup>                                   | 24.8                                  | 9.2                | 21.3   | 28.6                           | 11.9  | 32.9   |
| Capital (imputed) <sup>e</sup>                                | 19.0                                  | 46.8               | 18.3   | 21.9                           | 60.3  | 28.3   |
| Cash expenditures   | 43.0                                  | 21.6               | 25.2   | 49.5                           | 27.8  | 38.8   |
|   | 100.0                                 | 100.0              | 100.0  | 100.0                          | 100.0 | 100.0  |
| <u>Total Factor Productivity</u>                              |                                       |                    |        |                                |       |        |
| Value of Product/Total Inputs                                 | 1.70                                  | 2.15               | 1.59   | 1.96                           | 2.75  | 2.45   |
| Value Added/Total Inputs                                      | 1.40                                  | 2.00               | 1.39   | 1.62                           | 2.53  | 2.14   |
| <u>Related Factors</u>  |                                       |                    |        |                                |       |        |
|   | 1940                                  |                    |        | 1960                           |       |        |
| Total Value of Product (million 1960 pesos)                   | 1,790                                 | 431                | 2,240  | 7,703                          | 823   | 5,870  |
| Number of Farm Units <sup>b</sup> (thousands)                 | 195                                   | 800                | 1,176  | 292                            | 721   | 1,435  |
| Harvested Area/Farm Unit (hect.)                              | 15.6                                  | 0.9                | 2.4    | 19.8                           | 1.2   | 3.0    |
| Value of Product/Hectare (1960 pesos)                         | 584                                   | 550                | 636    | 1,335                          | 953   | 1,070  |
| Percent of Cult. Area Irrigated                               | -                                     | -                  | -      | 25%                            | n. a. | 14%    |
| Percent of area in Maize & Beans                              | -                                     | -                  | -      | 57%                            | 80%   | 66%    |
| Physical Yields: (relative to lowest group)                   |                                       |                    |        |                                |       |        |
| <u>Maize</u>  | 1.00                                  | 1.18               | 1.17   | 1.01                           | 1.01  | 1.00   |
| <u>Beans</u>  | 1.11                                  | 1.00               | 1.19   | 1.01                           | 1.50  | 1.00   |
| <u>Wheat</u>  | 1.39                                  | 1.00               | 1.25   | 1.42                           | 1.05  | 1.00   |
| <u>Cotton</u>   | 1.31                                  | 1.18               | 1.00   | 1.00                           | 1.21  | 1.00   |
| <u>Coffee</u>   | 1.27                                  | 1.00               | 1.79   | 1.00                           | 1.11  | 1.00   |
| <u>Sugar</u>  | 1.50                                  | 1.27               | 1.00   | 1.18                           | 1.00  | 1.02   |

<sup>a</sup> Large farms over 5 hectares, small farms under 5 hectares.

<sup>b</sup> "Operators" are either owners or ejidatarios (not ejidos as a whole). Similarly, "units" refer to ejidatario family farms, not ejidos.

<sup>c</sup> Number of workdays on farm reported by operator for himself and unpaid family members, multiplied by minimum rural wage rate.

<sup>d</sup> Imputed rent at 5% of land value.

<sup>e</sup> Imputed interest at 10% of own capital (excluding land).

SOURCE: Estructura Agraria, op.cit.; see Appendix Part C for detailed explanations.

factor productivity in these groups, is to consider the relative importance of two questions which may be asked: Either, who can extract the most value from a hectare of land? Or, who can produce staple food for the poor at lowest cost to society? The rich farmers, in Mexico and elsewhere, would often perform best by the first criterion, while the poor farmers would frequently qualify as superior by the second.

Data from the other countries studied are less precise and ample but can add something to the picture. For example, the consistent decrease in crop yields per hectare with increase in farm size in Bolivia (shown in Table 17 for potatoes, typical of other food crops) needs to be taken into account. Also, reform beneficiaries in the Bolivian case studies produced several times the volume of output per owned hectare of the ex-hacendados. In Peru, large farm size was thought to be a disadvantage in highland crop growing, as it seems clearly to be in Bolivia. But economies of scale were thought to be operative in sheep raising in the Puna, and in coastal sugar and cotton plantations. None of this was quantified, however.

These mixed findings suggest that the economies of scale in farming may be more elusive than is sometimes assumed. For example, the higher value of product per hectare on large Mexican farms may be unrelated to physical yields, or to operational economies, but may simply reflect a superior access to more costly methods of producing high-value types of product. If so, this production could perhaps be as well done in small units if the same access could be extended to them. The Laguna sample suggests that this may be so for cotton; the irrigated farm sample with variable crops, however, suggests managerial advantages of scale, at least up to 50-100 hectare sizes.

It should be noted that if significant economies of scale are not probable in modern commercial farming, this undermines the economic rationale for keeping big farms intact after land reform by forming cooperative farms. We have seen that the establishment of cooperative farming is inherently difficult owing to the desires of most farmers for their own land, their frequent skepticism over the capabilities of such new organizations, and the apparent weakness in group farming incentives. As noted earlier, the efficiency of group farming seems to be generally lower than other kinds, but it was not wholly discredited by the facts obtained in the relevant sample surveys; advocates and opponents could read them differently. However, the differences between group farms and large private farms in the kinds of factor utilization found may have some social utility. Like small farms, the cooperative farms tend to use less capital and less purchased inputs per hectare, as shown in the Mexican Laguna and irrigated farm samples; and they generated more man-days per hectare (in Laguna). Also, like the small farmers in Bolivia, the Chilean asentamientos increased their area planted to vegetables and other labor-using crops. If such differences are generalized, then group farming may offer some of the same qualities of labor intensity (employment creation, economies in other inputs) that are found in small farms as against large private ones. In this spectrum, the group farms appear to represent an intermediate alternative between large and small units.

These results from a small number of observations of variable quality in Latin America may be placed in a wider perspective by reference to some findings in a recent survey by Berry and Cline. 1/ The tendency for small farmers to cultivate land more intensively than large ones appears throughout much of the developing world: percentages of farm area cultivated follow this pattern in Latin America, East and South Asia, and the Middle East. 2/ The differences in percentages are more striking in Latin America, where large farms may on average cultivate only 5-10% of their area while small farms use perhaps half; in East and South Asia, where even the larger farms are relatively small, the percentages cultivated are generally higher and the group averages are closer together. Where double cropping is practiced, cropping intensity almost invariably declines as farm size rises even if the percentage of land cultivated does not.

There is thus a strong tendency in developing countries for land to be used more intensively by small than by large farmers, and the authors note a number of reasons why this should be so in theory. In particular, the greater application of family labor to given land areas by the smaller farmers is both logical and demonstrable. However, this does not mean that small farmers necessarily obtain higher physical yields per cultivated hectare for given crops, nor that their crop mix will result in either higher or lower values of total product per hectare than those on larger farms. The evidence on physical yield trends by farm size, Berry and Cline find, indicates no consistent trend up or downward, and they conclude that the relationship should be generally treated as constant. It may be noted that if physical yields are constant and if small farmers consistently cultivate more of their area, then the decreasing output of given crops per hectare owned as size of farm increases, such as that found for Bolivia in 1950 (Table 19), should be regarded as a typical and not an aberrant phenomenon. And this in itself constitutes a reasonably strong argument for subdividing large estates into smaller units as a means of increasing national output. But it does not deal with all the questions which could be raised about social efficiencies or production change over time.

Concerning production dynamism, Berry and Cline found no general relation with farm size. They explored with cross-country regressions the relationship of the rates of increase in agricultural output from 1961 to 1971 in 30 principal developing countries to the following variables: average size of farm (hectares); concentration of land ownership (Gini coefficient); land endowment (hectares per capita of rural population);

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1/ R. Albert Berry and William R. Cline, "Farm Size, Factor Productivity and Technical Change in Developing Countries" (mimeographed, draft text as of June 1976; prepared for ILO and IBRD. Cited with author's permission).

2/ See Berry and Cline, op. cit., p. 36 for data on 20 countries.

and population increase 1960-70 (percentage growth rate). None of the land variables showed significant correlation with production increase, either singly or in combination; only population increase was related, at a fairly low level of significance. 1/

The authors were unable to pursue the complexities of social efficiency of farm size with all inputs considered in any across-the-board fashion, due to data limitations, and they concentrated on testing hypotheses in six countries where relatively intensive studies had been made: Brazil, Colombia, the Philippines, Pakistan, India and Malaysia. 2/ While these results cannot be satisfactorily reproduced in a brief statement, it is clear that the decreasing intensity of land use as farm size increases is confirmed in each case. Value of output, or value-added, per hectare of farm area consistently declines with size; this remains true where land quality or value, and the availability of irrigation, are taken into account. There is, of course, much variation among countries and sub-regions in local conditions, and thus in the relationship of farm size to product mixes and to the value of output per cultivated area; in some cases product value per hectare decreases with farm size, in others it rises, and the same is true of physical yields. Where the value of product per hectare is higher on larger units (as in Mexico), this can be explained with varying degrees of completeness by shifts from labor toward capital in input mix as size increased. But in some areas (not all) the amounts of capital and purchased inputs per hectare were larger on the small farms, along with labor time--i.e. the greater intensity of small farming may extend to all factors where small farm access to them makes this possible.

In some instances the basic trend toward decreasing intensity with size was weakened, or slightly reversed, in some of the size categories: it does not always hold for the very smallest farms, and may flatten out among the larger groupings. But generally speaking the explorations of these authors, using data which are on the whole more complete than those in the studies reviewed here, lend support to the inferences favorable to small farmer productivity already noted. A relatively complex calculation of total factor productivities in Colombia, using several treatments of labor cost, yielded results favorable to small units similar to those found in the Laguna sample. One qualification should be noted: in Pakistan and India during the years of the "green revolution," and perhaps also in Colombia in the 1960s, when intensity of farming was increasing generally in these countries, it seemed to have increased somewhat faster on large than on smaller farms, thus reducing the differences between them.

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1/ Berry and Cline, op. cit., Tables 3-3 (p. 43) and 3-4 (p. 46).

2/ Authors of these studies were: Brazil - W.R. Cline; Colombia - R.A. Berry; Philippines - Vernon Ruttan; Pakistan - Mahmood Hasan Khan, Z.I. Qazi and S. Mohammed, et.al.; India - C.H.H. Rao, et.al.; Malaysia - Muda River Survey.

The authors attribute this more to superior access of large farmers to credit and particular inputs than to scale economies, although these are recognized also. And their general conclusion is that all six countries would have higher levels of farm output, by amounts varying from 19 to 49 percent, if production were to be undertaken on small, uniformly sized family farms. 1/, 2/

### C. National Income Distribution

The scope of land reforms in their effects on percentages of rural and total populations were spelled out in Table 5 of Chapter 2: Mexican and Bolivian reforms made about half of their rural populations, and 30-35 percent of total populations, into beneficiaries. In Venezuela one third of rural inhabitants but only 6 percent of total families were affected. In Chile and Peru, 13-14 percent of rural residents and 3-6 percent of all families were involved. Table 6 indicates the impact of land reform in reducing the numbers of landless and minifundists in rural areas: this result is greatest just after a peak of land redistribution; but population growth without further land given out, and without rapid urban migration, can in time bring back the numbers of landless.

We have noted that all land reforms redistribute incomes from rich landowners to at least some of the poor; but clearly they do not reach all of the latter. The complaint that land reforms did not "solve" the problem of rural poverty that they were addressing, and that they are therefore failures, is heard from both opponents and supporters of reform programs. Yet it should be obvious that any program has its limits, whether because the land eligible for distribution under the law is used up, or the application of the law is weaker than it might be; and in any case families go on having children. To some, this condition will indicate

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1/ Ibid, see Chapter 5 for methodology.

2/ Other writers who have noted the relative productivity of small farms in developing countries include: R. Dayal and C. Elliot, Land Tenure, Land Concentration and Agricultural Output (Geneva: United Nations Research Institute for Social Development, 1966); Peter Dorner, Editor. Land Reform and Economic Development (Harmondsworth, England: Penguin Books, 1972); Peter Dorner and Don Kanel, "The Economic Case for Land Reform," in Land Reform in Latin America: Issues and Cases, P. Dorner ed., Land Economics Monograph No. 3. (Madison, Wisconsin: University of Wisconsin Press, 1971); Folke Doving, "Land Reform: Ends and Means" (unpublished paper for World Bank Seminar on Land Reform, May 18, 1973); P.K. Bardhan, "Size, Productivity and Returns to Scale: Analysis of Farm Level Data in Indian Agriculture," Journal of Political Economy, Nov./Dec. 1973, p. 1370.

that further redistribution of lands, and more expropriations under a stiffer law, are the appropriate remedy. Those who take this view may support land reform on grounds of social justice, or as a form of relief for the poor. Others, however, will see the whole approach as wrong: on the one hand, radicals tend to view land reform as meaningless without a political revolution; conservatives, on the other hand, would let urban development pick up the rural slack without dismantling productive estates. All these various partisans may make somewhat different assumptions about the realities of population and resources, as well as the moral issues-- that is, they may (mistakenly or not) see rather different outcomes of policy efforts as possible under existing conditions.

National circumstances, of course, differ widely. Venezuela, for example, may be able to accommodate its petitioners for land out of public lands for some time; and its rural population total is decreasing. But there does not seem to be as much land available for the much larger and growing number of rural landless in Mexico. In Bolivia, there may be more land per capita which could be brought under cultivation in the settled areas, and the new trans-Andean settlement is underway (these new latifundia may some day be under pressure for sub-division). The situation in Peru, however, appears more restricted in its settled areas, and trans-Andean settlement is further out of reach than in Bolivia. In Chile, the lower population growth and further industrial development may eventually ease the problem of rural poverty. In varying degrees these, and of course other countries not studied here, are under pressure to take actions affecting their rural poor. Table 38 supplies some rough indicators of these pressures.

One dimension of land reform viewed as an anti-poverty measure is the question of how much land a family should have: the more people to be accommodated, the less each can get from a given total of land for distribution. The drive to take care of more people can present conflicts with a production perspective. Many agricultural economists or agronomists would favor the kind of "viable family farm," large enough to enable farmers to obtain some desirable level of income from modern technology and sales to the market, which would be substantially larger than the average beneficiary plot in any of the countries studied except Chile. Distribution of land in larger plots, however, would have led to still more landless in Mexico and Bolivia if it had been followed in those countries. The use of land by small numbers of producers can also be the result of cooperatives being formed in order to utilize certain highly mechanized and capital-intensive methods of farming: such a policy also presents a conflict between income distribution and production objectives. This policy, observed in the cooperative enterprises of coastal Peru and Chile, means that a small group of relatively well-off farmers are occupying good land and facilities; and we have seen that they will do what they can to keep others from entering their organizations and sharing the benefits. So either the "family farm" or the production cooperative approach runs head on against the claims of the needy landless to such land as can be made available.

Table 3d: INDICATORS OF RURAL POPULATION PRESSURE  
ON AGRICULTURAL LENDING 1975 AND 2000

|  | <u>Mexico</u> | <u>Bolivia</u> | <u>Peru</u> | <u>Venezuela</u> | <u>Chile</u> | <u>Latin America</u> |
|--|---------------|----------------|-------------|------------------|--------------|----------------------|
| <u>Total Population (millions)</u>               |               |                |             |                  |              |                      |
| in 1975  | 59.2          | 5.4            | 15.3        | 12.2             | 10.3         | 324                  |
| Annual Growth                                    | 3.2%          | 2.5%           | 2.9%        | 2.9%             | 1.8%         | 2.7%                 |
| <u>Rural Population (millions)</u>               |               |                |             |                  |              |                      |
| 1950   | 15.4          | 2.2            | 4.6         | 2.3              | 2.6          | 96.9                 |
| 1975   | 21.8          | 3.4            | 6.6         | 2.2              | 1.7          | 128.3                |
| 2000 (est.)                                      | 28.7          | 4.8            | 8.5         | 1.9              | 1.2          | 156.2                |
| <u>Agricultural Data (1974)</u>                  |               |                |             |                  |              |                      |
| % of Workforce in Agri.                          | 39            | 63             | 45          | 22               | 21           | 41                   |
| % of Area in Farm Land <sup>a</sup>              | 52            | 13             | 24          | 21               | 21           | 28                   |
| Farm Land (1000 km <sup>2</sup> ) <sup>a</sup>   | 1026          | 143            | 308         | 192              | 170          | 5635                 |
| <u>Farm Land per Rural Inhabitant (hectares)</u> |               |                |             |                  |              |                      |
| 1975   | 0.47          | 0.42           | 0.47        | 0.87             | 1.00         | 0.44                 |
| 2000 (projected) <sup>b</sup>                    | 0.36          | 0.30           | 0.36        | 1.01             | 1.42         | 0.36                 |

<sup>a</sup>Land under permanent crops or in permanent pasture.

