


1971

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Land Reform in the Lake Titicaca Region

Bolivia's National Revolutionary party (MNR) seized power in April 1952 and a year and a half later in August 1953 promulgated the agrarian reform law, which redistributed the land of the haciendas to the former Indian tenants and others. This comparative economic study of the haciendas and ex-haciendas in the Lake Titicaca region of Bolivia and Peru was undertaken to answer three important, but largely unresolved, questions about land reform: (1) Which land-tenure system—large estates or small peasant farms—affords the agriculture laborers and cultivators the greater freedom of mobility, opportunity, income, and education? (2) Did the land-tenancy conditions of a typical *latifundio* ("large landed estate") land-tenure system¹ border on serfdom and preclude freedom and was this system largely responsible for the low standard of living and education of the rural population in a traditional agrarian economy? (3) Is there any validity to the contention that "land reform is not only a reform of the way land is held but just as much reform of the man who tills the land?"²

LATIFUNDIO LAND TENURE AND LAND REFORM

Prior to the MNR revolution, Bolivia was an underdeveloped country with a traditional agrarian sector, characterized by a *latifundio* system.

This chapter is an expanded version of my article, "Land Reform and Its Effect Upon Production and Productivity in the Lake Titicaca Region," published in *Economic Development and Cultural Change*, 18, no. 3 (April 1970), pp. 410-50.

The agricultural sector was clearly differentiated from the nonagricultural sector. The nonagricultural sector comprised the extractive industries and the transport, construction, and trading activities associated with, and dependent upon, mining. Each sector had its peculiar problems. It was the agrarian sector, however, which was usually singled out as being the most backward, unproductive, and stagnant. Although approximately 70 percent of the Bolivian population was engaged in agricultural production in 1950, this sector was the source of only 30 percent of the gross national product and less than 3 percent of the value of the exports. In addition, roughly 40 percent of imports were food and other agricultural goods, most of which could have been domestically produced.³ A partial explanation for Bolivia's backwardness can be found in an examination of the prerevolutionary land-tenure system.

THE LATIFUNDIO LAND-TENURE SYSTEM

Before 1952 land concentration was very great. According to the 1950 agricultural census, approximately 6 percent of the largest agricultural units constituted 92 percent of the land, while 80 percent of the smallest held only 1 percent of the land. Three-fourths of the country's agricultural population had no property rights. Although 30 percent of the total land area was classified as arable, only 2 percent was cultivated. Also, there was an inverse relationship between the size of holding and area cultivated. While the smallest agricultural units cultivated 44 percent of their land, the largest estates, comprising 92 percent of all land, cultivated only 1 percent of their holdings.

These statistics do little more than reveal the fact that agriculture in Bolivia was dominated by large landed estates. The haciendas, moreover, were not only agricultural enterprises; they were social units. This is evident in the tenancy arrangement under which the land was operated and its product divided between the tiller and owner. The *colonos* ("Indian tenants") were traditionally, and often quasi-legally, tied to the haciendas. For the right to use a small parcel of the estate's poorer quality land, they were required in varying degrees to render to the landowner their labor, tools, animals, and servitude.

THE LAND REFORM

The concentration of landed property in so few hands, the less than progressive tenancy conditions, and the traditional methods of production combined to render the Bolivian latifundio land-tenure system an anach-

ronism. Many Bolivians and others came to consider this land-tenure system as one of the major obstacles to both agricultural and general economic efficiency and progress. Among these individuals were the leaders of the *Movimiento Nacionalista Revolucionario* who were responsible for the agrarian reform law which states that the soil, subsoil, and waters of the nation belong to the state but guaranteed private property which fulfills a "social function." It also committed the state to an

TABLE 1
BOLIVIAN LAND REDISTRIBUTION
1953-1965

Year	Number of Legal Re- distribution Cases	Titles Dis- tributed	Family Heads Benefited	Hectares Distributed	Hectares Reverted to the State
1953	—	—	—	—	—
1954	—	—	—	—	—
1955	32	3,400	2,809	51,811	—
1956	75	4,463	3,863	46,604	579
1957	281	11,400	8,028	276,293	103
1958	216	9,193	5,709	201,631	367
1959	313	18,380	12,097	316,462	4,040
1960	904	38,897	22,410	825,871	26,899
1961	1,186	45,511	28,210	1,129,442	38,379
1962	1,880	50,227	28,843	1,255,791	24,950
1963	1,185	47,461	40,641	1,271,686	91,905
1964	626	18,317	11,295	531,946	33,497
1965	202	15,600	9,652	365,042	23,241
Total	6,900	262,849	173,557	6,272,579	243,960

Source: Bolivia, Departamento de Estadística, Servicio Nacional Reforma Agraria (February 8, 1966), unpublished. Provided by the department head, Sr. Hector Mercado Negrete

"equitable" distribution of land. The land-reform decree further stipulated that small peasant farms, cooperatives, and indigenous communities were to be created and expanded by the redistribution of all the latifundio land and portions of "medium properties" and "agricultural enterprises."⁴ The expropriation was to be accompanied by monetary compensation in the form of 2 percent, twenty-five-year, agrarian bonds ultimately paid for by the new beneficiaries of this reform, the *campesinos* ("countrymen").

Since the passage of the Bolivian land reform, substantial progress has been made in legally redistributing the land. A comparison of the figures in the 1950 agricultural census with those in table 1 shows that, of the

32,749,850 hectares surveyed in 1950, 6,272,579 or 19 percent of this amount had been legally redistributed to individual campesinos by the beginning of 1966. A number of *expedientes* ("files of documents") relating to the legal distribution of land are still being processed, but, more important, a substantial amount of land was illegally expropriated by the campesinos.

In the midst of the early revolutionary years, 1952–1953, the campesinos organized militant *sindicatos* ("labor unions"), obtained control of the countryside, and confiscated or redistributed the lands of many estates—some of which were not liable for expropriation under the new law. It is important to bear in mind that the actual Bolivian land reform is distinct from that expressed in the legal statute. Land reform in Bolivia destroyed the latifundio land-tenure system and created the small campesino family-operated holdings. The Bolivian landowners were never officially compensated by the government or the campesinos for their expropriated properties. The only compensation received was in the form of non-official payments made by the campesinos to a few fortunate landowners. President Víctor Paz Estenssoro expressed the sum and substance of the true Bolivian land reform when he said: "We made the agrarian reform. We took the land from the unproductive and absentee landowners, and we have given it to the *campesinos* who work it."⁵

THE LAKE TITICACA REGION

The Lake Titicaca region is unique, since it is probably the only area in the world where haciendas and expropriated haciendas existed side by side in a relatively homogeneous setting.⁶ As such, it afforded a remarkable opportunity to conduct a comparative economic study of land tenure, land reform, and their effect upon human resources and the economy.