<sup>b</sup>Assuming no changes in area of farm land. The 1975 averages for Mexico, Bolivia and Peru are similar to that for Latin America as a whole, and are similarly due to decrease by the year 2000 if the area in farm lands does not grow. Venezuela and Chile are better situated, and their averages may increase. Bolivia and Peru have unsettled lands behind the Andes; Mexico has no such reserves, and a much higher percentage of its area is already in use by farms.

Sources: For population data, Trends and Prospects in Urban and Rural Population, 1950-2000, as Assessed in 1973/74 (Population Division, Department of Economic and Social Affairs, United Nations, April 1975). For agricultural data, Selected Economic Data for the Less Developed Countries (U. S. Agency for International Development, July 1974)

The experience of the five Latin American countries examined does not indicate whether it would be possible to settle all of a country's rural poor families on the land, or what the consequences would be if this were attempted. Mexico came close to it in 1940 when its landless rural families were reduced to a little under 10% of all farm families; but by now they are up over one third of the total, and the previous achievement would be harder to repeat today with the larger total numbers. In Venezuela, the 1973 landless were about 20 percent of rural families, and the land supply might be ample to settle these on, as it might also be in Chile; in both cases the numbers involved are relatively small, and they have begun to decrease. But it is quite another matter to consider how best to deal with the many thousands of poor and landless campesinos in Peru or Bolivia, or the less progressive parts of Mexico.

In principle they could all be given the right to a minimum plot of land (defined by size and quality) if one's overriding priority were to address the problems of the rural poor at whatever cost to other objectives. Alternatively, the Cuban land reform has attempted to provide for everyone within collective units of one sort or another, with results which cannot be assessed here. It can be argued that if all land were subdivided into small units the national production objective would not be sacrificed but would be served, 1/ but this cannot be conclusively demonstrated from experience. Where collective organizations are compulsory for all, the production prospect would be somewhat uncertain, judging from the Peruvian experience so far. What can be stated with more assurance is that either method of reaching 100 percent of the rural poor, whether by providing individual plots or by opening membership in collectives, requires a very strong commitment to a particular form of action on the part of political leaders and administrators, and either a widespread ideological consensus on this subject or an unquestioned control of the instruments of coercion by a group of "true believers." Such eventualities cannot be ruled out in the future; but they have not characterized the actual land reforms studied here.

Instead, it must be recognized that the income distribution effects of land reform have been a by-product of other forces and policies, rather than an outcome of policies designed to produce a predefined distribution of rural incomes. This is of course understandable, given the contentious and often turbulent atmosphere that has accompanied the introduction of land reforms; and these qualities are probably inevitable when a major and disturbing change in the socio-economic structure is undertaken. The impulse toward "social justice," and its expression in a drive toward greater income equality, is clearly influential. But this is hardly the same thing as a calculated goal for rural income distribution accompanied by a set of policies which can bring it about.

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1/ See, for example, Berry and Cline, op. cit., Chapter Five.

In the Mexican revolution, for example, the distributional impact of land reform resulted from an ethical concept based on the right of campesino groups to petition for lands of which their fathers had been unjustly deprived. Petitions were dealt with as they arose; and there was no definition or measurement of the desired results of this policy. In Bolivia, the distributional consequences were, despite the use of legal concepts, shaped mainly by the outcome of localized struggles from below against resistances from above. In Venezuela there was a closer approach to planning and design, but the reliance on campesino petitions kept the implementation relatively loose. In the more recent reforms of Peru and Chile, however, there was a good deal of consideration and debate over distribution-related issues, and some very complicated designs were enacted in law; future land reformers will undoubtedly be highly aware of the issues that have been raised in these countries. But it has to be noted that the designs adopted in these countries did not address the problems of the landless poor who were not working on the large estates; even Allende's aborted CERAs extended only to this group. The Peruvian SAIS idea was a tentative beginning in this direction (it was similar to the restoration of land to deprived groups, as in Mexico), but it seems to have been relatively ineffectual for its limited objective. In practice, the self-conscious land reform designs in Chile and Peru have proved less capable than the looser, ethically conceived reforms elsewhere of reaching the majority of the rural poor.

In sum, all the land reforms under consideration have resulted in incremental equalization of rural incomes--in varying degrees; and none have extended to all of the rural landless, although some have come closer to that than have others. Whether this definition of equity should be considered a primary objective in land reform is, of course, a matter for national political choice, along with the importance to be attached to success or failure by such a criterion. The experience under review supplies some partial contributions to a consideration of how the minimum income support goal might be approached, but there is nothing resembling a model for emulation. It may be noted in conclusion, however, that even if land reform does not supply a sure road toward rural income equalization or minimum security, it is difficult to see how such goals could be achieved in the absence of some kind of radical land redistribution. 1/

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1/ William Cline, for example, in "Policy Instruments for Rural Income Redistribution," concludes that neither land taxation, tenancy reform, new technologies, nor channeled credit has the equalizing potential of land reform. See Income Distribution and Growth in Less Developed Countries, Charles R. Frank, Jr. and Richard Webb, editors (Washington, D.C.: The Brookings Institution, forthcoming).

D. Policy Implications: Agricultural Strategies

Policy implications of land reform considered in the last chapter concerned the medium-term problems of ownership transfer of land, and their effect on whatever agricultural activities are ongoing at the time of redistribution. But it is also necessary to consider effects of land reform decisions on the future evolution of agriculture. This involves a definition of national development priorities and purposes, and the consequent role of the agricultural sector.

A basic issue here is the priority given to rapidity of increase in agricultural production for the nation, as against a concern with the rural poor--their need for productive employment, security, and self-respect. Ideally, of course, one would wish to pursue both objectives; but, as noted earlier, the objective of distributing land to large numbers of people can conflict with production objectives which may seem to require a lower man/land ratio than is compatible with provision of land to all the landless. This kind of conflict has shown up in different ways: for example, in Chile it appeared in the demand that all workers on ex-estates, not just the permanent resident workers, should share in the estates' resources equally. In Peru it took the form of the SAIS, a cooperative in which adjacent communities were to share with ex-estate workers the ownership of a large enterprise.

Conflict between production and what may be called welfare objectives involves not only questions of how existing resources should be allocated to poor farmers, but also the way that nations think of their agricultural future, about its shape and purpose. "Modern" farming aimed at maximizing the value of product per hectare, and yielding farm products other than staple grains and vegetables, has become increasingly capital-intensive via mechanization and use of chemicals, or with livestock via costly breeding stock and feeds. In Latin America such farms have been larger in scale than those of traditional food producers; they tend to occupy the best soils and irrigated lands; and they also employ relatively few laborers per hectare. Any nation which sees its agricultural progress as requiring more and more of this kind of production will find its best lands employing fewer and fewer people. And the transfer of ownership of such farms from private to cooperative hands would not in itself change these attributes--witness Peru. Nor would subdivision into 150-hectare plots, as in the Frei design for Chile.

By contrast, a nation emphasizing the welfare of the rural poor could subdivide its bigger holdings entirely into small farms, featuring labor-intensive food production at least initially. Markets for such food could be sustained by egalitarian incomes policies in the urban sector. "Progress" might be sacrificed, at least to some extent; but a continuing support to industrial and selective modern agricultural growth, including exports, is quite manageable in conjunction with the above policies. Such an overall policy could be pursued after drastically redistributed private land ownership. This kind of approach may be seen in Taiwan and South Korea, for example. It could also take the form of a decentralized socialism; the mainland Chinese model, for example, stresses labor intensive technology, local initiative, and income equality in both the cities and the countryside.

These Asian illustrations are intended mainly to show that this concept is not an imaginary possibility. A literal imitation of such models, embedded as they are in East Asian cultures and the particulars of history, is probably out of the question in Latin America. Nevertheless, it may be of significance for Latin America that so many thousands of Taiwanese and Korean farmers with 1-2 hectares each have been brought up to high levels of productivity per hectare by world standards, and that this was accomplished in low income countries. A key ingredient in these countries has been a strong network of multiservice cooperatives reaching virtually every village, strongly supported by governments. Such a network takes years to build up to thorough effectiveness, however.

A full discussion of the relative merits and alternatives involved in agricultural support institutions is beyond the scope of this report, and the subject is rather controversial. But such institutions are so important in determining the outcome of land reforms that a few summary and perhaps arbitrary judgments may be in order in this policy section. The need for any particular style of institution--whether a Taiwanese farmers' association or an Egyptian cooperative--is debatable; cultural differences are important. But there is a general requirement for some sort of institutional network which can successfully relate small farmers to the services, supplies and markets that are essential for agricultural innovation. This may be seen as a necessary institutional adaptation to the situation of small farmers in most developing countries, who are without the resources, skills, and contacts to conceive and carry out technological improvements. A wide-reaching network of some kind of "cooperative" farmers' organizations--however they are named--appears to be needed (though not sufficient by itself) if small farmers are to achieve rates of progress that are impossible for them in isolation. Such institutions, which may encompass marketing organizations, technical assistance, credit facilities, storage depots, etc., have their costs: the costs to government can be held down by attention to the possibilities of self-sufficiency (e.g., a credit agency which charges enough interest to cover lending costs), of scale economies, and local autonomy.

These general observations are derived more from experience elsewhere than from that in the five countries studied here. Support institutions were virtually non-existent in Bolivia. In Venezuela they were conventional in form and not unusually effective. The support institutions in both Chile and Peru were ambitious and elaborate, and operated under detailed directives from central government ministries. Overcentralization seems to have been a weakness that adversely affected performance--certainly with CORA in Chile, perhaps less clearly in the Ministry of Agriculture and SINAMOS work in Peru--although this is difficult to disentangle from other influences on performance. In Mexico, the ejido idea seems to represent a more significant innovation: while economic "success" among ejidos has so far been a minority phenomenon, at least the basis for a nationwide institutional network has been laid, and this may prove even more valuable in the future than it has so far.

Latin American land reforms have tended to separate the welfare and productivity objectives, most explicitly in Venezuela and Mexico. In effect, if not by design, small farms have been created for the poor without much expectation of productivity potential, while productivity growth on big farms is facilitated by "social function" exemptions for efficiency and by owners' reserves. Both parts of the two-pronged policy have met with some success. In Venezuela the reform beneficiaries are, in a sense, given a secure "parking place" in which to wait until they can be absorbed into an expanding industrialized economy; with current trends, this parking place may prove to be sufficient for the purpose. In Mexico, however, the man/land ratio is less favorable. As of 1940, Mexico had taken a giant step to provide for its rural poor, while also laying the groundwork for a modernization policy that was to prove highly productive. But the ejido "parking place" was insufficient: as time passed the rich farmers became richer, which the rural poor have become more numerous and especially the landless. Mexico is currently exploring new ways to raise the productivity of small farmers, and it may evolve methods suitable to Latin American culture. The existing ejido network may become capable of sustaining effective multiservice cooperatives, and of expanding further to more farm groups.

Some countries of Latin America may be able to follow the Venezuelan path, where it is appropriate to their land resources, population trends and industrial levels. But others will almost certainly face the Mexican type of problem, if they do not already, and they may be less well prepared than Mexico to recognize and deal with it. Sooner or later they will have to take the productivity problems of small farmers more seriously.

An alternative is to abolish small farms by wholesale collectivization. But it needs to be recognized that the problems and potential for dealing with ordinary small farmers--i.e., the present minifundists and casual workers--by this means are very different from those encountered in the cooperatives that take over ongoing, wage-paying modern farms. It is only the latter kind of farms, and farmers, to which Peruvian, Chilean and Laguna experiences apply. Aside from farmers' skills and attitudes, it is always much harder to create new entities from disparate people and activities than to simply maintain existing routines under new management. If there are lessons from experience with collectivization of ordinary farmers in a Latin American setting, these can only be learned with more information from Cuba.

## 1. Classification of Alternatives

The patterns that a country could consider when contemplating the options for its agricultural future may be classified in the following way.

### a. Small Farms

1. Operated by individual farmers with little or no government support programs (e.g., Bolivia).

2. Individual farmers who may join service cooperatives in a network, which is built up and supported by government as strongly as resources permit.

3. Formation of collective units for land ownership within which are individual farms (as in most Mexican ejidos). Governments can decide which units to support with which services, within resource limits.

b. Medium Sized Farms

1. Generous "family farm" units with commercial viability potential, and collateral for commercial bank credit. These could be either large beneficiary plots, ex-owner reserve lands, or pre-existing medium farms.
2. Small production cooperatives, based on village communities or smaller sub-groups, with government support via service networks.

c. Large Farm Units

1. Retention of large efficient farms in private hands (e.g., Venezuela).
2. Mixed subdivision of big farms into individual farms and collective lands by local decision (as in the 1967 Chilean law).
3. Production cooperatives on big farms with only a core group of permanent workers as members (coastal Peru).
4. Production cooperatives with many members, heterogeneous organizations covering large areas (as in the Peruvian SAIS, or the Allende plan for CERA in Chile).
5. State farms as a substitute for either 3, or 4.

Option a-1, small farms without support programs, represents the cheapest solution with least problems of administration. The larger private property options, b-1 and c-1, have these virtues as well; but a-1 would extend ownership to as many of the rural landless as land availability would permit, while the larger private units effectively limit the numbers of private owners. Options b-1 and c-1 are consistent with modern technology, and would tend to reduce rural employment opportunities.

The weakness of the a-1 approach is that small farmers lacking access to institutional credits and other facilities will be unable to develop the productivity levels that they should be capable of reaching with effective support programs, as in a-2 and a-3. The difference between the latter two options is that with a-3 an institutional framework for a service cooperative type of network is created in advance by being built into the reform adjudication; this may have certain advantages later when

the government is in a better position to bring it into effective life. However, the pattern is thereby frozen in advance; and there may be advantages in allowing government to design its network more freely (a-2) as it meets evolving new conditions affecting product and technological choices, or geographical location and grouping combinations. It is important to remember that such networks cannot be implemented with full effectiveness in a short time under either procedure.

Options b-2 and c-3, 4, and 5 involve some kind of group farming operation, the problems of which (incentives, internal conflict, etc.) have been noted. Option c-2 is a kind of compromise solution, which may offer the potential for obtaining the best of both world (private and joint property) on large modern estates. All of these options would seem to be oriented toward modern technology, and not necessarily toward employment generation for the rural poor. Disregarding state farms (c-5) for which there is little Latin American experience (elsewhere state farms have tended to be capital-intensive), we may compare the other three in their potential for productive employment. In this comparison, the operation of large modern farms by cooperatives with only the permanent core of workers as members (c-3), as in coastal Peru, would appear to be the least labor-intensive alternative, and therefore the most likely to project a dualistic structure into the future (unless agriculture is already a small sector nationally and the landless can be absorbed in cities).

For the remaining options, small units of group farming (b-2) and large cooperative farms with a big heterogeneous membership (c-4), we may cite the small collective ejidos of Laguna as a case of b-2, and the SAISs of highland Peru as an example--albeit a peculiar one--of c-4. Both of these options may offer a more labor-intensive potential than the other large unit options considered here, though probably less so than the small farm pattern. The efficiency of the collective cotton farms in Laguna, tested with time, would seem to be mixed: some very good, some running at a loss, and a majority viable but not superior to small farms. Small farms supported by effective service cooperatives should be able to do as well or better. As for the SAISs, the outlook is at present dubious and they do not seem to offer a viable pattern for projection into a nation's future. And the Allende version of CERAs, never tried for long but a possible alternative form for c-4, might well have ended as unmanageable entities, facing some of the problems found in the over-extended cropping enterprises of highland Peru. Thus, where relative labor intensity and group farming are combined as in b-2 and c-4, the smaller units (b-2) are more likely to be successful and durable--judging from these few very preliminary indications.

## 2. Conclusions

Land reform enables a nation to transform its existing structure of farming units to fit an agricultural strategy. A nation considering its agricultural future need not opt for a single pattern throughout, either in farm size, ownership forms or types of farming. Any full discussion of

the relative merits of various possible combinations, however, would become endlessly complex, and would be most useful if land reform decisions were made by rational technocrats in a political vacuum. This is an unlikely prospect. Nevertheless, we may conclude by sketching out a few summary inferences concerning rational uses of land reform, appropriate in different settings.

For a poor country with limited state revenues and limited agricultural and bureaucratic skills, the only relevant choice may be the simple one of whether or not to cut up big haciendas into small farms (a-1). Here, the results in Bolivia and Mexico suggest that such a move should be rewarding economically provided that some medium-sized properties also remain intact, as it is likely that the latter will become the focus for future improvements in technology.

At the opposite extreme, where a country has reached an advanced stage of industrialization but still has a numerous rural population which is underemployed and landless, or settled on minifundia inadequate for their growing families, the Venezuelan type of "parking place" for the poor (a-2) may be appropriate. Where unused public lands can be mobilized with little new infrastructure, these offer the easiest way out. Lacking that, the subdivision of underutilized estates is next best--or may even have tactical advantages for meeting political demands by activist peasant sindicatos in an atmosphere of class hostility. Here the Venezuelan political orchestration might prove instructive.

For countries with moderate financial resources and skills, and with islands of advanced agricultural practice surrounded by rural poverty and rapid population growth, the problems are more urgent and the choices are wider and more complex. We may distinguish two general approaches, one which assumes acceptance of private property norms for society, and a second which features socialist ideas--but in a looser, more experimental spirit than that in Cuba.

The expropriation of estates is by itself an attack on existing property rights. But it may be said that the establishment of a more egalitarian structure of ownership is likely to create a larger and more productive group of private farmers, owners who will give long run support to private property norms and will therefore constitute a more durable base for private enterprise than would the continuing dominance of big latifundia in conjunction with rural poverty. Land reform planners could, then envisage a large number of small farms assisted by such support as government could muster (a-2), plus a reasonable number of medium-sized private farms (b-1)--especially in land-extensive activities, and perhaps a very few large private units (c-1) in instances where economies of scale were important. However, a general favoring of medium over large farms would probably serve both the objective of efficiency and that of generating support for the private property ethic, a consideration which would point either to b-1 (medium beneficiary plots) or to c-2, rather than to c-1.

If, however, an incoming government finds itself committed to socialist experimentation, the appropriate land reform design will depend in part on its population pressure and supply of arable lands, as well as the extent of its resources for support to agriculture. Most economical and flexible would be the Mexican ejido solution, establishing communal ownership in principle while allowing communities to work with small farms (b-2), as far as this was locally expedient, would also be possible. This is probably the best overall combination of labor intensity with relative efficiency. Socialist thinking often (though not necessarily) envisages larger units than these--perhaps as the result of an urban frame of reference, perhaps with a desire to accomplish a reconstruction of society in a short time, or to create showcase projects for demonstration impact. But Latin American experience suggests that, at least in agricultural activities, large integrated structures bring in complexities, conflicts, bureaucratic delays, etc., if they are the units for operational decision-making. Neither the capital-intensive (c-3) nor labor-intensive (c-4) large units have been clearly successful, or more so than smaller units. Large-area administrative units for technical planning and extension work and for efficient financial support are useful, and probably necessary for a socialist society; but localized non-bureaucratic decision-making in farm management is clearly desirable for many types of crop cultivation and some livestock raising, and it should be provided for within socialist institutions.

Land reform has been examined with respect to production growth, shifts in technology and productivity, and changes in income distribution. There are other things associated with land reform which are either non-economic or related only indirectly to economic matters, and some of these could be regarded as conducive to national development in a broad sense. These considerations may be noted briefly in conclusion. The phenomena to be mentioned are not susceptible of proof, nor of quantification, and even their contributions to national development can be questioned. Nevertheless they are involved in prevalent value judgments on land reform and its desirability.

Land reforms remove or severely downgrade the large landowners who are the dominant figures in rural society. The complex of relationships built up around the hacendado as patron, and his colonos or workers as dependent clients, is weakened--sometimes entirely destroyed. For landowners, this will normally have a minus value. For their underlings, new horizons open out. Not only increased incomes but increased social status and security, and new capabilities for control of one's fate are acquired. Social mobility, however circumscribed, is greater; local leadership is fostered; individual self-respect is enhanced. These changes are relative, and may be thought minor in practice, but the direction is important. They are new opportunities for low status individuals; and the particular people concerned respond in a variety of ways, not all of which will appeal to an outside observer. Clearly these are matters on which value judgments can differ. But there is a case for considering that these are changes from a traditionalist, restrictive society to one which is more dynamic, and that these changes are therefore conducive to long run national development. And while these considerations are stated here in condensed fashion, their importance may be as great or greater than that of other relationships which are more fully elaborated.

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APPENDIX

This statistical Appendix includes three main presentations: Part A has five tables in which the basic data on land reform impact that were used to make up the tables presented in Chapter 2 are shown for the five countries concerned. Part B includes various kinds of material on national agricultural production trends. Table B-1 gives FAO index values 1952-75 for the five countries, and Chart 1 shows how these trends appear on a graph for Venezuela, Peru and Chile, in comparison to the Latin American trend. Table B-2 gives a number of alternative values for agricultural production in Chile in the 1970s, the purpose of which is to show how these values differed from one source to another and shifted over time in unusual fashion if one considers the successive FAO publications. (The Allende period is in question, in particular the changes in 1971 and 1972). Charts 2 and 3 give graphic presentation of Mexican production trends and Chart 4 shows data on cotton output and yields in Laguna. Finally, the Appendix concludes with reproductions of two tables on the pages from Background Paper No. 16, the Bolivia Country Report, in order to illustrate the degrees of uncertainty along with the strength of the upward trends in Bolivian output and yields of selected products. Part C analyzes nationwide productivity comparisons of averages for Mexican large and small farms and ejidos in 1940 and 1960, describing the basis for figures presented in Table 37.

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Part C: Productivity Comparisons Among Tenure Groups in Mexico, 1940 and 1960, by Shlomo Eckstein. (Text and internal tables, 27 pp.)



APPENDIX

Part A

Land Reform Impact Data



Table A-1: MEXICO, LAND REFORM IMPACT ON LANDHOLDING AND RURAL FAMILIES.

|  | Thousands        | Thousands of Hectares  |         |        |         |
|--|------------------|------------------------|---------|--------|---------|
|  |                  | Cropland <sup>8/</sup> | Pasture | Other  | Total   |
| Total Agricultural Families <sup>2/</sup>                  |                  |                        |         |        |         |
| 1910   | 2,350            |                        |         |        |         |
| 1930   | 2,134            |                        |         |        |         |
| 1940   | 2,260            |                        |         |        |         |
| 1960   | 3,610            |                        |         |        |         |
| 1970   | 3,002            |                        |         |        |         |
| Landless Families and Minifundists, 1910                   | 2,300            |                        |         |        |         |
| Estate Workers (families), 1910                            | 1,645            |                        |         |        |         |
| Land Reform Beneficiaries                                  |                  |                        |         |        |         |
| by 1930  | 537              |                        |         |        |         |
| by 1940  | 1,223            |                        |         |        |         |
| by 1960  | 1,524            |                        |         |        |         |
| by 1970  | 1,986            |                        |         |        |         |
| Land in All Farms  |                  |                        |         |        |         |
| 1923   |                  | -                      | -       | -      | 159,102 |
| 1930   |                  | 14,618                 | 66,493  | 50,483 | 131,594 |
| 1940   |                  | 14,871                 | 56,172  | 57,706 | 128,749 |
| 1960   |                  | 23,817                 | 79,092  | 66,175 | 169,084 |
| 1970 <sup>1/</sup>   |                  | 23,138                 | 74,499  | 42,231 | 139,868 |
| Land in Large Estates <sup>7/</sup>                        |                  |                        |         |        |         |
| 1923   |                  |                        |         |        | 130,115 |
| 1930   |                  |                        |         |        | 102,000 |
| 1940   |                  |                        |         |        | 79,086  |
| 1960   |                  |                        |         |        | 92,649  |
| 1970   |                  |                        |         |        | 41,840  |
| Land Redistributed via Land Reform                         |                  |                        |         |        |         |
| by 1930  |                  | 1,941                  | 3,557   | 2,847  | 8,345   |
| by 1940  |                  | 7,046                  | 10,659  | 11,218 | 28,923  |
| by 1960  |                  | 10,329                 | 19,614  | 14,557 | 44,500  |
| by 1970 <sup>2/</sup>                                      |                  | 11,853                 | 28,433  | 20,438 | 60,724  |
| Average Land Allotment per Beneficiary                     |                  |                        |         |        |         |
| 1930   |                  | 4                      | 7       | 5      | 16      |
| 1940   |                  | 6                      | 9       | 9      | 24      |
| 1960   |                  | 7                      | 13      | 10     | 29      |
| 1970   |                  | 6                      | 14      | 10     | 30      |
| Number of Large Estates                                    |                  |                        |         |        |         |
| 1923   | 13               |                        |         |        |         |
| Affected by Land Reform <sup>9/</sup>                      | n.a.             |                        |         |        |         |
| Remaining, 1970  | 10               |                        |         |        |         |
| Land Reform Beneficiaries                                  |                  |                        |         |        |         |
| As % of Agricultural Families                              |                  |                        |         |        |         |
| 1930   | 25               |                        |         |        |         |
| 1940   | 54               |                        |         |        |         |
| 1960   | 42               |                        |         |        |         |
| 1970   | 66 <sup>4/</sup> |                        |         |        |         |
| As % of 1910 Landless Families and Minifundists            |                  |                        |         |        |         |
| 1930   | 23               |                        |         |        |         |
| 1940   | 53               |                        |         |        |         |
| As % of 1910 Estate Workers                                |                  |                        |         |        |         |
| 1930   | 33               |                        |         |        |         |
| 1940   | 74               |                        |         |        |         |
| Land Redistributed   |                  |                        |         |        |         |
| As % of Land in All Farms                                  |                  |                        |         |        |         |
| 1930   |                  | 13                     | 5       | 6      | 6       |
| 1940   |                  | 47                     | 19      | 19     | 22      |
| 1960   |                  | 43                     | 25      | 22     | 26      |
| 1970 <sup>5/</sup>   |                  | 51                     | 38      | 48     | 43      |
| As % of Land in 1923 Large Estates                         |                  |                        |         |        |         |
| 1930   |                  |                        |         |        | 6       |
| 1940   |                  |                        |         |        | 22      |
| 1960   |                  |                        |         |        | 34      |
| 1970   |                  |                        |         |        | 46      |
| Remaining Landless Families and Minifundists <sup>6/</sup> |                  |                        |         |        |         |
| 1930   | 1,380            |                        |         |        |         |
| 1940   | 830              |                        |         |        |         |
| 1960   | 1,750            |                        |         |        |         |

(con't.)

Table A-1 (con't)

Sources:

- 1910: Elaborated from estimates given in Frank Tannenbaum, The Mexican Agrarian Revolution, MacMillan Co., 1929.
- 1923: Official statistics, quoted in Tannenbaum, id., and in Carlos Tello, La Tenencia de la Tierra en Mexico, Instituto de Investigaciones Sociales, Mexico, 1968.
- 1940, 1960: II and IV Agricultural, Livestock and Ejido Censuses, elaborated in Sergio Reyes, et al, Estructura Agraria y Desarrollo Agricola, especially Tables II-18 and III-9 through 12, Fondo de Cultura Economica, Mexico, 1974.
- 1970: V Agricultural, Livestock and Ejido Census, elaborated in S. Eckstein and E. Gitli, Evaluacion de la Estructura Agraria Mexicana, forthcoming in 1977 in Mexico.

Notes:

- 1/ The 1970 figures are not strictly comparable with those of earlier years. The 1970 census reports only farming units that had been cultivated during 1969/70, whereas previous censuses also included idle units that comprised wide areas of mostly barren land ~~in~~ untilled large private farms. Thus, the total censused area declined by close to 20%.
- 2/ The 1970 figures have been adjusted for land belonging to Indian communities, so that values are comparable with those of earlier years.
- 3/ Number of persons economically active in agriculture (according to the Population Censuses) divided by 1.7, which is the average number of active persons per family (see Estructura Agraria, p. 335).
- 4/ The sharp increase in the percentage during 1960-70 is due to:  
(1) the addition of close to half a million ejidatarios;  
(2) the decline in the total agricultural labor force, from which the number of "agricultural families" has been derived.
- 5/ But see footnote 1/; the total area in private farms declined by 54 million hectares, whereas the total area in ejidos rose only by 16 million has. Hence, at least 38 million has. of the decline in privately owned land is due to the exclusion of untilled farms from the 1970 census figures.
- 6/ "Landless" are derived as the difference between agricultural families and landholders, both private and ejido, after some adjustments to avoid double-counting (see Estructura Agraria, p. 333 and Table IV-7); "minifundistas" are private holdings of less than 5 has. total area. No comparable figures were available for 1970, but it seems that the number has fallen, following the decline in the agricultural labor force reported by the Population Census for 1960-70.
- 7/ Total area of estates with more than 1000 hs. of total land.
- 8/ Land, under crops, plus fallow land (as reported by census).
- 9/ The number of large estates affected by LR is not available. Perhaps the original idea was to obtain this number as the difference between the number of large estates prior to LR and the number remaining afterwards. But that does not work, because the time interval is very large and in the interim period many new large estates may have been formed, others may have sold out voluntarily, etc. Only in Bolivia, Peru and perhaps Chile is this figure meaningful; elsewhere it is empty, so maybe we best delete it altogether.

Table A-2: BOLIVIA AND REFORM IMPACT ON LANDHOLDING AND RURAL FAMILIES

|   | Thousands             | Thousands of Hectares |         |        | Total  |
|---|-----------------------|-----------------------|---------|--------|--------|
|   |                       | Cropland              | Pasture | Other  |        |
| (1) Total Agricultural Families, 1950 <sup>1/</sup> | 450                   |                       |         |        |        |
| Landless Families and Minifundists                  |                       |                       |         |        |        |
| (2) 1950  | 416                   |                       |         |        |        |
| (3) 1955  | 207                   |                       |         |        |        |
| (4) 1970  | 431                   |                       |         |        |        |
| (5) Estate Workers (families), 1950                 | 356                   |                       |         |        |        |
| (6) Land Reform Beneficiaries, by 1955              | 237                   |                       |         |        |        |
| (7) Land in All Farms, 1950                         |                       | 3,092                 | 11,323  | 18,325 | 32,740 |
| (8) Land in Large Estates, <sup>2/</sup> 1950       |                       | 2,445                 | 10,478  | 17,182 | 30,105 |
| (9) Land Redistributed via Land Reform, by 1955     |                       | 2,360                 | 6,040   | 1,392  | 9,792  |
| (10) Average Land Allotment per Beneficiary (has.)  |                       | 8                     | 21      | 5      | 34     |
| Number of Large Estates <sup>2/</sup>               |                       |                       |         |        |        |
| (11) 1950   | 6                     |                       |         |        |        |
| (12) Affected by Land Reform                        |                       |                       |         |        |        |
| (13) Remaining, 1955                                | 1                     |                       |         |        |        |
| Land Reform Beneficiaries (..... Percentage .....   |                       |                       |         |        |        |
| (14) As % of Agricultural Families (6 ÷ 1)          | 53 (34) <sup>3/</sup> |                       |         |        |        |
| (15) As % of Landless and Minifundists              | 57                    |                       |         |        |        |
| (16) As % of Estate Workers (6 ÷ 2)                 | 67                    |                       |         |        |        |
| Land Redistributed                                  |                       |                       |         |        |        |
| (17) As % of Land in All Farms (9 ÷ 5)              |                       | 76                    | 53      | 7      | 30     |
| (18) As % of Land in Large Estates (9 ÷ 6)          |                       | 97                    | 58      | 8      | 33     |

Sources:

Bolivia Country Report, by Jeff Dorsey, published as Background Paper No. 16, especially Tables 5-16 and sources quoted there. See also John W. Wilkie, Measuring Land Reform, UCLA Latin American Center, Los Angeles, 1974.