A sampling of four Peruvian haciendas and four Bolivian ex-haciendas had been chosen for examination and comparison. From a nearly complete list of all the large landed estates in the Peruvian sector of the region, four haciendas were selected. These were livestock and grain enterprises that were absentee owned and representative in size, production, and productivity. From the other side of the border, four Bolivian ex-haciendas with similar characteristics were selected for comparison. Every attempt was made to insure comparability in such areas as distance from the lake, elevation, water access, and climate. In short, every

Bolivian ex-hacienda investigated was matched as closely as possible with a comparable Peruvian hacienda.⁶ Nevertheless, because all available data indicate that the prereform Bolivian haciendas were usually smaller in size and supported larger populations than their Peruvian counterparts, the four Bolivian ex-haciendas investigated possessed these different characteristics. (See table 2.) A partial explanation for the difference in estate

TABLE 2
SAMPLE OF PERUVIAN HACIENDAS AND BOLIVIAN EX-HACIENDAS

	Peruvian Haciendas				
	I	II	III	IV	Total
Area in hectares	4,850	5,719	4,244	16,310	31,123
Campesino families	35	23	23	94	175
Family heads interviewed	34	23	22	88	167
Percentage interviewed	97%	100%	96%	94%	95%
	Bolivian Ex-Haciendas				
	I	II	III	IV	Total
Area in hectares	5,591	2,348	1,518	5,221	14,678
Campesino families	287	65	108	209	669
Family heads interviewed	68	30	48	21	167
Percentage interviewed	24%	46%	45%	10%	25%

size and population density among the two sampled groups can be found in the locations of the major consumer markets in the two nations. The prereform Bolivian haciendas had a greater access to a large consumer market, the capital city of La Paz. Thus, these estates had a nearby market for bulky, high-cost transport products, such as potatoes, oca, and similar foods which are both labor and land intensive in production. On the other hand, the lack of a similarly accessible market in the Peruvian sector has historically oriented production toward high-value, low-cost transport products, such as wool, for international export.

Because a hacienda is dichotomized into that portion utilized by and for the landowner and that used by the campesinos for their subsistence, and because an ex-hacienda is separated into those farmed cooperatively and those farmed individually by the campesinos, two different questionnaires were used in the field study. In both cases, the services of an interpreter were necessary, since the Indians chose to answer in their native Aymara and Quechua languages. Also, due to the large number of

campesinos encountered on the Bolivian ex-haciendas, only a random sample was selected for interviewing.

The field research for this article was carried out in a sedentary agricultural and stock-raising area. The Lake Titicaca region is composed of the Altiplano portions of the department of Puno, Peru, and the department of La Paz, Bolivia, as seen in figure 1. Prior to 1953, the culture,

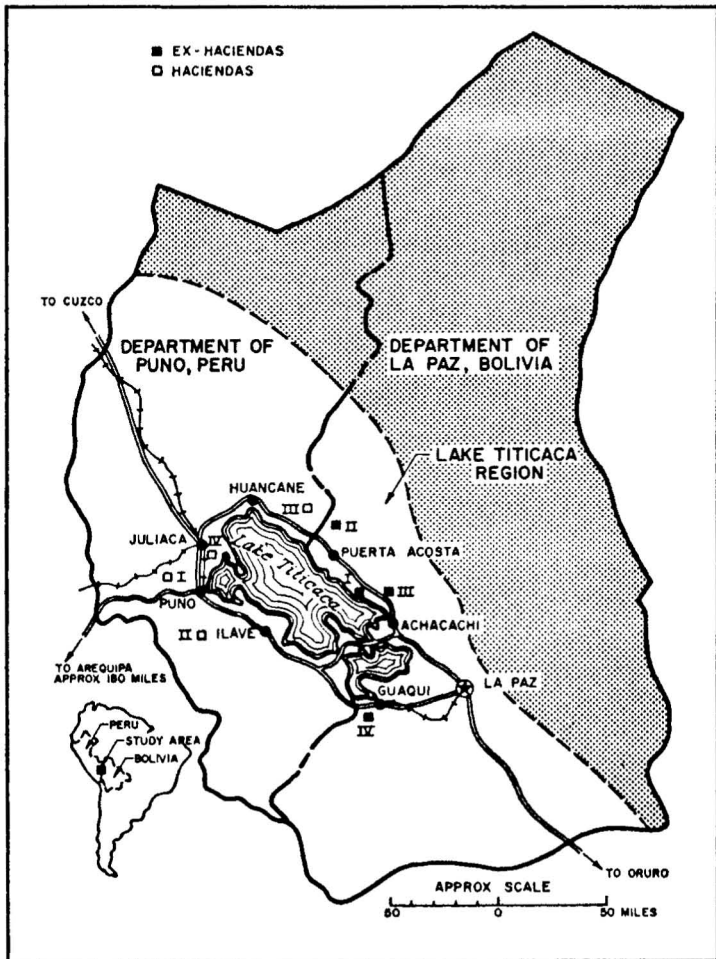


FIG. 1. LAKE TITICACA REGION

the economy, and, above all, the latifundio land-tenure system of the Bolivian sector were nearly identical to those of the Peruvian sector. For example, in the department of Puno, 80 percent of the smallest agricultural units owned 3.2 percent of the land while 0.2 percent of the largest units possessed 60 percent of the land. The same inverse relationship between size of holding and the area cultivated existed here as in La Paz. Nearly all the large estates were absentee owned, and the tenancy conditions resembled those of prereform Bolivia except for the differences discussed below. Finally, 70 percent of the Peruvian population was engaged in stagnant and unproductive agriculture.⁷ Latifundio land-tenure systems are not dynamic, and in many ways the Peruvian haciendas investigated resembled the prereform Bolivian haciendas.

The Peruvian haciendas served only as imperfect proxies, however, since there were a number of notable differences between the Peruvian haciendas and the prereform Bolivian haciendas. The Peruvian Resolución Suprema no. 14 of January 17, 1964, required all campesino laborers to be paid a minimum daily wage, and Resolución Suprema no. 18 of May 21, 1965, formally designated the department of Puno as an agrarian reform zone.⁸ Even though these decrees were either not fully obeyed or inoperative, they modified the Peruvian latifundio land-tenure system. First, because some money wages were paid to campesinos, labor was no longer a free resource. Secondly, if they exceeded the average productivity of haciendas in the department, the agrarian reform law enabled haciendas to retain between three thousand and eight thousand hectares of land. After the 1965 agrarian reform went into effect, the Peruvians have invested in capital equipment and livestock, as well as paid their laborers minimum wages. In short, these laws were instrumental in bringing about changes in the resource mix within the haciendas. Nevertheless, if one would ignore all of the cash income of the Peruvian campesinos, much of the newly acquired capital, and some of the international wool sales of the Peruvian haciendas, one would approximate the prereform Bolivian sector of the Lake Titicaca region.