Notes:

<sup>1/</sup> Total rural population, divided by 5.

<sup>2/</sup> Over 1,000 has. in size.

<sup>3/</sup> By 1970 the number of agricultural families had risen to 756,000 and the share of land reform beneficiaries had fallen to 34% of this total.

Table A-3: VENEZUELA: LAND REFORM IMPACT ON LANDHOLDING AND RURAL FAMILIES

|  | Thousands                | Thousands of Hectares |         |       | Total                         |
|--|--------------------------|-----------------------|---------|-------|-------------------------------|
|  |                          | Cropland              | Pasture | Other |                               |
| ( 1) Total Agricultural Families, 1960                                   | 423                      |                       |         |       |                               |
| Landless Families and Minifundists                                       |                          |                       |         |       |                               |
| ( 2) 1960  | 263                      |                       |         |       |                               |
| ( 3) 1973  | 150                      |                       |         |       |                               |
| ( 4) Estate Workers (families), 1960                                     | 150                      |                       |         |       |                               |
| ( 5) Land Reform Beneficiaries, by 1973                                  | 128 <sup>g/</sup>        |                       |         |       |                               |
| ( 6) Land in All Farms, 1961   |                          | 6,555                 | 14,157  | 2,360 | 23,342 (29,679) <sup>a/</sup> |
| ( 7) Land in Large Estates, 1961   |                          | 3,343                 | 12,741  | 2,183 | 18,267                        |
| Land Affected by Land Reform, by 1973                                    |                          |                       |         |       |                               |
| ( 8) Private   |                          | 880                   | 744     | 631   | 2,285                         |
| ( 9) Public  |                          |                       |         |       | 6,337                         |
| (10) Land Redistributed Among Beneficiaries, by 1973 <sup>b/</sup>       |                          |                       |         |       | 1,650                         |
| (11) Average Land Allotment per Beneficiary (has.)                       |                          |                       |         |       | 13                            |
| Numbers of Large Estates <sup>c/</sup>                                   |                          |                       |         |       |                               |
| (12) Prior to Land Reform, 1950  | 3.4 (4.2) <sup>d/</sup>  |                       |         |       |                               |
| (13) Affected by Land Reform <sup>h/</sup>                               | 4.9                      |                       |         |       |                               |
| (14) Remaining, 1971   | (..... Percentages ..... |                       |         |       |                               |
| Land Reform Beneficiaries  | 30 (35) <sup>e/</sup>    |                       |         |       |                               |
| (15) As % of Agricultural Families (5 + 1)                               |                          |                       |         |       |                               |
| (16) As % of Landless and Minifundists (5 + 2)                           | 49                       |                       |         |       |                               |
| (17) As % of Estate Workers (5 + 4)                                      | 85 (47) <sup>f/</sup>    |                       |         |       |                               |
| Land Redistributed   |                          |                       |         |       |                               |
| All Land Affected by Reform Program <sup>a/</sup>                        |                          |                       |         |       | 29                            |
| (18) As % of Total Land ( (8 + 9) + 6 )                                  |                          |                       |         |       |                               |
| (19) Private Land Affected as % of All Private Land (8 + 6)              |                          | 13                    | 5       | 24    | 10                            |
| (20) Private Land Affected as % of Private Land in Large Estates (8 + 7) |                          | 26                    | 6       | 29    | 12                            |
| (21) Land Redistributed as % of Total Land                               |                          |                       |         |       |                               |
| (22) Land Redistributed as % of Total Land (9 + 6) <sup>a/</sup>         |                          |                       |         |       | 6                             |

- Notes: <sup>a/</sup> In addition to the 1961 Census figure of 23,342,000 has. in private farms, there was an undetermined amount of (largely unexploited) private land. By 1973, 6,337,000 has. of public land were re-distributed. The sum of these two figures is 29,679,000.
- <sup>b/</sup> Includes land adjudicated with provisional and definitive titles and that which had not yet been formally adjudicated, but was occupied by squatters.
- <sup>c/</sup> Over 1,000 has. in size.
- <sup>d/</sup> By 1960 the number of large estates had risen to 4,200.
- <sup>e/</sup> By 1973 the number of agricultural families had fallen to 370,000 and the proportion of land reform beneficiaries had risen to 35% of this.
- <sup>f/</sup> The figure in parenthesis is the percent of estate workers which have received lands under the reform program.
- <sup>g/</sup> Land had been allocated to 139,000 beneficiaries, but 11,000 had abandoned their parcels by 1973.
- <sup>h/</sup> See note 9 to Mexico.

**Sources:**

- 1960: *Reforma Agraria*, Report of CENDES/CIDA on Study on Land Reform in Venezuela, published in 9 volumes in Venezuela (by CENDES) and partly in Washington, (by CIDA), in 1969; especially volumes 1 and 2. Also *Agricultural Census of Venezuela of 1961, Part B*, page 287.
- 1971-73: Elaboration of Census Data prepared by Gustavo Pinto C. (coordinator of the CENDES/CIDA Study mentioned above) for the present World Bank Land Reform Study.

Table A-4: PERU, LAND REFORM IMPACT ON LANDHOLDING AND RURAL FAMILIES

|  | Thousands | Thousands of Hectares       |                      |       |        |    |
|--|-----------|-----------------------------|----------------------|-------|--------|----|
|  |           | Cropland                    | Pasture              | Other | Total  |    |
| (1) Total Agricultural Families, 1961                      | 937       |                             |                      |       |        |    |
| Landless Families and Minifundists                         |           |                             |                      |       |        |    |
| (2) 1961   | 793       |                             |                      |       |        |    |
| (3) 1976   | 738       |                             |                      |       |        |    |
| (4) Estate Workers (Families), 1961                        | 244       |                             |                      |       |        |    |
| Land Reform Beneficiaries                                  |           |                             |                      |       |        |    |
| (5) by 8 - 1973  | 166       |                             |                      |       |        |    |
| (6) by 1976  | 340       |                             |                      |       |        |    |
| (7) Land in All Farms, 1972                                |           | 3,729                       | 15,352               | 4,615 | 23,696 |    |
| (8) Land in Large Estates, <sup>1/</sup> 1961              |           | 970                         | 13,356 <sup>2/</sup> | 2,174 | 16,500 |    |
| Land Redistributed via Land Reform                         |           |                             |                      |       |        |    |
| (9) by 8 - 1973  |           | 833                         | 3,573                | 1,103 | 5,508  |    |
| (10) by 1976   |           | 1,833                       | 6,420                | 3,616 | 11,869 |    |
| (11) Average Land Allotment per Beneficiary (has.) by 1975 |           | 5                           | 21                   | 7     | 33     |    |
|  |           | by 1976                     | 5                    | 19    | 11     | 35 |
| (12) Number of Large Estates, 1961                         | 2         |                             |                      |       |        |    |
| (13) Number of Large Estates Affected by Land Reform       |           |                             |                      |       |        |    |
| (14) Number of Large Estates Remaining after Land Reform   | .1        | (..... Percentages .....) : |                      |       |        |    |
| Land Reform Beneficiaries                                  |           |                             |                      |       |        |    |
| (15) As % of Agricultural Families (6 ÷ 1)                 | 36        |                             |                      |       |        |    |
| (16) As % of Landless and Minifundists (5 ÷ 2)             | 43        |                             |                      |       |        |    |
| (17) As % of Estate Workers (5 ÷ 4)                        | 139       |                             |                      |       |        |    |
| Land Redistributed   |           |                             |                      |       |        |    |
| (18) As % of Land in All Farms (10 ÷ 7)                    |           | 49                          | 42                   | 78    | 50     |    |
| (19) As % of Land in Large Estates (10 ÷ 8)                |           | 190                         | 48                   | 166   | 72     |    |

Source:

Peru Country Report, by Douglas E. Horton, published as Background Paper No. 24, especially Tables, 1, 2, 6, 10, 15, 19, 20, 21, 23.

Notes:

<sup>1/</sup> Over 1,000 has. in size.

<sup>2/</sup> Areas under natural pastures and cropland were adjusted and allocated to different size groups in accordance with preliminary results of the 1972 Census of Agriculture.

Table A-5: CHILE, LAND REFORM IMPACT ON LANDFOLDING AND RURAL FAMILIES

|   | Thousands             | Thousands of Hectares |                   |        |
|---|-----------------------|-----------------------|-------------------|--------|
|   |                       | Cropland              | Pasture and Other | Total  |
| (1) Total Agricultural Families, 1965<br>Landless Families and Minifundists         | 425                   |                       |                   |        |
| (2) 1965  | 244                   |                       |                   |        |
| (3) 1973  | 240                   |                       |                   |        |
| (4) Estate Workers (families), 1965<br>Land Reform Beneficiaries                    | 114                   |                       |                   |        |
| (5) by 1970   | 21                    |                       |                   |        |
| (6) by 1973   | 58                    |                       |                   |        |
| (7) Land in All Farms, 1965   |                       | 5,168                 | 15,111            | 20,278 |
| (8) Land in Large Estates, <sup>1/</sup> 1965<br>Land Redistributed via Land Reform |                       | 2,809                 | 10,413            | 13,222 |
| (9) by 1970   |                       | 659                   | 2,906             | 3,564  |
| (10) by 1973  |                       | 2,041                 | 7,476             | 9,517  |
| (..... Percentages .....) )   |                       |                       |                   |        |
| (11) Average Land Allotment per Beneficiary (has.)<br>Number of Large Estates       |                       | 35                    | 129               | 164    |
| (12) 1965   | 10                    |                       |                   |        |
| (13) Affected by Land Reform  | 5                     |                       |                   |        |
| (14) Remaining, 1973  | 10                    |                       |                   |        |
| Land Reform Beneficiaries   |                       |                       |                   |        |
| (15) As % of Agricultural Families (6 ÷ 1)  | 14 (13) <sup>2/</sup> |                       |                   |        |
| (16) As % of Landless and Minifundists (6 ÷ 2)                                      | 24                    |                       |                   |        |
| (17) As % of Estate Workers (6 - 4)   | 51                    |                       |                   |        |
| Land Redistributed  |                       |                       |                   |        |
| (18) As % of Land in All Farms (10 ÷ 7)   |                       | 39                    | 49                | 47     |
| (19) As % of Land in Large Estates <sup>1/</sup> (10 ÷ 8)                           |                       | 73                    | 72                | 72     |

Source:

Chile Country Report, by Eduardo Cifuentes, published as Background Paper No. 15, especially Tables 2, 6, A-1, A-4, A-9, A-13.

Notes:

<sup>1/</sup> BIH are Basic Irrigated Hectares, defined in terms of land quality using units of good irrigated land in Chile's Central Valley, or their equivalent in other types of land. 40 BIH are roughly equivalent to 1000 has. elsewhere in Chile. Large Estates are defined as those over 40 BIH (roughly equivalent to 1,000 has.).

<sup>2/</sup> By 1973 the number of agricultural families had risen to 450,000, causing the proportion of land reform beneficiaries to fall to 13%.

APPENDIX

Part B

National Production Trends



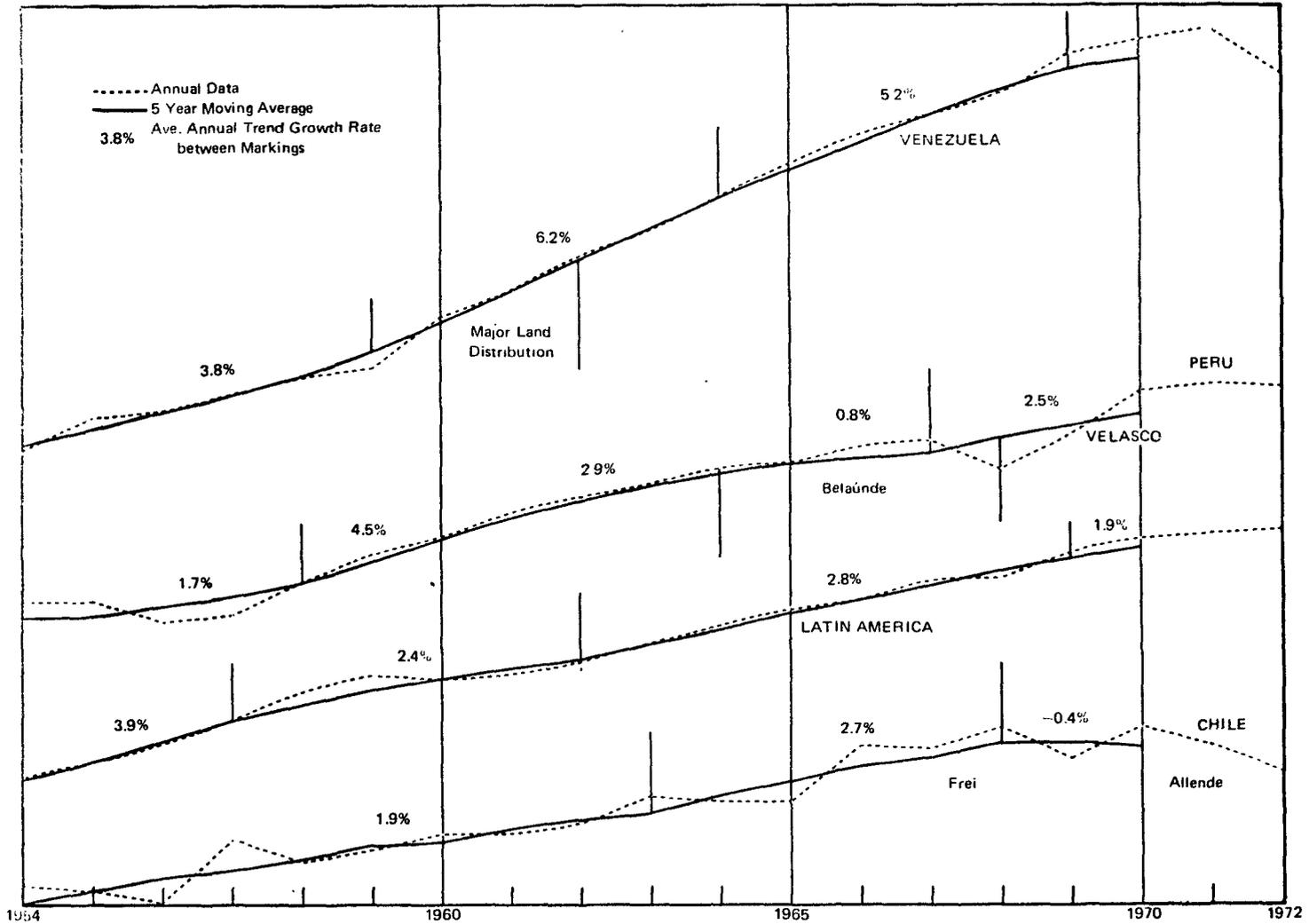
Table B-1: FAO INDICES OF AGRICULTURAL PRODUCTION IN  
FIVE COUNTRIES AND LATIN AMERICA, 1952-74  
(1952-56 = 100)

| Year | Bolivia | Chile | Mexico | Peru | Venezuela | Latin<br>America |
|------|---------|-------|--------|------|-----------|------------------|
| 1952 |         | 93    | 82     | 95   | 92        | 93               |
| 1953 |         | 97    | 89     | 97   | 98        | 95               |
| 1954 |         | 98    | 103    | 104  | 99        | 100              |
| 1955 |         | 105   | 111    | 104  | 107       | 104              |
| 1956 | 120     | 107   | 115    | 101  | 108       | 107              |
| 1957 | 125     | 105   | 131    | 102  | 115       | 111              |
| 1958 | 138     | 117   | 141    | 109  | 118       | 118              |
| 1959 | 139     | 112   | 133    | 112  | 125       | 118              |
| 1960 | 147     | 114   | 141    | 123  | 138       | 121              |
| 1961 | 152     | 119   | 148    | 126  | 143       | 128              |
| 1962 | 150     | 119   | 153    | 129  | 151       | 130              |
| 1963 | 166     | 127   | 161    | 132  | 159       | 133              |
| 1964 | 172     | 124   | 170    | 136  | 174       | 135              |
| 1965 | 166     | 120   | 175    | 136  | 185       | 142              |
| 1966 | 169     | 124   | 179    | 141  | 194       | 139              |
| 1967 | 174     | 127   | 187    | 142  | 204       | 147              |
| 1968 | 179     | 133   | 194    | 141  | 216       | 145              |
| 1969 | 180     | 131   | 190    | 139  | 220       | 148              |
| 1970 | 208     | 144   | 196    | 160  | 240       | 163              |
| 1971 | 219     | 143   | 212    | 160  | 243       | 163              |
| 1972 | 229     | 138   | 209    | 158  | 249       | 167              |
| 1973 | 243     | 116   | 209    | 157  | 261       | 169              |
| 1974 | 251     | 143   | 217    | 156  | 287       | 177              |

Source: 1952-55: FAO Yearbook 1967, p. 147.  
1956-69: FAO Yearbook 1970, p. 231.  
1970-74: FAO Yearbook 1975, p. 119.