As can be seen in table 2 on page 305 two important distinctions between the haciendas and ex-haciendas must be borne in mind. First, although the same absolute number of campesino family heads was interviewed on both sides of the border, the sample of 167 Peruvian campesinos represented 95 percent of all hacienda employees, while the 167 Bolivians interviewed represented only 25 percent of the total number of campesino family heads on the ex-haciendas. Secondly, while the same

number of haciendas and ex-haciendas was included in the sample, the Peruvians had twice the amount of land as the Bolivians. Finally, official governmental statistics and studies of other Peruvian haciendas and Bolivian ex-haciendas were used throughout this study as supplemental sources of data and information. Studies of prereform Bolivian haciendas were also used for the historical comparison of before and after the land reform.

RELATIVE ECONOMIC PERFORMANCE OF PERUVIAN HACIENDAS AND BOLIVIAN EX-HACIENDAS

ECONOMIC RESOURCES

In an attempt to make the analysis of the effect of the Bolivian land reform upon human resource development more readily comprehensible, this section will briefly summarize the economic performance of the sampled Peruvian haciendas and Bolivian ex-haciendas in the Lake Titicaca region.⁹ Total population estimates based upon the sample averages obtained in the field study indicate that the Bolivian ex-haciendas supported four times as many people with only half as much land as the Peruvian haciendas. Thus, the population density of the Bolivian ex-haciendas was more than eight times that of the Peruvian haciendas (see table 3).

The greater population density of the Bolivian ex-haciendas was re-

TABLE 3
COMPARISON OF HACIENDA AND EX-HACIENDA POPULATIONS

	Peruvian Haciendas	Bolivian Ex-Haciendas
Total population	998.0	3,847.0
Total "weighted economically active" population ^a	560.0	2,141.0
Population density per square mile	8.3	67.9

Note: In this table and all the following ones, except where indicated, the figures represent projections based on the sample averages obtained in the field study.

a. Computed on the basis of the following weights furnished by the Oficina Nacional de Evaluacion de Recursos Naturales de Puno, Peru: male over seventeen years of age = 1.0; female over seventeen years of age = 0.8; male and female ten to seventeen years of age = 0.5; and all others = 0.0.

flected in the more intensive utilization of the land, as seen in table 4. In the aggregate the Bolivian ex-haciendas cultivated six times as many hectares as the Peruvian haciendas during the agricultural year 1964-1965. Approximately 5 percent of the Bolivian ex-hacienda land was cultivated as compared to less than 0.5 percent of the Peruvian hacienda land.¹⁰

On the Peruvian estates the lower population density and greater land extension were reflected in the greater specialization in sheep ranching, as seen in table 5. By far the most numerous and important type of capital found on both the hacienda and ex-hacienda was livestock.

Reducing all grazing livestock to the common denominator of a sheep ("*unida animal ovino*" or U.A.O.) enabled the computation of some interesting livestock statistics (table 6). When the livestock is weighted accordingly, data show that the Peruvian haciendas had twice as much livestock as the Bolivian ex-haciendas. Taking population and land into consideration, the livestock density per hectare was nearly equal for both sampled groups, although the Peruvian campesinos shepherded approximately eight times as many animals as their Bolivian counterparts.

Land, labor, and livestock capital were the most important economic resources on these traditional units of production. Of lesser influence upon production and productivity were physical capital and management. It is difficult to say whether haciendas or ex-haciendas possessed the greater quantity of physical capital, since it was virtually impossible to weigh the greater quantity of hand tools and new constructions of the campesinos on the Bolivian ex-haciendas against the old physical plant and more modern machinery and equipment on the Peruvian haciendas.

In addition, the institutional nature of these traditional agrarian units of production suggests that possession of economic resources did not imply their rational or complete utilization in production. For example, although the Peruvian haciendas employed professional managers, owned large tracts of land, and used agricultural equipment such as tractors, the influence of all these upon production was less than one would expect. The Peruvian haciendas were not only absentee owned, but to a degree, absentee managed. This partially explains the observed underutilization of agricultural machinery on the estates.¹¹ Large extensions of land were also lying idle or underutilized on these estates, since the Peruvian landowners only put about half their total land in production. On the other hand, because a smaller quantity of labor was combined with greater amounts of other resources such as land and livestock, the Peruvian campesino's labor and time were fully utilized on the haciendas.

TABLE 4
 UTILIZATION OF LAND
 (In Hectares)

Type of Land	Cultivated by and for		Pasture and/or Land in Rest of			Total Land Area
	Campesinos	Hacendados	Campesinos	Hacendados	Joint Use	
<i>Peruvian Haciendas</i>						
Level	5.5	53.0	220.0	15,582.0	4,328.5	20,189.0
Hill and/or broken	18.5	41.0	655.0	—	10,219.5	10,934.0
Total	24.0	94.0	875.0	15,582.0	14,548.0	31,123.0
<i>Bolivian Ex-Haciendas</i>						
Level	342.0	10.0	2,678.0	685.0	2,929.0	6,644.0
Hill and/or broken	378.0	2.0	602.0	1,529.0	5,523.0	8,034.0
Total	720.0	12.0	3,280.0	2,214.0	8,452.0	14,678.0

TABLE 5
DISTRIBUTION OF TOTAL LIVESTOCK

	Peru			Bolivia		
	Campesinos	Hacendados	Total	Campesinos	Cooperatives	Total
Sheep	9,592	52,955	62,547	18,156	845	19,001
Cattle	1,334	1,512	2,846	2,348	42	2,390
Horses	385	115	500	16	—	16
Borros ^a	229	7	236	381	—	381
Alpaca	607	236	843	—	—	—
Llama	321	—	321	1,455	—	1,455
Fowl	253	41	295	1,508	—	1,508
Pigs	61	7	68	1,704	38	1,778

Note: Nearly all the sheep and cattle of the Bolivian and Peruvian campesinos were of the degenerate criollo ("domestic") type, while those of the Peruvian hacendados were predominantly crossbreeds between criollos and imported (improved) stock.

a. Male lambs not yet two years old.

On the Bolivian ex-haciendas the situation was reversed; it was labor which was not completely expended on production, and land which was more fully exploited. Because the Bolivian campesino was not required to render his labor services to any landowner, and because his small holdings and animal herds did not require all his time, he possessed greater leisure and time for work outside the ex-hacienda. Comparing them with the Peruvian haciendas, more labor and an equal amount of livestock were combined with each hectare of land on the Bolivian ex-haciendas. Thus, land was more fully utilized on the Bolivian ex-haciendas.

TABLE 6
COMPARISON OF HACIENDA AND EX-HACIENDA LIVESTOCK

	Peruvian Haciendas	Bolivian Ex-Haciendas
Total livestock (U.A.O.'s)	89,139	44,408
Livestock (U.A.O.'s) per hectare	2.9	3.0
Livestock (U.A.O.'s) per campesino family	512	66

Note: There are various methods used to compute this sheep equivalent unit (U.A.O.) which is the reduction of all grazing animals to the land capacity for an adult sheep. The one used here is that of the Agrarian Reform Office of Plano, Peru: sheep = 1, cattle = 6, horses and burros = 8, alpacas and llamas = 3, and pigs = 2.