The 1970-74 figures were shifted from a base of 1961-65 = 100, using the following averages for 1961-65 from the 1970 yearbook: Bolivia 161, Chile 122, Mexico 161, Peru 132, Venezuela 162, Latin America 134.

CHART NO. 1  
INDEX OF TOTAL AGRICULTURAL PROJECTION



Based on FAO Production Data

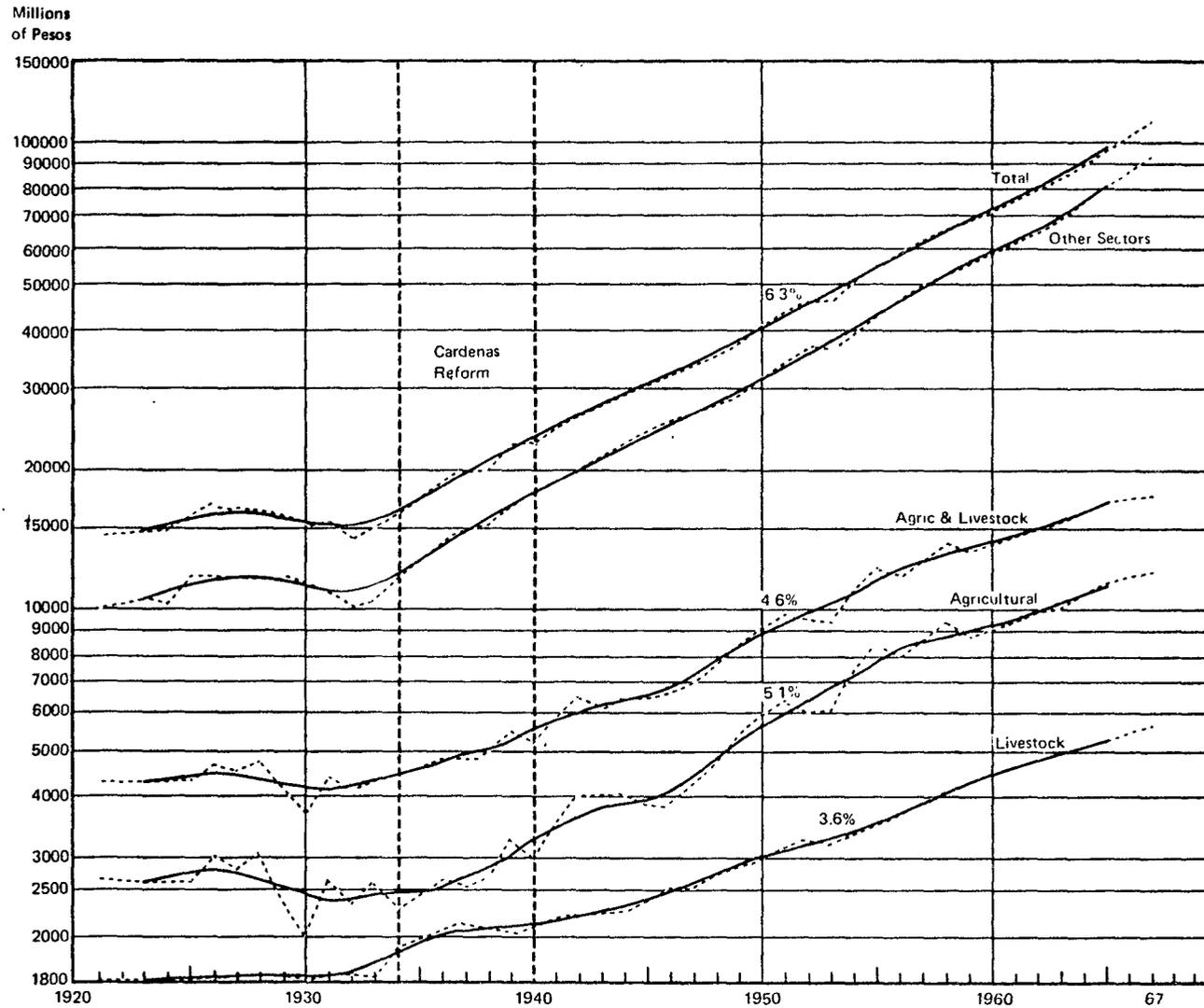
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Table B-2: CHILE: INDEX NUMBERS OF TOTAL AGRICULTURAL PRODUCTION

| Year | Base 1961/65=100 |       |          |       |          |       |          |       |          |       | Base 1969=100     |       | Base 1970=100   |       |                    |       |
|------|------------------|-------|----------|-------|----------|-------|----------|-------|----------|-------|-------------------|-------|-----------------|-------|--------------------|-------|
|      | FAO 1971         |       | FAO 1972 |       | FAO 1973 |       | FAO 1974 |       | AID 1976 |       | Barracclough 1973 |       | Valparaiso 1974 |       |                    |       |
|      | Index            | %     | Index    | %     | Index    | %     | Index    | %     | Index    | %     | Index             | %     | Agri.<br>Index  | %     | Livestock<br>Index | %     |
| (1)  | (2)              | (3)   | (4)      | (5)   | (6)      | (7)   | (8)      | (9)   | (10)     | (11)  | (12)              | (13)  | (14)            | (15)  | (16)               | (17)  |
| 1961 | 98               |       | 96       |       |          |       |          |       |          |       |                   |       |                 |       |                    |       |
| 1962 | 98               | 0     | 98       | +2.1  | 97       |       |          |       |          |       |                   |       |                 |       |                    |       |
| 1963 | 103              | +5.1  | 103      | +5.1  | 103      | +6.2  | 103      |       |          |       |                   |       |                 |       |                    |       |
| 1964 | 102              | -0.9  | 102      | -0.9  | 102      | -0.9  | 102      | +0.9  |          |       |                   |       |                 |       |                    |       |
| 1965 | 99               | -2.9  | 102      | 0     | 102      | 0     | 102      | 0     | 107      |       | 100               |       |                 |       |                    |       |
| 1966 | 110              | +11.9 | 114      | +11.8 | 114      | +11.8 | 115      | +12.7 |          |       | 111.8             | +11.8 |                 |       |                    |       |
| 1967 | 109              | -0.9  | 113      | -0.9  | 113      | -1.7  | 113      | -1.7  |          |       | 116.4             | +4.1  |                 |       |                    |       |
| 1968 | 113              | +3.7  | 118      | +4.4  | 118      | +4.4  | 118      | +4.4  |          |       | 117.0             | +0.5  |                 |       |                    |       |
| 1969 | 107              | -5.3  | 111      | -6.0  | 113      | -4.2  | 112      | -5.1  |          |       | 109.3             | -6.6  |                 |       |                    |       |
| 1970 | 112              | +4.7  | 118      | +6.3  | 121      | +7.1  | 118      | +5.4  | 127      |       | 114.7             | +4.9  | 100             |       | 100                |       |
| 1971 | 118              | +5.3  | 114      | -6.8  | 121      | 0     | 117      | -0.8  | 128      | +0.8  | 120.4             | +5.0  | 100.9           | +0.9  | 103.2              | +3.2  |
| 1972 |                  |       | 108      | -5.3  | 119      | -1.7  | 113      | -3.4  | 116      | -9.4  | 122.2             | +1.5  | 90.2            | -11.9 | 89.1               | -13.7 |
| 1973 |                  |       |          |       | 106      | -10.9 | 95       | -15.9 | 103      | -11.2 |                   |       |                 |       |                    |       |
| 1974 |                  |       |          |       |          |       | 117      | +23.2 | 116      | +12.6 |                   |       |                 |       |                    |       |
| 1975 |                  |       |          |       |          |       |          |       | 119      | +2.6  |                   |       |                 |       |                    |       |

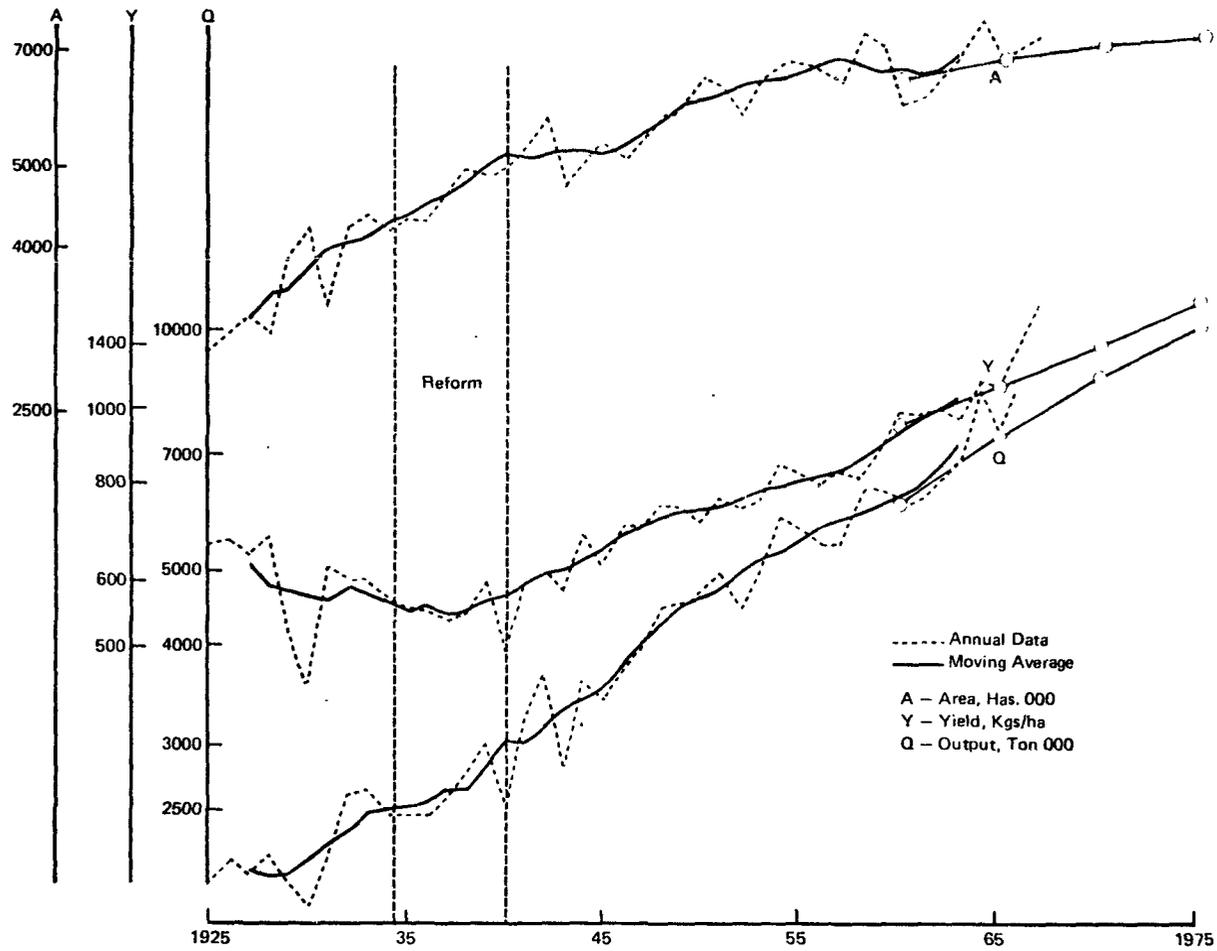
Sources: FAO 1971--FAO Production Yearbook, vol. 25, 1971  
 FAO 1972--FAO Production Yearbook, vol. 26, 1972, p. 29.  
 FAO 1973--FAO Production Yearbook, vol. 27, 1973, p. 27.  
 FAO 1974--FAO Production Yearbook, vol. 28, 1974, p. 27.  
 AID 1976--Food and Total Agricultural Production in the Less Developed Countries 1950-75. Office of Financial Management, Agency for International Development, Washington, D.C., July 1976, Table 7.  
 Barracclough 1973--S. Barracclough and Fernandez, Diagnostica de la Reforma Agraria Chilena, Siglo XXI, Mexico, 1974, p. 125.  
 Valparaiso 1974--Escuela do Negocios de Valparaiso--La Economia de Chile Durante el Periodo de Gobierno de la Unidad Popular, Valparaiso, Chile, 1974, p. 62.

**CHART 2**  
**GROSS DOMESTIC AND AGRICULTURAL PROJECT**  
**MEXICO 1920-1970**



Source: Eckstein, Shlomo, "Lessons from the Mexican Experience in Land Reform", paper presented at the World Bank Seminar on Land Reform, Washington, D.C. May 10, 1973

CHART 3  
MAIZ, NATIONAL LEVEL, MEXICO



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CHART 4  
LAGUNA REGION – COTTON, 1932 – 1970 MOVING AVERAGE  
A: AREA; Y; YIELD; Q: OUTPUT

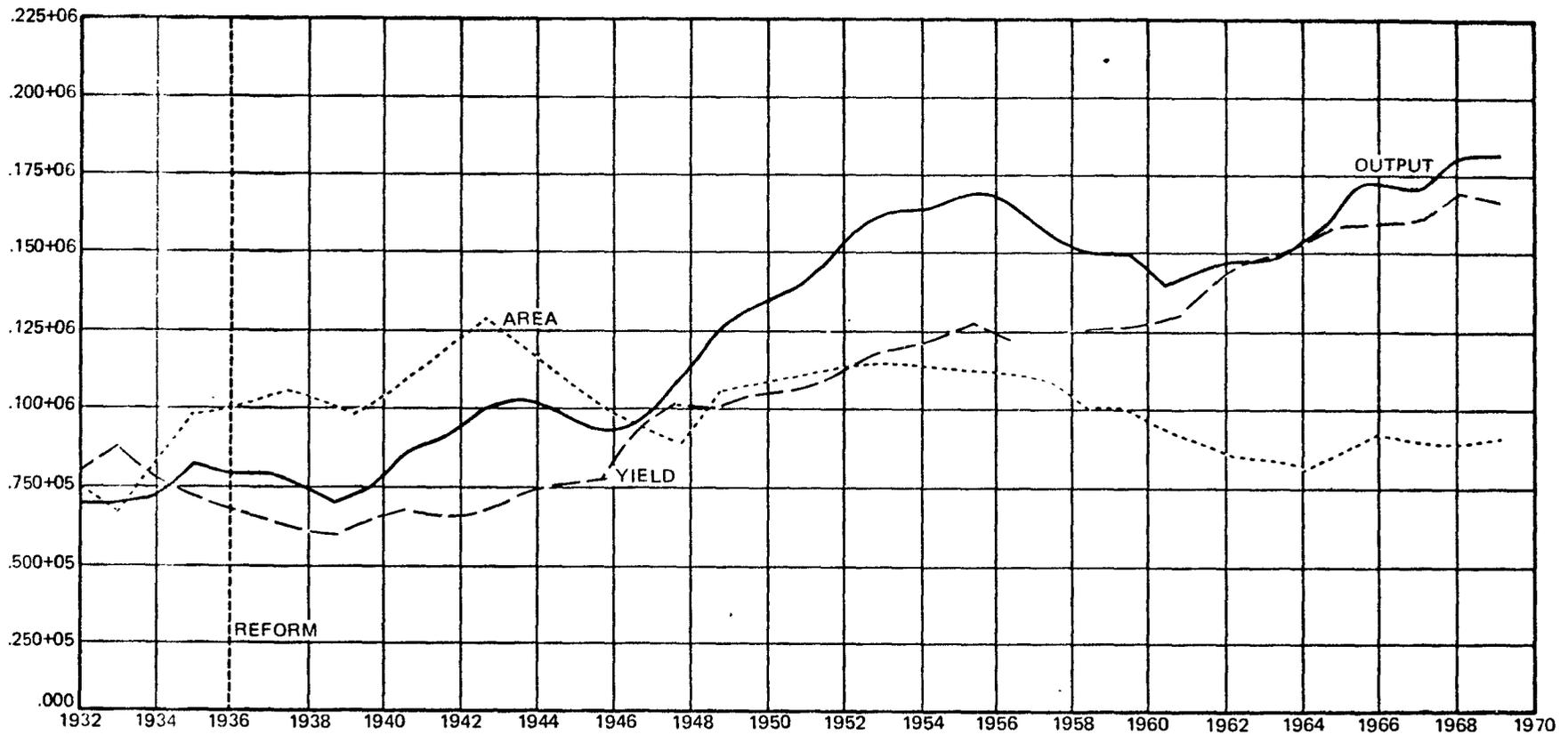


Table B-3: AGRICULTURAL PRODUCTION DATA, BOLIVIA  
(in thousands of metric tons)

| Sources:      | Potatoes |     |     | Wheat |    |    | Barley |    |    | Corn |     |     | Raw Sugar |     |     | Rice |    |    | Yuca |     |     |
|---------------|----------|-----|-----|-------|----|----|--------|----|----|------|-----|-----|-----------|-----|-----|------|----|----|------|-----|-----|
|               | D        | US  | F   | D     | US | F  | D      | US | F  | D    | US  | F   | D         | US  | F   | D    | US | F  | D    | US  | F   |
| 1948/8-1952/3 |          |     | 189 |       |    | 37 |        |    | 40 |      |     | 163 |           |     | 1   |      |    | 20 |      |     | 77  |
| 1952/3-1954/5 |          |     | 273 |       |    | 22 |        |    | 40 |      |     | 157 |           |     | 3   |      |    | 26 |      |     | 20  |
| 1952-1956     |          | 181 |     |       |    |    |        |    | 46 |      |     | 111 |           |     | 4   |      |    |    |      |     | 61  |
| 1957/8        |          | 200 |     | 62    | 16 |    | 57     | 45 |    |      |     | 175 |           |     | 9   | 18   | 27 |    |      |     | 65  |
| 1958/9        | 592      | 230 |     | 62    | 22 |    | 58     | 44 |    |      |     | 200 |           |     | 16  | 22   | 30 |    |      |     | 65  |
| 1959/60       |          | 560 |     |       |    | 19 | 59     | 44 |    |      |     | 254 |           |     | 18  | 23   | 41 |    |      |     | 65  |
| 1960/61       | 528      | 300 |     |       |    | 18 |        |    | 44 |      |     | 254 |           |     | 25  |      | 39 |    |      |     | 65  |
| 1961/62       |          | 350 |     |       |    | 19 |        |    | 46 |      |     | 267 |           |     | 41  |      | 44 |    |      |     | 65  |
| 1961          | 516      | 617 |     | 35    | 67 |    | 60     | 80 |    | 301  |     | 260 | 41        |     |     | 24   | 40 |    | 128  |     | 143 |
| 1962          | 531      | 568 |     | 40    | 61 |    | 61     | 85 |    | 312  |     | 234 | 49        | 53  |     | 27   | 41 |    | 135  |     | 143 |
| 1963          | 546      | 622 | 700 | 55    | 55 | 55 | 56     | 62 | 90 | 323  | 260 | 260 | 68        | 75  | 92  | 30   | 62 | 42 | 138  | 106 | 138 |
| 1964          | 561      | 622 | 720 | 58    | 58 | 80 | 56     | 62 | 95 | 323  | 261 | 265 | 94        | 102 | 82  | 33   | 63 | 42 | 140  | 108 | 150 |
| 1965          | 565      | 650 | 635 | 35    | 42 | 70 | 59     | 65 | 95 | 344  | 239 | 239 | 85        | 91  | 93  | 36   | 62 | 42 | 150  | 112 | 174 |
| 1966          | 549      | 670 | 635 | 41    | 41 | 58 | 56     | 62 | 63 | 352  | 249 | 318 | 81        | 91  | 88  | 35   | 63 | 47 | 160  | 110 | 170 |
| 1967          | 519      | 610 | 635 | 27    | 37 | 60 | 50     | 56 | 56 | 365  | 224 | 371 | 95        | 86  | 104 | 43   | 65 | 66 | 180  | 110 | 149 |
| 1968          | 598      | 598 | 660 | 45    | 45 | 45 | 54     | 54 | 57 | 380  | 288 | 382 | 109       | 113 | 111 | 46   | 66 | 68 | 200  | 110 | 150 |
| 1969          |          | 627 | 642 | 52    | 53 | 47 | 61     | 55 |    | 390  | 286 | 393 |           | 124 | 135 | 58   | 85 | 60 |      | 110 | 160 |
| 1970          |          | 655 | 620 |       | 62 | 62 |        | 62 | 55 |      | 283 | 370 |           | 117 | 123 |      | 64 | 60 |      | 110 |     |
| 1971          |          | 698 |     |       |    | 69 |        | 66 |    |      | 293 |     |           | 80  |     |      | 71 |    |      |     | 110 |
| 1972          |          | 614 |     |       |    | 70 |        | 68 |    |      | 287 |     |           | 123 |     |      | 76 |    |      |     |     |

Sources: D - Carmen F. Deere, Estimates of Agricultural Production, (1958-70) USAID/Bolivia, 1970.  
 US - United States Department of Agriculture, Economic Research Service, Foreign 44, Indices of Agricultural Production For 20 Latin American Countries  
 F - Food and Agriculture Organization of the United Nations, (FAO), Production Yearbooks.

Table B-4: AVERAGE YIELDS OF CROPS, BOLIVIA  
(in kilograms per hectare)

| Sources:                       | 1950<br>Agr. Census | Average<br>1958-61<br>(footnote) | Average<br>1961-63<br>(footnote) | 1968<br>(footnote)   | FAO average,<br>latest 3 yrs.<br>(usually 1968-70) |
|--------------------------------|---------------------|----------------------------------|----------------------------------|----------------------|--|
| <u>Valley Crops-Vegetables</u> |                     |                                  |                                  |                      |  |
| Dry peas                       | 538                 |                                  | 883 <sup>/FAO</sup>              |                      | 1,000  |
| Beans                          |                     | 363 <sup>/a</sup>                |                                  | 385 <sup>/a</sup>    | 670  |
| Broad beans                    | 639                 | 603 <sup>/a</sup>                |                                  | 700 <sup>/b</sup>    | 717  |
| Garbanzos                      | 597                 |                                  | 500 <sup>/b</sup>                | 480 <sup>/b</sup>    |  |
| Carrots                        | 4,323               |                                  | 8,000 <sup>/b</sup>              | 8,000 <sup>/a</sup>  |  |
| Onions                         | 3,985               |                                  | 4,167 <sup>/b</sup>              | 5,000 <sup>/b</sup>  | 4,200  |
| Tomatoes                       | 4,753               | 12,369 <sup>/a</sup>             | 12,343 <sup>/b</sup>             | 12,700 <sup>/a</sup> |  |
| Corn                           | 1,118               | 1,357 <sup>/b</sup>              | 1,364 <sup>/b</sup>              | 1,392 <sup>/a</sup>  | 1,457  |
| Hot peppers                    | 604                 | 1,800 <sup>/a</sup>              |                                  | 1,587 <sup>/a</sup>  |  |
| Peanuts                        | 854                 | 1,402 <sup>/b</sup>              | 1,220 <sup>/b</sup>              | 1,587 <sup>/b</sup>  | 1,220  |
| Cabbage                        | 2,787               | 5,000 <sup>/a</sup>              |                                  | 5,497 <sup>/b</sup>  |  |
| <u>Highland Crops</u>          |                     |                                  |                                  |                      |  |
| Barley                         | 716                 | 700 <sup>/a</sup>                | 721 <sup>/b</sup>                | 666 <sup>/b</sup>    | 587  |
| Oats                           | 1,189               | 607 <sup>/a</sup>                |                                  | 600 <sup>/a</sup>    | 1,100  |
| Wheat                          | 539                 | 674 <sup>/a</sup>                | 1,075 <sup>/b</sup>              | 600 <sup>/a</sup>    | 740  |
| Potatoes                       | 1,674               | 4,933 <sup>/a</sup>              |                                  | 6,809 <sup>/a</sup>  | 5,900  |
| Papaliza                       | 1,379               |                                  |                                  | 1,600                |  |
| Oca                            | 1,509               |                                  |                                  | 2,231 <sup>/a</sup>  |  |
| Quinoa                         | 406                 | 500 <sup>/a</sup>                | 501 <sup>/b</sup>                | 680 <sup>/a</sup>    |  |
| Alfalfa                        | 5,027               | 6,000 <sup>/a</sup>              |                                  | 18,000 <sup>/a</sup> |  |
| <u>Tropical Lowland Crops</u>  |                     |                                  |                                  |                      |  |
| Yuca                           |                     | 17,817 <sup>/b</sup>             | 10,500 <sup>/a</sup>             | 12,000 <sup>/a</sup> | 15,300   |
| Sugar cane                     | 34,248              | 40,110 <sup>/a</sup>             |                                  | 38,000 <sup>/a</sup> |  |
| Rice                           | 1,655               | 968 <sup>/a</sup>                | 1,471 <sup>/b</sup>              | 1,355 <sup>/a</sup>  | 1,820  |
| Tobacco                        | 663                 | 600 <sup>/a</sup>                |                                  | 820 <sup>/a</sup>    | 1,240  |
| Sweet Potato                   | 3,604               |                                  | 9,033 <sup>/a</sup>              | 9,900 <sup>/a</sup>  | 5,500  |
| Cotton                         | 830                 | 483 <sup>/a</sup>                | 377 <sup>/b</sup>                | 593 <sup>/a</sup>    |  |
| Coffee                         |                     | 500 <sup>/a</sup>                |                                  | 791 <sup>/a</sup>    | 767  |

Sources: a. Carmen Deere, Estimates of Agricultural Production, 1958-70, USAID/Bolivia, 1970.  
 b. G. Barja and A. Cardozo, Geografia Agricola do Bolivia, Amigos del Libro, La Paz, 1971.  
 1950, Agricultural Census, Bolivia.  
 FAO - Production Yearbooks of the Food and Agricultural Organization of the United Nations.

APPENDIX

Part C

Productivity Comparisons Among Three Tenure  
Groups in Mexico, 1940 and 1960



Part C

Productivity Comparisons Among Three Tenure Groups  
in Mexico, 1940 and 1960

by Shlomo Eckstein

The purpose of this Appendix is to compare the productivity of the three major tenure groups in Mexico over the period 1940-1960. It will be shown that the frequently used measure of "physical yields per hectare" gives a very distorted picture of reality; a number of alternative methods for comparing productivity will be elaborated and applied to the Mexican data.

When physical yields are compared, ejidos appear as the least productive of the three tenure groups; large farms have higher yields for some crops, small farms for others. When the values of total crop output per hectare <sup>1/</sup> are compared, large farms show the highest values in 1960 followed by ejidos, and finally the small farms. However, when productivity measures account for the scarcity of agricultural resources, the ranking is inverted: small private farms prove to have made the most efficient use of their scarce resources, followed by ejidos, with large farms at the bottom of the scale.

The above statements are based on analyses using 1940 and 1960 census data <sup>2/</sup> in accordance with the following outline:

I. - Yields per Hectare .

1. Comparing physical yields
2. Comparing real value returns per hectare

II. - Average Value Product per Unit of Inputs

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1/ Harvested cropland.

2/ Data is based on the 1940 and 1960 Agricultural and Ejido Censuses of Mexico, and is taken from "El Marco Macroeconomico del Problema Agrario Mexicano," (CIDA: Washington 1969) reproduced in Estructura Agraria y Desarrollo Agricola in Mexico, (Fondo de Cultura Economica: Mexico 1974).

III. - Value of Total Product per Unit of Total Inputs

IV. - Residual Value Product per Unit of Input

V. - Major Changes over the period 1940-1960

I. Yields per Hectare

1. Physical yields per hectare

Table 1 indicates the relative yields of six major crops <sup>1/</sup> for the three tenure groups in 1940 and 1960:

Table 1 - Physical Yields per Hectare\* in Relative Terms

|        | <u>1940</u>               |                |               | <u>1960</u>               |                |               |
|--------|---------------------------|----------------|---------------|---------------------------|----------------|---------------|
|        | <u>Private</u><br>Large** | <u>Small**</u> | <u>Ejidos</u> | <u>Private</u><br>Large** | <u>Small**</u> | <u>Ejidos</u> |
| Maize  | 1                         | 1.18           | 1.17          | 1.01                      | 1.01           | 1             |
| Beans  | 1.11                      | 1              | 1.19          | 1.01                      | 1.50           | 1             |
| Wheat  | 1.39                      | 1              | 1.25          | 1.42                      | 1.05           | 1             |
| Cotton | 1.31                      | 1.18           | 1             | 1                         | 1.21           | 1             |
| Coffee | 1.27                      | 1              | 1.79          | 1                         | 1.11           | 1             |
| Sugar  | 1.50                      | 1.27           | 1             | 1.18                      | 1              | 1.02          |

\* Harvested land

\*\* "Large": 5 hectares and above, total land area.

"Small": Less than 5 hectares, total land area.

In 1940 small farms occupied the bottom of the scale in three crops, ejidos in two and large private farms in one crop only. By 1960 the picture had changed considerably; ejidos were lowest in practically all six crops, private large farms were highest in two, and private small farms were highest

<sup>1/</sup> These crops account for 84% of the harvested area and 70% of the value of crops in 1960.

in three crops. By how much would the gross value of output per hectare increase on ejidos if they would reach the same physical yields as the private sector? As the following calculations<sup>1/</sup> show, with the same crop pattern and prices, it would rise by 5% as compared with private large farms, and by 4% as compared with the private small farms.

$$\frac{\sum H_E Y_L P_E / \sum H_E}{\sum H_E Y_E P_E / \sum H_E} = \frac{915}{870} = 1.05$$

$$\frac{\sum H_E Y_S P_E / \sum H_E}{\sum H_E Y_E P_E / \sum H_E} = \frac{908}{870} = 1.04$$

It is therefore evident that the often-voiced claim that ejidatarios in Mexico produce so little from the land at their disposal because their physical yields are low is a gross overstatement. They could improve their position by reaching the mean level of physical yields in the private sector by only 4 to 5%.

Over the period 1940 - 1960 the rise in physical yields produced an increase of some 50% in the average real value of output per hectare in the entire agricultural sector. From the following calculations it becomes evident that the three sectors did not participate equally in this increase: large farms registered an increase of 60%, small farms of 48%, and ejidos of only 38%. These differences are due not only to the fact that physical yields, crop by crop, increased more on the large private farming sector but

<sup>1/</sup> H = Hectars  
Y = Yields in Kgs per hectare  
P = Prices in Mexican 1960 pesos per crop  
L = Large private farms  
S = Small private farms  
Data refer to the six major crops.

Table 2. Effect of Yield Increases in 1940-60 onAverage Value of Crops per Hectare

|   | Total | Large<br>Private | Small<br>Private | Ejidos |
|---|-------|------------------|------------------|--------|
| (1) $\frac{\sum H_{60} Y_{60} P_{60}}{\sum H_{60}}$ | 965   | 1,080            | 740              | 870    |
| (2) $\frac{\sum H_{60} Y_{40} P_{60}}{\sum H_{60}}$ | 638   | 675              | 500              | 630    |
| (3) = (1)/(2)                                       | 1.51  | 1.60             | 1.48             | 1.38   |

(1)  
also to the fact that/the crop pattern was such that the major yield increases occurred in crops which private farms cultivated more heavily, (2) private farms owned better quality land, and (3) had better access to credit, market outlets, technical assistance, etc. This is elaborated in the following sections.