TOTAL-VALUE PRODUCTION AND PRODUCTIVITY

The different amounts of economic resources available to the haciendas and ex-haciendas and the diverse utilization of the same manifest themselves most obviously in production and productivity. The Peruvian haciendas raised approximately \$170,000 worth of agricultural produce during the 1964–1965 year, which is only slightly larger than the estimated \$149,000 produced by the Bolivian ex-haciendas.¹² Four times as many Bolivian campesinos were engaged in producing nearly the same output on only half as much land; in other words the Bolivian ex-haciendas were, on the average, twice as productive with respect to land and one-fourth as productive with respect to labor as the Peruvian haciendas. Productivity statistics and estimates of the average monetary return to each available economic resource are set forth in table 7.

TABLE 7
VALUE PRODUCTIVITY
(In Dollars)

Statistics	Peruvian Haciendas	Bolivian Ex-Haciendas
<u>Value output</u> Hectare	\$ 5.47	\$10.15
<u>Value output</u> Man-years of labor ^a	304.00	69.62
<u>Value animal products</u> Livestock capital ^b	0.38	0.40
<u>Value crops</u> Hectares cultivated	105.31 ^c	88.45

a. The man-year equivalents of labor figures are the same as the "economically active population" figures computed in table 3, p. 308.

b. This figure of the total value of livestock was computed by multiplying the average prices of animals sold in tables 16 and 17 by the total number of animals on the haciendas and ex-haciendas in table 6 on p. 311.

c. This average-value figure includes only the output of the three haciendas for which data are available, i.e., it excludes that of hacienda IV.

ECONOMIC EFFICIENCY WITH RESPECT TO
SIZE OF FIRM AND LABOR PRODUCTIVITY

Which were more efficient—the Peruvian haciendas or the Bolivian ex-haciendas? Because of the limitations of the data and the lack of a general consensus upon the criteria of efficiency, the reader should be

forewarned not to expect a definitive answer to this question. For, although few economists condone the tenure conditions on the large haciendas, many rally to defend the haciendas in the name of economies of scale and labor productivity. Thus, an important consideration is whether size economies resulting from such indivisible inputs as capital equipment and management existed on the Peruvian haciendas. It appears that the underutilization of agricultural machinery, management, and land on the Peruvian estates prevented the realization of any size economies. Also, no evidence of financial economies of scale, such as quantity discounts from marketing, was uncovered. This does not imply that the small campesino holdings on the Bolivian ex-haciendas were either efficient or of optimum size. The implication is, however, that the large landed estates in the sample were not necessarily more efficient than the small campesino holdings by virtue of size alone. In brief, the findings of this study indicate that there probably is no overwhelming advantage to any particular size Altiplano agricultural unit of production under existing institutional and technological conditions.

But what is the economic significance of the difference in labor productivity on the haciendas and ex-haciendas? Was the lower labor productivity of the Bolivian ex-haciendas evidence of a less efficient allocation of resources? What is needed to analyze this allocative efficiency is information on prices of both resources and production at the margin, which, unfortunately, was not available. Even information obtained from production functions would have limited value, since the price of land and labor to the Bolivian campesino were nonmonetary opportunity costs. It appears that the Peruvian haciendas were more efficient in their use of labor. However, when labor is abundant relative to land and capital, as it was in both sectors of the region, the area yielding the higher output per hectare, in this case the Bolivian ex-haciendas, can be considered more efficient.

When technology, incentive, and employment are taken into consideration, neither the Peruvian haciendas nor the Bolivian ex-haciendas could be considered to be more efficient or to perform in a superior economic manner. The evidence suggests that both sampled groups were producing short of their optimum.

PRODUCTION FOR THE MARKET

With more and better breeds of animals, twice as much land, and one-fourth the population of the Bolivian ex-haciendas, one would expect the Peruvian haciendas to produce more for the market. This is precisely

what the data reveal, using the total value of products sold as crude approximation of agricultural surplus. In the agricultural year 1964–1965 the sampled Peruvian haciendas sold approximately \$142,000 worth of products on the market as compared to about \$51,450 sold by the Bolivian ex-haciendas.¹³ Not only did the Peruvians sell nearly three times as much in absolute dollar value as the Bolivians, but they sold a greater proportion of their output. The Peruvian haciendas sold 85 percent and the Bolivian ex-haciendas 34 percent of their respective gross outputs. The sale of wool accounts for the greater part of this difference, however. Approximately \$65,000 of foreign exchange was earned by the Peruvian hacendados from the sale of wool in international markets.¹⁴ If one subtracts this amount from the Peruvian hacienda sales, the value of products sold in their respective domestic markets by the haciendas and ex-haciendas is more nearly equal. Although the four Peruvian haciendas and the four Bolivian ex-haciendas investigated constituted only a fraction of all those in the Lake Titicaca region, they were quite similar—and in many respects virtually identical—to most other haciendas and ex-haciendas in the region.

THE EFFECTS OF THE BOLIVIAN LAND REFORM

To what extent does this difference in economic performance between the Peruvian haciendas and Bolivian ex-haciendas reflect changes brought about by the Bolivian land reform? In any attempt to answer this question, let us begin by briefly outlining the major characteristics of the prereform Bolivian haciendas, since the Peruvian haciendas investigated, as stated above, served only as imperfect proxies for the prereform Bolivian haciendas.

PREREFORM BOLIVIAN HACIENDAS

The prereform Bolivian haciendas were, to a much greater degree than the Peruvian ones, mere agglomerations of small Indian *sayañas* (“usufructuary tracts of land”). In the Lake Titicaca region, approximately two-thirds of the prereform Bolivian haciendas were cultivated exclusively by and for the Indians, who also owned approximately three-fourths of the livestock.

The Bolivian haciendas did not possess great quantities of productive physical capital or employ production methods other than those traditionally used by their Indian tenants. Nor did they specialize in wool

production for the international market, and nearly all their sheep and cattle were of the degenerate criollo type. The prereform Bolivian haciendas also supported larger populations and cultivated a greater portion of their lands than did the Peruvian haciendas.

CHANGES IN RESOURCES

Since the Bolivian land reform, the population of the ex-haciendas in the Lake Titicaca region has doubled as a result of the natural increase in population and migration to these lands from the indigenous communities, villages, and cities. Perhaps this growth helps to explain why La Paz does not have the extensive *barriadas* ("slums") typical of most large Latin American cities. This population increase, in turn, has given rise to a slightly more intensive use of the land. Although many new campesino sayañas were carved out of the old *hacendado* ("estate owner's") lands to accommodate the larger population, the average sayaña has not changed in size or composition since the land reform.