## 2. Comparing real value returns per hectare.

In 1940 the average value of crop production per hectare on ejidos was 636 pesos (in 1960 values) as compared with 550 to 580 pesos in the private farming sector. But over the next two decades ejidos improved by only 65% as compared with 73% in private small farms and 128% in private large farms. As a result the contribution of the large farming sector to total agricultural output increased manifold, as can be seen from table 3. In 1960 the average value produced per hectare was 25 and 40% higher on large private farms than on ejidos and small private farms, respectively. Ejidos, in turn, produced 12% more per hectare than small private farms.

We shall now try to isolate the different factors contributing to these observed differences.

(a) Quality of land: the best estimate of quality of land we have is the percentage of irrigated land out of the total cultivated land in each

Table 3. Number of Farms, Area and Productivity (in Mexican 1960 Pesos)

|   | Large Private |        | Small Private |       | Ejidotarios |       |
|---|---------------|--------|---------------|-------|-------------|-------|
|   | 1940          | 1960   | 1940          | 1960  | 1940        | 1960  |
| Number of Farming Units **                | 195           | 292    | 800           | 721   | 1,176       | 1,435 |
| Index                                     | 100           | 150    | 100           | 90    | 100         | 122   |
| Relative Share %                          | 9             | 10     | 37            | 29    | 54          | 59    |
| Harvested Area per Farming Unit           | 15.6          | 19.8   | 0.94          | 1.19  |             | 3.00  |
| Index                                     | 100           | 127    | 100           | 126   | 100         | 128   |
| Value of Crop Production per Hectare      | 584           | 1,335  | 550           | 953   | 636         | 1,070 |
| Index                                     | 100           | 228    | 100           | 173   | 100         | 165   |
| Value of Crop Production per Farming Unit | 9,100         | 26,400 | 516           | 1,135 | 1,908       | 4,100 |
| Index                                     | 100           | 290    | 100           | 220   | 100         | 215   |
| Total Value of Output*                    | 1,790         | 7,703  | 431           | 823   | 2,240       | 5,870 |
| Index                                     | 100           | 430    | 100           | 200   | 100         | 262   |

\* Millions of 1960 pesos

\*\* Farming units producing crops

sector. 25% of the area cultivated in large private farms was irrigated in 1960 as compared with 14% in the ejido sector (and an unknown percentage in the small private farms). If we consider that the average value product per hectare of irrigated land is four times that on rainfed land, <sup>1/</sup> private large farms would be expected on that account alone to produce 25% more on each hectare under cultivation than the ejidos, as shown in the following calculation:

$$\frac{\frac{4}{4} (0.25) + 1 (0.75)}{\frac{4}{4} (0.14) + 1 (0.86)} = \frac{1.75}{1.42} = 1.23$$

<sup>1/</sup> The ratio usually assumed in Mexico. The average value of maize and beans per hectare was \$600; of cotton, sugar and coffee \$3,000, in 1960.

For some crops the ratio seems to be as large as 1 to 6 as for instance between maize and beans grown on the poor rainfed areas characteristic of the central part of Mexico and cotton or coffee grown on irrigated lands elsewhere. In that case the relative advantage for private farms would be as high as 34% as shown in the following calculations:

$$\frac{6 (0.25) + 1 (0.75)}{6 (0.14) + 1 (0.84)} = \frac{2.25}{1.68} = 1.34$$

(b) Crop mix. In 1960 ejidos had some 66% of their land under maize and beans; private small farms about 80%; large farms only 57%. Large farms had a much higher proportion of their land under cotton, sugar, coffee, wheat and more intensive crops requiring irrigation. If the small private farms produced the same crop mix as the large private farms, given their own yields and prices in 1960, they would produce 48% more on each hectare than they actually did. Similarly, ejidos would show a value product per hectare 8% larger than the one actually produced. This is shown in the following calculations using the same symbols as used earlier:

$$\frac{\sum H_L Y_S^P / \sum H_L}{\sum H_S Y_S^P / \sum H_S} = \frac{1,410}{953} = 1.48$$

$$\frac{\sum H_L Y_E^P / \sum H_L}{\sum H_E Y_E^P / \sum H_E} = \frac{1,150}{1,070} = 1.08$$

c. Price effects. The census gives very incomplete information on prices received by producers in different tenure categories. Field observations indicate that the price differential is often great, but this is not borne out by census data as published. Using census data, the estimated net price effect amounted to about 1% in 1960 comparing large private farms with ejidos

and to 4% comparing large with small private farms, as set out in the following formulae:

$$\frac{\sum H_E Y_{E L} P / \sum H_E}{\sum H_E Y_{E E} P / \sum H_E} = \frac{880}{870} = 1.01$$

$$\frac{\sum H_S Y_{S L} P / \sum H_S}{\sum H_S Y_{S S} P / \sum H_S} = \frac{770}{740} = 1.04$$

d. Physical yields. As pointed out above, differences in physical yields can account for a difference of only about 5% between the value of crop production per hectare on private farms and ejidos.

e. Summing up. In short, it seems that in Mexico the total value of crop production per hectare of harvested land was significantly higher on large private farms than on either small private farms or on ejidos, contrary to observations made in other countries. <sup>1/</sup> However, it was shown that the difference was due in a very minor way to differences in physical yields whereas the major part was accountable to differences in the crop mix, and indirectly to differential access to irrigated land.

## II. Average Value Product per Unit of Inputs

In the following sections we shall compute and compare the average value of total farm output obtained per unit of each of the three major input categories: land, capital and operator. "Land" is measured in value units as registered by the Census, and includes all the land in possession of the farmholding (not just cropland as above). "Capital" includes the value of

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<sup>1/</sup> Where the total value of crop production per hectare of total arable land is calculated, small private farms rank highest and ejidos lowest, with large private farms in between.

on-farm capital, equipment and livestock, but does not include the value of the land. Labor in this context is limited to that of the operator, and thus is equal to the number of farming units in each category. Output includes the total value of crops, livestock products, and all other farm products produced on the farm unit. In that respect these average products will be different from the measures used in the preceding chapter because there we were concerned only with crop production per unit of harvested area (excluding pastures, fallow and other land). The present measure is hence more general and more inclusive. We shall use the following notations:

$$AP_T = \frac{TP}{T}$$

$$AP_C = \frac{TP}{C}$$

$$AP_L = \frac{TP}{L}$$

where:

T = Total value of farmland

C = Value of on-farm capital excluding land itself

L = Farmholder or Operator, equal to the number of farm units

TP = Value of total farm output including crops, livestock, forestry, etc.

$AP_T$  = Average product per value unit of T (in 1960 pesos)

$AP_C$  = Average product per value unit of C (in 1960 pesos)

$AP_L$  = Average product per unit of L (in 1960 pesos)

In 1960 small private farms obtained an average product per unit of land ( $AP_T$ ) of about 1.20 pesos for each peso value of land at their disposal, as compared with only .35 for both ejidos and large private farms. This is in accordance with observations made in other countries as well. However, it must be observed that over the period 1940-1960 only large private farms show

Table 4. Average Product per Unit of Major Input Category, 1940, 1960

|                 | 1940    |       |        | 1960    |       |        |
|-----------------|---------|-------|--------|---------|-------|--------|
|                 | Private |       | Ejidos | Private |       | Ejidos |
|                 | Large   | Small |        | Large   | Small |        |
| AP <sub>T</sub> | 0.22    | 1.55  | 0.45   | 0.33    | 1.17  | .36    |
| AP <sub>C</sub> | 0.73    | 0.36  | 0.89   | 0.86    | .46   | .83    |
| AP <sub>L</sub> | 8,700   | 1,500 | 2,040  | 35,600  | 2,900 | 5,150  |

an improvement in this respect (from 0.22 to 0.33) whereas both small farms and ejidos register a decline in their AP<sub>T</sub>.\*

The average product per unit of capital is much lower in the small private farms than in both ejidos and large farms (which are roughly the same). But this is primarily due to the great amount of livestock in small private farms which register relatively small output-capital ratios. This can be seen from the following figures where capital is decomposed into these two components:

Table 5. Relative Weight of Livestock and Livestock Products, 1960

|                                    | Large | Small | Ejidos |
|------------------------------------|-------|-------|--------|
| <u>Livestock products</u>          | .29   | .62   | .21    |
| <u>Total products</u>              |       |       |        |
| <u>Agricultural production</u>     | 1.39  | 1.48  | 2.56   |
| <u>Capital excluding livestock</u> |       |       |        |
| <u>Livestock production</u>        | .35   | .39   | .28    |
| <u>Value of livestock</u>          |       |       |        |

Over time, AP<sub>C</sub> has risen in large private farms and in small private farms and has declined slightly on ejidos.

The greatest differences are observed in the average product per operator, which reflects to a large extent the different sizes of their farming units (compare table 3). AP<sub>L</sub> indicates that the operator on a large

\* Since land is here measured in monetary values, the implication of a decline in AP<sub>T</sub> over time must be viewed with caution; it could indicate that land values rose more rapidly than output prices, especially since AP<sub>T</sub> in terms of physical hectares rose substantially (see p. 5 above).

farm produced in 1960 an average output of 35,000 pesos as versus only 5,000 in ejidos and close to 3,000 in small private farms. But more significantly, large private farms registered the greatest increase over the 1940-1960 period: 300% as compared with only 150% for ejidos and close to 100% for small private farms.

The differences observed over time can best be appreciated in table 6, where we calculate "marginal" or incremental products, defined as follows:

$$\Delta AP_x = \frac{\Delta TP}{\Delta x} = \frac{TP_{60} - TP_{40}}{x_{60} - x_{40}}$$

where x stands for either of the three major input categories T, C or L.

The low percentage of livestock products in the ejido sector is also partly due to the fact that part of ejido livestock products are registered together with the small private farm sector due to some census deficiencies which did not adequately separate these two groups concerning livestock products (cf. El Marco Macro, A p. I).

Table 6. Incremental Average Products, 1940-1960

| <u>Increments</u><br><u>1940 - 1960</u> | <u>Total</u> | <u>Large</u> | <u>Private</u><br><u>Small</u> | <u>Ejidos</u> |
|---|--------------|--------------|--------------------------------|---------------|
| $\Delta AP_T$                           | .36          | .36          | .91                            | .33           |
| $\Delta AP_C$                           | .85          | .89          | .68                            | .81           |
| $\Delta AP_L$                           | 45,000       | 800,000      | -23,000                        | 18,000        |

According to the well known principle, the average product increases when the marginal product is above it and vice versa. This can be observed here too: small private farms register a much higher marginal product per unit of land than the other two groups; but since this marginal is still below

its average in 1940 the average falls over these two decades. Private large farms and ejidos show a similar  $\Delta AP_T$ , but whereas for large private farms this is above the 1940 average, for the ejido sector it is below it (as can be seen by returning to table 4). Concerning capital, large private farms show the highest marginal ratio followed rather closely by ejidos, and finally by small farms. The marginal product per operator reflects the relative changes in the number of landholders and the increment in output. The number of large farms increased by about 50% (compare table 3) but the total value of output produced on these private farms increased manyfold hence producing a "marginal product" per operator of 800,000 pesos. In contrast, the number of farms smaller than 5 hectares declined over the same period. At the same time their output increased, hence the negative marginal product registered in Table 6, which reflects the fact that they produced more in spite of their being less in 1960. Ejidos' marginal increase per additional ejidatario is small relatively to large private farms. Still it is about six times the size of their average product in 1940, hence it produced a 250% increase in their  $AP_L$  by 1960.

### III. Value of Total Product per Unit of Total Inputs.

The measure of  $AP_x$  has the disadvantage of attributing the entire output to any one of the major inputs. As has been shown this can lead to rather absurd conclusions. <sup>1/</sup> One way of overcoming this difficulty is to compute what has been called an aggregate productivity index, which is the value of the total product divided by the value of all inputs used to obtain this product. The total inputs are divided into two main categories: (1) actual expenditures; (2) imputed value of factors of production which are fixed for the farming unit: land, its capital and its own labor and managerial

<sup>1/</sup> Salomon Eckstein, "Aspectos Teoricos de un Analisis Comparativo de Productividad Economica," El Trimestre Economico, No. 141, enero-marzo 1969, Mexico.

efforts. It is customary to impute market priced or shadow-price values to these self-owned inputs. We have used 5% rent value for land and a 10% imputed interest on capital; in view of the general condition of rural unemployment we have opted for using a zero shadow-price for the operator's own labor which is especially justified regarding the small private farms and the ejido farms. The extent to which these ratios are affected by the procedure can be appreciated in Table 7.

The difference between the two approaches is especially manifest in the small private and ejido farming units where the own labor constitutes between 25 and 35% of total inputs. When cost is imputed to the operator's own labor, private large farms turn out to show the highest aggregate productivity, of 1.70 as compared with 1.59 on ejidos and 2.15 on smaller farms. However, when we deduct the imputed value of own labor in all the categories, the coefficient for large farms increases only slightly to 1.96 whereas private small farms now show a coefficient of 2.76 (which is 40% greater than that of large farms) and ejidos register a coefficient of 2.45 (25% greater). In a similar way value added (VA) per unit of inputs has been calculated; the corresponding values for the three groups are: 1.62, 2.53, and 2.14 reconfirming the same relative position observed with respect to the value of total output.

Table 7: TOTAL OUTPUT PER UNIT OF TOTAL INPUTS, 1960

|   | Imputing cost to the operators' own labor * |       |        | Without imputing cost to the operators' own labor |       |        |
|---|---|-------|--------|---|-------|--------|
|   | Private Farms                               |       | Ejidos | Private Farms                                     |       | Ejidos |
|   | Large                                       | Small |        | Large   | Small |        |
| Total inputs per operator<br>(TIMP, in pesos) | 21,771                                      | 1,107 | 3,515  | 18,890  | 860   | 2,280  |
| <u>Percentages</u>                            |   |       |        |   |       |        |
| Imputed costs to:                             |   |       |        |   |       |        |
| Land <sup>/1</sup>                            | 24.8  | 9.2   | 21.3   | 28.6  | 11.9  | 32.9   |
| Own labor <sup>/2</sup>                       | 13.2  | 22.3  | 35.1   | -   | -     | -      |
| Capital <sup>/3</sup>                         | 19.0  | 46.8  | 18.3   | 21.9  | 60.3  | 28.3   |
| Total expenditures                            | 43.0  | 21.6  | 25.2   | 49.5  | 27.8  | 38.8   |
| Total inputs                                  | 100   | 100   | 100    | 100   | 100   | 100    |
| Total products per operator<br>(TP, in pesos) | 37,090                                      | 2,380 | 5,580  | 37,090  | 2,380 | 5,580  |
| TP/TINP                                       | 1.70  | 2.15  | 1.59   | 1.96  | 2.75  | 2.45   |
| Value added/TINP                              | 1.40  | 2.00  | 1.39   | 1.62  | 2.53  | 2.14   |

<sup>/1</sup> 5% of value of land.

<sup>/2</sup> Minimum rural wage rate multiplied by number of workdays on farm reported by operator for himself and for non-remunerated family members.

<sup>/3</sup> 10% of value of own capital (excluding land).

IV. Residual Value Product per Unit of Input

We shall now attempt to estimate the "residual" average productivity of the three major input categories by deducting from the value of total output all input costs (both outlays and imputed) except those attributed to a specific input category and dividing by the value of this input held by the farm unit. The concept used for this purpose is the residual product (RP).  $RP_T$  can be calculated as follows:

$$RP_T = \frac{TP - (\text{Total inputs} - \text{Cost imputed to T})}{T}$$

In other words,  $RP_T$  is the net value of production per unit of land<sup>1/</sup> the value

of output which "remains" as a residual for each unit of land. Similarly, we define  $RP_C$  as the residual product per unit of capital as follows:

$$RP_C = \frac{TP - (\text{Total inputs} - \text{Cost imputed to C})}{C}$$

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<sup>1/</sup> Arrived at by deducting from the value of output the value of all inputs except those directly connected with the use of the land itself and dividing this residual by the value of land.

Finally, the residual product per operators,  $RP_L$ , will be equal simply to

$$RP_L = TP - \text{Total inputs}$$

which is the net value of output per operator after the value of all inputs has been deducted except, to repeat once more, the value of the operator's own labor.<sup>1/</sup> The values obtained for 1940 and 1960 census data are reproduced in Table #8.