However, since the land reform, there has been a small reduction in the total number of animals in the sector. This occurred because the landowners were able to sell some of their animals, some perished through neglect, and an additional number were confiscated by the campesinos. Since that time, however, the herds have been gradually built up to nearly their prereform size. But there has been a slight deterioration in the quality of the sheep and cattle, or, at least, there has been no improvement of the herds since 1953. Also, a decrease has occurred in the average size of the campesino herd. These statements are supported in table 8 by data from the field study, the Viacha study, and the 1946 ministry of agriculture study—all major sources of information drawn upon in this comparison.

Finally, since 1953 the old adobe structures of the haciendas have deteriorated, because the campesinos refused to replace their *paja* ("grass") roofs. This destruction, however, has been compensated for by the construction of new campesino homes and schools. In addition, since the Bolivian land reform disinvestment in the form of a decrease in the amount of agricultural machinery has taken place on the ex-haciendas. Rarely does one see a tractor today in the Bolivian sector of the Lake Titicaca region. It is impossible to determine how much of this mobile machinery and equipment was removed by the landowners and how much was destroyed as a result of campesino indifference and neglect. There has been no inflow of agricultural equipment in the area either for re-

TABLE 8
ECONOMIC RESOURCES BEFORE AND AFTER LAND REFORM

	Before Land Reform ^a	After Land Reform ^b
Population density per square mile	35.0	68.0
Livestock (U.A.O.) density per hectare	3.3	3.0
U.A.O.'s owned per campesino family	93.0	66.0
Approximate average size of campesino sayaña (in hectares)	6.0-8.0	6.0-8.0 ^a
Total land area cultivated	1.0-6.0%	5.0%

a. Source: *Estudio socio-económica en las provincias de omasuyos, ingavi, y los andes del departament de La Paz* (La Paz, 1946).

b. Sources: Author's field study and *Estudio económico estadístico del Canton Viacha* (La Paz, 1965).

c. It is obvious that the average Bolivian campesino did not possess, let alone own, between ten and thirty-five hectares of land as prescribed by article 15 of the Decreto Ley de la Reforma Agraria.

placement or for addition to stock since 1953, because the Bolivian campesinos have neither the funds nor the inclination to purchase this type of capital.

CHANGES IN ECONOMIC PERFORMANCE

It is difficult to compare the economic performance of the prereform Bolivian haciendas with the present-day ex-haciendas, because comparisons over time may reflect climatic or price changes above all else. Consequently, a rigorous historical comparison cannot be made. Nevertheless, the subject will be briefly commented upon because of the controversy surrounding the issue of land redistribution and its economic consequences.

Because there were no verifiable size economies operative on the relatively productive Peruvian haciendas, there is even more reason to suspect that no economies of scale were realized by the prereform Bolivian haciendas. Consequently, when the lands used exclusively by the landowners and portions of their criollo livestock were parceled among the campesinos after the land reform, it is unlikely that any size economies of production were lost.

The evidence accumulated in this study suggests that labor productivity on the Bolivian ex-haciendas has decreased, land productivity has increased, and capital productivity has remained unchanged since the land reform. This can be accounted for largely by the increased population, greater use of the more marginal land, and the small decrease in agricultural equipment. Also, in part, the decrease in labor productivity reflects the increase in leisure and off-the-farm employment of the Bolivian campesinos.

An increase in the number of people engaged in marginal agriculture and a decrease in agricultural productivity per unit of labor are, however, normally considered by economists to be prima facie evidence of an inefficient allocation of a nation's resources. But Bolivia was not a full employment economy, and the decrease in labor productivity in the agrarian sector must be considered in conjunction with the increased employment in agriculture and the higher land productivity which resulted from the land reform. In short, the increased marginal farming may well be an efficient allocation of the nation's resources in the short run or until such time as alternative employment is available.

For example, agricultural output in the region has increased since the Bolivian land reform. However, because of their greater numbers and greater per capita consumption of food, the Bolivian campesinos have retained a greater share of the region's larger output. At the same time, the agricultural produce sold in the market has equaled prereform levels. At least, this is what most official government statistics indicate.

Bolivian campesinos also have increased their commercial activity since the expropriated landowners no longer supply the markets with food and other agricultural produce. This is seen in the numerous local fairs which have come into existence since the land reform, as well as the increased coming and going of the Altiplano campesinos. The Bolivian campesino, like his Guatemalan counterpart, is a businessman. As Sol Tax observed, "The Indian is perhaps above all else an entrepreneur, a businessman, always looking for a new means of turning a penny."¹⁵

However, unless technology and human and physical capital are forthcoming, the agricultural output and surplus, at best, will be augmented at a very slow pace within the existing framework of the traditional agrarian sector. As Theodore W. Schultz and others have shown, these apparent traditional optima can only be exceeded by the infusion into the agrarian sector of nontraditional inputs, such as improved seed, equipment, livestock, and modern methods of production.¹⁶ Agricultural credit, extension services, and other forms of assistance are needed for this task.

CAMPESINO INCOME, CONSUMPTION, MOBILITY, AND EDUCATION

The growing emphasis on capital investments in human beings is one encouraging trend in current discussions of the mainsprings of economic growth. This emphasis is of primary importance to agricultural development. Improving

the quality of the labor input through new knowledge and new skills offers one rewarding opportunity for agricultural capital investment. For this reason, a major test of the performance of land-tenure structures is to be found in the role they play in advancing capital investment in education.¹⁷

Labor is one of the most abundant economic resources that underdeveloped nations possess. The labor force is only an asset to economic efficiency and progress when it is healthy, educated, and mobile. Many development economists have theoretically demonstrated the merits of: (1) freeing the agricultural labor force so that its members may migrate to the industrial sector when conditions warrant, (2) providing the laborers with sufficient income to purchase manufactured products as well as to keep body and soul together, and (3) educating and informing these individuals so that they may become more productive economic resources and participating citizens. But how did the two sampled groups of campesinos in the Lake Titicaca region fare under the different land-tenure systems? Did the haciendas of the Peruvian sector or the ex-haciendas of the Bolivian sector afford the campesinos a greater freedom (i.e., mobility and opportunity), income, and education?

To begin with, the sampled populations possessed many similar characteristics. For example, the average size of a household was 5.70 on the Peruvian estates and 5.75 on the Bolivian ex-haciendas. The average ages of the two sampled groups were twenty-four and twenty-three respectively. In both sampled groups roughly 55 percent of the population was under twenty years of age.

CAMPESINO INCOME

An investigation of the income patterns of the campesinos on the sampled Peruvian haciendas and Bolivian ex-haciendas was conducted in the field study. One would expect for a number of reasons the Peruvian campesino to have a higher income and standard of living than his Bolivian counterpart. First of all, the Peruvian campesino owned, on the average, twice as much livestock as the Bolivian campesino and had at his disposal an equal amount of land. Secondly, the Peruvian was more than four times as productive on the hacienda as the Bolivian was on the ex-hacienda. Finally, the Peruvian, unlike the Bolivian campesino, received a money wage for his labor on the hacienda. Table 9 gives an estimate of Peruvian campesino wages for the agricultural year 1964-1965. Table 10 shows the paradox in the data obtained in the field study, indicating that it is the Bolivian campesino, not the Peruvian, who received the greater income.

Part of this apparent paradox can be explained by the higher prices that Bolivian campesinos received in the market for their animals; this higher price is also the one imputed for the animals consumed by the campesinos.¹⁸ However, the Bolivian campesino did, on the average, sell and consume a greater quantity of virtually every agricultural good produced by the haciendas and ex-haciendas in the region. In any case, the Peruvian campesinos did not greatly benefit from their relatively higher labor productivity; nor did the Bolivian campesinos grievously suffer from their lower productivity. There was, in short, little relationship between labor productivity and remuneration, at least in this respect.

TABLE 9
PERUVIAN CAMPESINO WAGES AND SALARIES
(In Dollars)

	Haciendas				
	I	II	III	IV	Total
Gross wages	\$3,097	\$557	\$4,060	\$13,674	\$21,388
State taxes ^a	124	22	162	547	855
Hacienda fees ^b	1,592	—	720	—	2,312
Net wages	\$1,381	\$535	\$3,178	\$13,127	\$18,221

Note: These wages and salaries do not include the salaries of the administrators. See table I on p. 303 for the number of families in each hacienda.

a. A 4 percent social security tax.

b. Compulsory payments made to the landowners for the use of pasture and cultivable hacienda land.

Table 10 gives the impression that the Peruvian campesino, on the average, earned twice as much money income as the Bolivian. But, when one recalls that this table only includes income earned from the production of the haciendas and ex-haciendas, the higher money income of the Peruvian campesino may be no more than an illusion. While interviewing the Bolivian campesinos, it became apparent that they had a source of money income unavailable to the Peruvians—namely, outside employment. The obvious reason for the Peruvian campesinos' inability to work outside the haciendas is that their labor time was fully utilized by the landowners. Each Peruvian campesino had assigned to his care between four hundred and five hundred head of livestock which his family herded, while he devoted most of his working time to the cultivation of the hacendado's land, the shearing of his sheep, and the maintenance of his buildings and other physical plants. He and his family accomplished all

this in addition to farming land for their exclusive benefit and caring for their own animals.

Such was not the case on the Bolivian ex-haciendas, where the campesinos often worked part time in the Yungas and elsewhere as agricultural laborers and in La Paz as seasonal construction workers. Unfortunately, due to an oversight in the construction of the questionnaire, no estimate of the money income received by all the surveyed Bolivian campesinos for this outside employment was obtained. Only the campesinos of one

TABLE 10
ESTIMATED CAMPESINO INCOMES FROM HACIENDA AND EX-HACIENDA
PRODUCTION
(In Dollars)

	Peruvian Campesinos	Bolivian Campesinos
Money wages	\$18,221	\$ —
Other money income ^a	7,019	51,451
Total money income	\$25,240	\$ 51,451
Income-in-kind ^b	10,738	97,604
Total income ^c	\$35,978	\$149,055
Money income per family	\$144.22	\$ 77.35
Total income per family	205.59	222.80

a. Earnings from the sale of agricultural products. See table 15, p. 336.

b. Consumption of agricultural products. These figures were obtained by subtracting the value of products sold in table 15 from the value of output in table 14.

c. These figures do not include off-the-farm income.

ex-hacienda were asked to reveal the source and amount of such wages. Approximately one-half of these campesinos were employed at least part time outside the ex-hacienda during the agricultural year 1964-1965 and earned between six and twenty-five dollars a month for their labor. A very rough estimate of the average amount of money income earned per campesino would be between fifty and seventy-five dollars per year. In short, it may very well be that the Bolivian campesino earned not only a greater total income but also a greater money income than the Peruvian campesino.

CAMPESINO CONSUMPTION

Another indication that the Bolivian campesinos had greater money incomes and, therefore, total incomes was their apparent higher standard

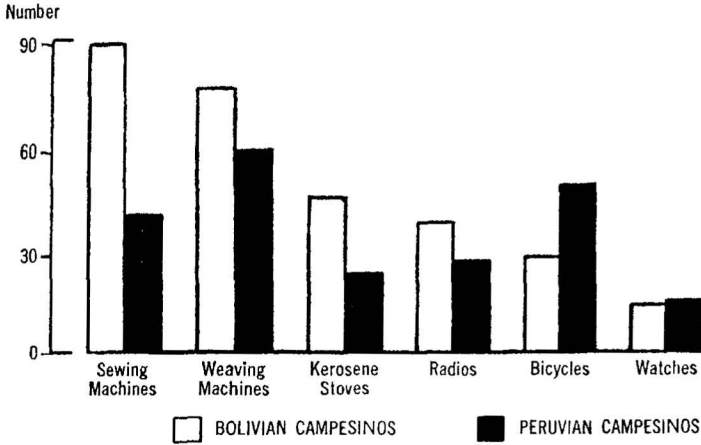


FIG. 2. NUMBER OF DURABLE GOODS OWNED BY SAMPLED CAMPESINOS

of living reflected in a greater consumption of manufactured goods and other purchased products. In figure 2 one sees that the 167 Bolivian campesinos interviewed owned more durable goods of all types than the same number of Peruvian campesinos—with the notable exception of bicycles. Figure 3 shows that the Bolivian campesinos purchased more “store-bought” dry goods. They also claimed to have worn these clothes more

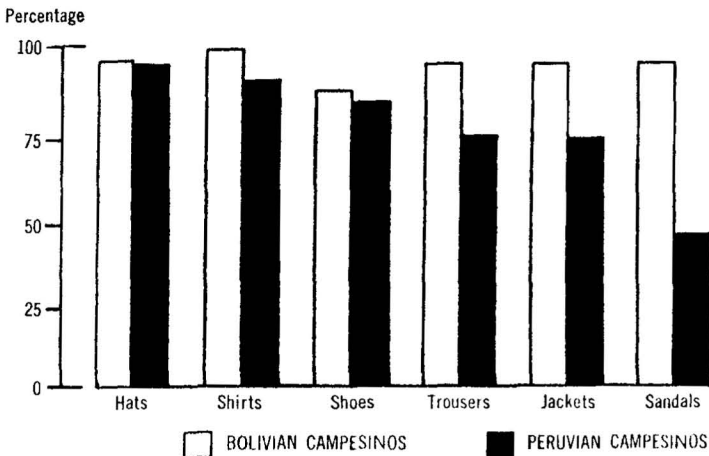


FIG. 3. STORE-BUGHT DRY GOODS OWNED BY SAMPLED CAMPESINOS

frequently than their Peruvian neighbors. Finally, figure 4 indicates that the Bolivian campesinos purchased and consumed more "luxury" foods and stimulants than the Peruvians.¹⁹ In addition, one out of every two Bolivians interviewed slept on wood or iron beds, as compared with only one out of every ten Peruvians. Finally, nearly 60 percent of the Bolivian campesinos had constructed new homes since 1953 while the Peruvians had built no new ones.