Table 8 - Residual Product per Unit of Major Input Category,  
1940, 1960

|        | 1940                           |              |               | 1960                           |              |               |
|--------|--------------------------------|--------------|---------------|--------------------------------|--------------|---------------|
|        | <u>Private</u><br><u>Large</u> | <u>Small</u> | <u>Ejidos</u> | <u>Private</u><br><u>Large</u> | <u>Small</u> | <u>Ejidos</u> |
| $RP_T$ | 0.10                           | 1.10         | 0.34          | 0.20                           | 0.80         | 0.25          |
| $RP_C$ | 0.27                           | 0.35         | 0.67          | 0.50                           | 0.39         | 0.58          |
| $RP_L$ | 2,060                          | 1,030        | 1,320         | 16,700                         | 1,850        | 2,950         |

The values of  $RP_T$  and  $RP_C$  show the same trend we have observed with respect to the average products,  $AP_T$  and  $AP_C$ , although at lower levels.<sup>2/</sup>  $RP_L$  which

<sup>1/</sup> Incidentally it will be observed that the shadow price adopted for L will not affect  $RP_L$  at all, because it would have been included as part of total inputs and deducted again as the cost imputed to L.

<sup>2/</sup> For example, each peso worth of land generated an average product of \$0.36 on ejidos in 1960, but a net worth of only \$0.25.

measures the net value of output per operator is evidently lower than  $AP_L$ , especially for the large farms which use a greater proportion of purchased inputs. In 1960 large private farms have a net return per farm that was 11 times larger than on small farms, and 6 times larger than on ejidos.<sup>1/</sup> Whereas  $RP_T$  of large private farms had increased to double its level of 1940, both small farms and ejidos see their net value per unit of land declining by about 25%. The same is true also with respect to  $RP_C$ : it shows a significant increase in large farms, almost no change on small farms and a 10% decline in ejidos.  $RP_L$  increases 700% on private large farms, as compared with 80% on small farms and 120% on ejidos.

These differences in  $RP$  between tenure groups, both for 1960 and for the years between 1940 and 1960, are attributable to the differences in access to incooperating inputs which each of the three tenure groups had at their disposal, as measured by the following index:

$$AP_T - RP_T = \frac{\text{Total inputs} - \text{Cost imputed to T}}{T}$$

for the case of land, and similarly for capital and labor. The expression  $(AP_T - PR_T)$  measures the amount of complementary or cooperative inputs on top of the land which were available for each value unit of the land.

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<sup>1/</sup> The gap among tenure groups has been widening over the 1940-1960 period.

The corresponding values are reproduced in Table #9. In 1960, for example, large private farms had \$0.13 worth of inputs not counting the value of the land itself, for each peso value of land at their disposal; as compared with \$0.37 in small farms and \$0.11 in ejidos. These values are computed per unit value of land, and reflect on the one hand the differences in access to these cooperative inputs, and on the other hand the differences in the amount of land over which these additional inputs are being spread.<sup>1/</sup>

Table 9 - Cooperating Inputs per Unit of Major Input Category,  
1940, 1960

|                | 1940           |              |               | 1960           |              |               |
|----------------|----------------|--------------|---------------|----------------|--------------|---------------|
|                | <u>Private</u> |              | <u>Ejidos</u> | <u>Private</u> |              | <u>Ejidos</u> |
|                | <u>Large</u>   | <u>Small</u> |               | <u>Large</u>   | <u>Small</u> |               |
| AP - RP<br>T T | .12            | .45          | .11           | .13            | .37          | .11           |
| AP - RP<br>C C | .46            | .01          | .22           | .36            | .07          | .25           |
| AP - RP<br>L L | 6,640          | 470          | 720           | 18,900         | 1,050        | 2,200         |

The high value of AP on the small private farms is now clearly  
T  
explained by the very high value of AP - RP. Given their small amount of land,  
T T

<sup>1/</sup> It should be recalled that the denominator of this index measures the value of land at the disposal of each operator, and not only that part of the land which had actually been cultivated or pastured.

it is being utilized very intensively, putting in \$0.37 of inputs on each peso worth of land and deriving an  $AP_T$  of \$1.17 per unit of land. Turning

the argument around, small private farms produced \$1.17 pesos on each peso worth of land, of which \$0.37 constituted all other inputs beside the land and the difference of \$0.80 is the residual product with which the small farmers are left.

We can now compare the large private farms with the ejido sector. In spite of the fact that large private farms used more non-land inputs per unit of land than the ejidos (0.13 versus 0.11), they derived from each unit of land a smaller residual product (.20 versus .25) which indicates that ejidos used the scarce resources at their disposal more intensively and more efficiently. Similarly we can now compare or rather explain the differences in the residual product per unit of capital in terms of the value of additional resources available with each unit of capital. Small farms in 1960 had only 1/5 of the value of cooperative inputs per unit of capital than had large farms and only 1/3 that of ejidos. Hence their lower average and residual product per unit of capital observed in the preceding sections. Again ejidos come out ahead of large private farms with  $RP_C = .58$  versus .50, in spite of the fact that ejidos'

$AP_C - RP_C$  equals only .25 as compared with .36 on the larger private farms.

When the same concept is used for the unit of labor it becomes especially meaningful and easy to interpret -- the total amount of inputs (rent on land, interest on farm capital, all cash expenditures including the cost of salaried wage earners but without including the imputed value of the operators' own labor) for each farming unit or operator.

$$\frac{AP_L - PR_L}{L} = \frac{\text{Total inputs}}{L}$$

We can now see that the great disparities in value of output per operator, both gross and net, are due in great part to the fact that the larger units had access to much greater amounts of inputs to work with (18,900 on the large private farms as compared with only 2,200 on ejidos and 1,050 pesos in small private farms). When evaluating the relative efficiency of farming the relevant question will therefore be: what is the value of net output derived in each farming unit per unit of these additional inputs to which these same farming units had access. This will be given by the following expression:

$$\frac{\text{RP}}{\text{L}} \div \frac{\text{AP} - \text{RP}}{\text{L}}$$

which measures the value of the residual product generated by each value unit of total inputs at the disposal of the farming operator or holder. The relevant figures are summed up in Table 10.

Table 10 - Residual Product, Resources and Productivity Per Operator

|                         | <u>Private</u> |              | <u>Ejidos</u> | <u>Private</u> |              | <u>Ejidos</u> |
|-------------------------|----------------|--------------|---------------|----------------|--------------|---------------|
|                         | <u>Large</u>   | <u>Small</u> |               | <u>Large</u>   | <u>Small</u> |               |
| RP<br>L                 | 2,060          | 1,030        | 1,320         | 16,700         | 1,850        | 2,950         |
| AP - RP<br>L L          | 6,640          | 470          | 720           | 18,900         | 1,050        | 2,200         |
| RP / (AP - PR)<br>L L L | .31            | 2.19         | 1.83          | .88            | 1.70         | 1.34          |

Each peso of inputs (rent on land, interest on capital, wage-labor and cash expenditures) generated 1.76 pesos on small farms, 1.34 pesos on ejidos and only .88 pesos in larger farms. It is in this respect that we concluded above that small private farms seem to be the most efficient followed by ejidos, whereas the large private farms seem to be those that put the scarce resources at their disposal to the least intensive and efficient use.

V. Major Changes Between 1940 - 1960

In order to evaluate the major changes which occurred over the period 1940-1960, we shall use a concept similar to  $\Delta AP$  which we shall call "marginal" residual product, defined as follows:

$$\Delta RP_T = \frac{\Delta \overline{TP} - (\text{Total inputs} - \text{Cost imputed to T})}{\Delta T}$$

$\Delta RP_T$  measures the increase in the residual product of land divided by the

increment in the value of land made available to each tenure group. In other words, it is the contribution to the net product of the marginal input of land, after deducting from the value of output the possible contribution of all other inputs that have increased over the same period.

For the case of labor it will not be meaningful to compute (in the denominator) the change in the number of operators since this number does not reflect so much an additional input as an additional charge for the small and ejido units. We shall therefore compute the marginal residual product of

labor  $\Delta RP_L$  in terms of the average number of holdings during the period

1940-1960 which we shall denote by  $\bar{L}$

$$\Delta RP_L = \frac{\Delta(TP - \text{Total inputs})}{\bar{L}}$$

Similarly we shall also denote the additional amount of complementary inputs available for each additional unit of land by the following expression

$$\Delta AP_T - \Delta PR_T = \frac{\Delta(\text{Total inputs} - \text{Cost imputed to T})}{\Delta T}$$

which measures the value of all additional inputs per unit of land, except the value imputable to this additional land itself. In a similar way we shall also be able to define the marginal residual product of capital and the marginal availability of complementary inputs per unit of capital. For labor, once more, we shall use the average amount of labor and not the increment in labor, as follows:

$$\Delta AP_L - \Delta RP_L = \frac{\Delta \text{Total inputs}}{\bar{L}}$$

The results obtained for the three tenure groups are registered in table 11, summing up the results by major input categories.

Table 11 - Marginal Residual Product for Tenure Groups  
by Major Input Categories

| <u>Increment 1940-1960</u>  | <u>Private</u> |              | <u>Ejidos</u> |
|-----------------------------|----------------|--------------|---------------|
|                             | <u>Large</u>   | <u>Small</u> |               |
| $\Delta RP_T$               | .21            | .63          | .27           |
| $\Delta AP_T - \Delta RP_T$ | .13            | .33          | .10           |
| $\Delta RP_C$               | .56            | .49          | .54           |
| $\Delta AP_C - \Delta RP_C$ | .33            | .19          | .27           |
| $\Delta RP_L$               | 19,000         | 740          | 1,200         |
| $\Delta AP_L - \Delta RP_L$ | 18,000         | 540          | 1,020         |

1. Land.  $\Delta RP_T$  is highest in small private farms, indicating that also the additional land put at their disposal in the 1940-1960 period was put to a more intensive use there than in the other two groups. However, their marginal  $RP_T$  is lower than their average  $RP_T$  in 1940, which in turn reflects the fact that their marginal additional inputs (.33) are also lower than those they had registered in 1940 (.45). This could be due either to a stronger input that the additional land

accounted for in the census data. The marginal residual product of ejidos is slightly higher than that of private farms in spite of the fact that their additional inputs were lower. This once more corroborates the fact mentioned above about the higher productivity of the ejido sector, not only in terms of the average levels in 1940 and in 1960 but also with respect to the additional resources, scant as they were, put at their disposal over the period in question.

2. Capital. Small farms show the lowest marginal productivity of capital, due as we saw before to a much lower marginal increase in complementary inputs.  $\Delta RP$  is almost identical in large private farms and in ejidos, but <sub>C</sub> whereas in the large farms this reflects an improvement over their situation in 1940, for ejidos it reflects a deterioration. This again is attributable to the higher level of complementary inputs per unit of capital observed in large private farms as compared with that observed in ejidos (\$0.27 for each additional peso of capital in the ejidos as compared with \$0.33 in the larger farms). In addition, ejidos started out in 1940 with much lower initial doses of capital (2,300 pesos per ejidatario as compared to 12,000 pesos per large private farm in 1960 prices).

3. Operators. The most significant changes have occurred with respect to RP . It was already mentioned above that it is here where the <sub>L</sub> income gap has opened most radically over the 1940-1960 period. Let us therefore analyze these changes, with respect to the operator's efficiency, in four stages: (a) Comparing RP in 1940 and 1960 in relative terms to the small private farms, <sub>L</sub> which have always shown the lowest RP levels:

L

|             |         | <u>Large</u> | <u>Private</u><br><u>Small</u> | <u>Ejidos</u> |
|-------------|---------|--------------|--------------------------------|---------------|
| RP          | in 1940 | 2            | 1                              | 1.3           |
| L           |         |              |                                |               |
| RP          | in 1960 | 9            | 1                              | 1.6           |
| L           |         |              |                                |               |
| $\Delta$ RP |         | 26           | 1                              | 1.6           |
| L           |         |              |                                |               |

In 1940 large private farms had an RP twice as high as that of small farms.

But over the two decades their increment in RP was twenty-six times bigger

than that of the small farms and sixteen times that of the ejidos. Hence the gap between the sectors widened considerably, reaching 9 to 1 in 1960 with respect to the small farmers and 6 to 1 with respect to ejidos.

(b) Comparing additional resources per farming unit:

|                           |         | <u>Large</u> | <u>Private</u><br><u>Small</u> | <u>Ejidos</u> |
|---------------------------|---------|--------------|--------------------------------|---------------|
| AP - RP                   | in 1940 | 14           | 1                              | 1.5           |
| L                         |         |              |                                |               |
| AP - RP                   | in 1960 | 18           | 1                              | 2.1           |
| L                         |         |              |                                |               |
| $\Delta$ AP - $\Delta$ RP |         | 33           | 1                              | 5.3           |
| L                         |         |              |                                |               |

The tendency established in (a) is explained by the tendencies reflected in (b).

The average operator of a large farm had at his disposal 33 times as many additional inputs per farming unit than a small farm. He therefore was able to generate an additional RP which was 26 times larger. As a result his relative advantage vis-a-vis the private small farmer with respect to resource availability increased

from 14 to 1 in 1940 to 18 to 1 in 1960. Similarly, his advantage vis-a-vis the average ejidatarios is explained by a greater access to incremental resources.

(c) Comparing the relative progress made by each tenure group:

|                           | <u>Private</u> |              | <u>Ejidos</u> |
|---------------------------|----------------|--------------|---------------|
|                           | <u>Large</u>   | <u>Small</u> |               |
| AP - RP in 1940<br>L L    | 1              | 1            | 1             |
| $\Delta$ (AP - RP)<br>L L | 2.71           | 1.15         | 1.42          |
| AP - RP in 1960<br>L L    | 2.85           | 2.22         | 3.05          |

Large farms had additional resources per farming unit that were 2.7 times higher than what they had at their disposal in 1940. In other words, their marginal resource availability was 2.7 times higher than their average resource base in 1940, as compared with only 1.4 in ejidos and 1.2 in small private farms. Hence they registered much greater progress over the two decades with respect to RP<sub>L</sub>, as can be observed in the final panel.

(d) Comparing the progress made with respect to RP<sub>L</sub> :

|                  | <u>Private</u> |              | <u>Ejidos</u> |
|------------------|----------------|--------------|---------------|
|                  | <u>Large</u>   | <u>Small</u> |               |
| RP in 1940<br>L  | 1              | 1            | 1             |
| $\Delta$ RP<br>L | 9.2            | 0.72         | 0.91          |
| RP in 1960<br>L  | 8.1            | 1.8          | 2.24          |

$\Delta$  RP<sub>L</sub> of large farms increased ninefold over their base figure in 1940,

whereas ejidos'  $\Delta$ RP<sub>L</sub> increased only by 90% and that of smaller farms by 70%.

Under these conditions, ejidatarios had a residual product in 1960 which was close to 2.5 times what they had in 1940, which is a considerable improvement. Similarly private small farmers improved their lot by 80%, but these improvements are much lower than that registered by private large farms which reached in 1960 RP<sub>L</sub> eight times as high as what they had in 1940. These differences in turn are attributable to the different resource bases and resource increments analyzed in (b) and (c) above, which bring us back to the observed differences in RP<sub>L</sub> brought out in (a).

Summing up: From the above, it becomes evident that contrary to what has usually been assumed or postulated in Mexican agriculture, the large farms are not the most efficient when the comparison of efficiency is made with respect to the real scarcity of resources at a national accounting level. Within these limitations, it seems that the small private farms have made the best use of these scarce resources and have hence proved to be the most efficient. They are followed by the ejido sector whereas private large farms seem to have occupied the last place. However, over the period 1940-1960, large private farms have made the greatest progress, due to a much larger increment in cooperating inputs.

It would follow that under these conditions if what is sought is to increase the agricultural output in Mexico with the least strain on resources on a national level, they should be allocated to the three tenure groups in the same order. This general statement however is subject to a number of institutional and organizational constraints which become very severe when the changes envisaged are not marginal but of a substantial magnitude. These limitations and constraints are dealt with in the book from which these calculations have been abstracted.



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