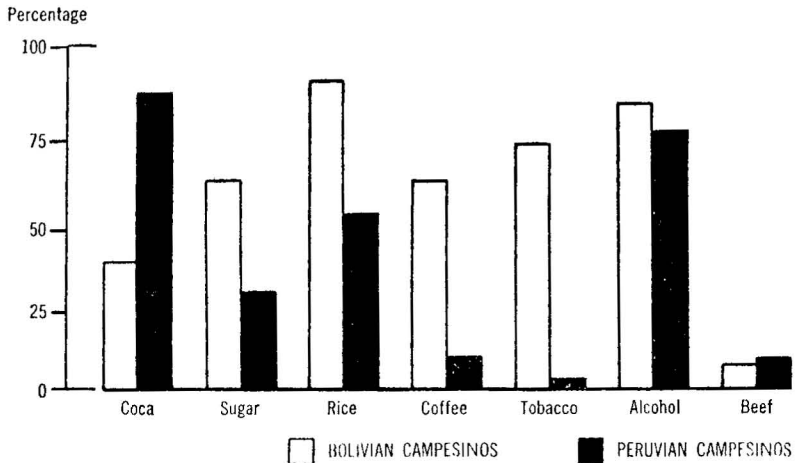


FIG. 4. CONSUMPTION OF LUXURY FOODS AND STIMULANTS BY SAMPLED CAMPESINOS. Percentages for coca, sugar, rice, and coffee represent daily consumption, while those for tobacco, alcohol, and beef reflect weekly consumption.

Bolivian campesinos could have consumed greater quantities of these goods than the Peruvian campesinos without higher money incomes if prices were sufficiently lower in the Bolivian sector or if they had incurred larger consumption debts, of course. Although price data are very scarce, unreliable, and often rendered virtually useless by inflation, it seems that durable goods and clothing were less expensive in Bolivia because of the lower import duties and the nearness of the sampled ex-haciendas to the major distribution center of La Paz. Coffee, tobacco, and similar agricultural products are also grown in the Yungas, a region of Bolivia which borders the Altiplano, and this proximity made it possible for the Bolivian campesinos to obtain these products at lower prices. In short, lower prices in the Bolivian sector probably did account for a small part of the

higher consumption of the Bolivian campesinos. None of this difference in consumption can be attributed to indebtedness, however, since campesinos, in general, were not debtors due to their unwillingness and inability to borrow. As seen in table 11, only a fraction of the Bolivian and Peruvian campesinos interviewed were in debt, and the amounts they owed were very small.²⁰

In sum, the evidence accumulated in this study indicates that the Bolivian campesino, on the average, had a greater total income, a higher standard of living, and possibly a greater money income than his

TABLE 11
DISTRIBUTION OF INDEBTEDNESS OF CAMPESINOS INTERVIEWED
(In Dollars)

Creditor	Peruvian Campesinos		Bolivian Campesinos ^a	
	Number in Debt	Amount of Debt	Number in Debt	Amount of Debt
Hacienda administrators	5	\$ 150	—	—
Friends and neighbors	20	480	25	\$257
Families	8	280	6	43
Businessmen	5	105	2	24
Agricultural banks	1	225	1	333
Total	39	\$1,240	34	\$657

a. The Bolivian campesino debt does not include a \$15,827 debt of the cooperative of ex-hacienda 1 which is owed to the Agricultural Bank for the ex-haciendado property.

Peruvian counterpart during the agricultural year 1964–1965. Indeed, because of the lower demand placed upon his labor and time, the Bolivian campesino had greater leisure, which in itself is a form of income. When the more than five hundred campesinos not interviewed—nearly all of them Bolivians—are taken into consideration, the Bolivian ex-haciendas, with half the land extension of the Peruvian haciendas, provided a comparable living for four times as many campesinos. Consequently, the purchase and consumption of manufactured goods typically used by the campesinos were substantially greater on the Bolivian ex-haciendas than on the Peruvian haciendas.

In regard to the disposition of the incomes of the Peruvian hacendados and administrators, a very rough estimate of the economic profit of the four haciendas would be about \$80,000. In addition, the administrators drew salaries totaling approximately \$5,000. The administrators probably spent the greater part of their salaries in Puno, and this income and

consumption of manufactured products should be added to that of the Peruvian campesinos. On the other hand, a portion of the recent investment in the haciendas was debt financed, as evidenced by the \$25,000 they owed to local banks. Apparently, most of the hacendado economic profit was consumed or invested outside the Lake Titicaca region and possibly outside the nation.

CAMPESINO MOBILITY

There can be little doubt that the Bolivian campesinos were more free and mobile than their Peruvian counterparts. This enabled them to seek outside employment, engage in political and marketing activity, and

TABLE 12
SCHOOL ATTENDANCE OF THE SAMPLED CAMPESINO POPULATIONS

	Peruvians			Bolivians		
	Male	Female	Combined Average	Male	Female	Combined Average
Percentage of population that has attended school ^a (six years old and over)	54%	24%	39%	63%	30%	47%
Percentage of children attending school (six to seventeen years of age)	75	43	59	75	40	58

a. These figures include all persons who were attending school as well as those who had terminated their education.

most important of all, to educate themselves and their children. Approximately one out of every five Bolivian campesinos questioned had attended some type of adult education course since 1953, as compared with approximately one out of every fifteen Peruvian campesinos interviewed. Of the adult populations—all those over seventeen years of age—38 percent of the Bolivians sampled had attended school as compared with only 23 percent of the Peruvians. Finally, of the entire sampled population over six years of age, 47 percent of the Bolivians and 39 percent of the Peruvians had attended or were attending school. The average level of education of those who attended or were attending school was 2.83 years

for the Bolivians and 2.27 years for the Peruvians. Eleven percent of the Bolivians achieved at least a primary education (six years or more) while only 6 percent of the Peruvians did so.

However, in table 12 one notes that approximately 60 percent of both the Bolivian and Peruvian school-age children (six to seventeen years of age) were enrolled in an educational institution. Every Bolivian ex-hacienda sampled had at least one school—nearly all newly constructed—while two of the four Peruvian haciendas investigated had no school. Also, the teachers of the Bolivian ex-hacienda schools were Indians, while the Peruvian teachers were *blancos* (“whites”). In both sectors, females were discriminated against with respect to education. Since the land reform, however, this has been ameliorated in the Bolivian sector of the region. Although the evidence is not overwhelming or conclusive, the data

TABLE 13
ILLITERACY OVER SEVENTEEN YEARS OLD

	Bolivian Campesinos			Peruvian Campesinos		
	Male	Female	Combined Average	Male	Female	Combined Average
Unable to speak Spanish	40%	77%	59%	53%	88%	71%
Unable to read and write Spanish	43	78	61	55	92	74
Unable to read, write, and speak Spanish	39	77	58	50	87	69

accumulated in the field indicate that the Bolivian campesinos were slightly better educated than their Peruvian counterparts (table 13). This increased education has led to a desire for even more. Of the campesinos interviewed 82 percent of the Bolivians professed a desire that their children obtain a primary (six years) or secondary (eleven years) level of education as compared with a similar desire on the part of only 69 percent of the Peruvians. Finally, the Bolivian campesino adults were observed to be more literate than their Peruvian neighbors.

SUPPORTING EVIDENCE

Other studies of Peruvian haciendas and Bolivian ex-haciendas in the Lake Titicaca region provide additional information which confirms most

of these findings and thus validates the references to the sampled haciendas and ex-haciendas as representative of those in the region. For example, the Viacha study of eleven ex-haciendas shows that the sixty sampled campesinos possessed an average of seven hectares of land and sixty-six head of livestock (U.A.O.'s) and cultivated approximately one and a half hectares.²¹

Another study found half the campesinos on three Altiplano ex-haciendas with incomes averaging \$125 from outside employment.²² Likewise, a sample study of fifty haciendas in the department of Puno, Peru, provides evidence which indicates that the campesinos on these estates earned approximately the same income as the Peruvian campesinos interviewed in the field. According to this report the average campesino had exclusive use of about six hectares of land, owned between 125 and 220 head of livestock (U.A.O.'s) and shepherded between 300 and 600 U.A.O.'s per family.²³ In short, because they so closely resembled the Peruvian campesinos interviewed by this writer in terms of resources, production, and productivity, it is reasonable to expect their incomes to have been quite similar. In only one respect were the haciendas investigated by this writer different—all four of these haciendas paid their campesinos the minimum wage, while only half of the fifty haciendas investigated by the Agrarian Reform Office fully complied with the decree. But in general, there is every reason to expect the incomes of other campesinos in the region, both Peruvian and Bolivian, to approximate those of the campesinos interviewed by this author. Were it not for compulsory wage payments, the Peruvian campesinos would have had much lower incomes and standards of living than the Bolivians. Since this law has only been in existence since 1964, the Bolivian campesinos in the region, until very recently, probably had a much higher income than the Peruvian campesinos.

There is also additional evidence to support the study's findings that the Bolivian campesinos were more educated and literate than their Peruvian counterparts. In the Bolivian sector the Viacha study found 46 percent of the adult campesinos unable to speak Spanish and 50 percent illiterate. The study of fifty haciendas in the department of Puno, Peru, found one-half to have no schools²⁴ and the remainder to be "deficient." It has been estimated that 43 percent of the rural children between the ages of five and fourteen in the department of Puno were enrolled in school during 1963. The same report estimated the rural illiteracy rate for adults in the department to be 71 percent.²⁵ Since these estimates are similar to those arrived at by this author based upon independent samples, they lend

support to the contention that the Bolivian campesinos on the ex-haciendas in the region were more literate and more educated than the Peruvian campesinos on the other side of the border.

THE EFFECTS OF THE BOLIVIAN LAND REFORM UPON HUMAN RESOURCES

Once again, the question arises as to what extent these differences in freedom, mobility, income, and education between the Bolivian campesinos and the Peruvian campesinos can be attributed to the Bolivian land reform of 1953. Did the tenancy conditions of the Bolivian latifundio land-tenure system restrict the freedom and mobility of the Indian tenants, and were these arrangements largely responsible for their low standards of living, education, and literacy? And if so, did the Bolivian land reform make it possible for the Bolivian campesinos to achieve higher incomes, standards of living, and education?

INCOME AND CONSUMPTION BEFORE AND AFTER THE LAND REFORM

To reiterate, the Peruvian haciendas investigated in many respects did not resemble the prereform Bolivian haciendas. This is most obvious with respect to the tenancy arrangements. Below is a list of the rights and obligations of the Bolivian hacendado and his Indian tenants under the prereform latifundio land-tenure system.

Obligations of the Hacendado

1. To provide each colono with a tract of cultivable land, called a sayaña, from which he is entitled to all production and upon which he can build his own house out of such materials as are at his disposal. This sayaña includes the piece of land for his house and a composite of fragmented parcels in various *ainokas*—tracts of land devoted to a particular crop each year and rotated so that one year it is planted in potatoes, the next in barley, etc.
2. To allow the colono certain rights to pasture his livestock on hacienda land which is not being either used for crops or reserved exclusively for grazing the hacendado's livestock.
3. To grant the colono certain rights to irrigation water which is not being used on the lands exclusively reserved for the hacendado.
4. To furnish the colono with coca and occasionally a noonday meal during periods of heavy labor such as seeding, harvesting, etc. It

was often customary to provide the campesino with alcohol for the festivities that usually followed occasions such as a good harvest.

Obligations of the Colonos

1. To devote three days of each week (usually Monday, Tuesday, and Wednesday) to the lands or properties of the hacendado. During the cropping seasons the colono worked as many days as were needed to complete the tasks—which often exceeded the customary three day per week obligation.²⁶
2. To furnish his own tools, oxen, burros, etc., as well as family members to prepare, seed, and harvest the crops of the hacendado and carry the produce to market or the town house.
3. To assume certain responsibilities for the care of the hacendado's livestock, land, and buildings.
4. To prepare periodically the products of the hacienda such as *tunta* and *chuño* ("dehydrated potatoes"), etc.
5. To provide certain personal services to the hacendado and administrator at both the estate and town house. These services included kitchen duties, collecting fuel, running errands, etc.²⁷

Before the land reform the Bolivian landowners, with few exceptions, did not pay their laborers and tenants a money wage, but they did demand a great deal of the colono's labor-time for their estates. Because the Bolivian campesino had about the same quantity of land and livestock before the land reform as he does today but substantially less labor-time, he probably produced less on his *sayaña*. In addition, because a great deal of his labor-time was expended in shepherding the landowner's animals, working his lands, and providing him with personal services, the Indian tenant was not free to engage in outside employment. Therefore, one can be reasonably certain that the Bolivian campesinos before the land reform did not earn money income outside the estates as they do today.

There can be little doubt that the Bolivian land reform gave the campesinos the freedom, mobility, and time which has enabled them to obtain greater income. In addition, the Bolivian campesinos not only had higher per capita incomes in 1964–1965 but also supported approximately 50 percent more people on the same estate lands than they did before 1953. Because the Bolivian land reform redistributed most of the land previously used exclusively by the landowners to these new campesinos, it is the redistribution of labor-time which was the most significant benefit received by the ex-colonos. While it cannot be denied that the higher income

and standard of living enjoyed by the Bolivian campesinos were achieved largely at the expense of the expropriated landowners, neither can it be denied that a part of the increased campesino income was a result of their increased output on the former estate lands and their outside employment.

This redistribution of income, in turn, created for the first time in Bolivia's history a mass consumption demand in the agrarian sector for manufactured products which could be domestically produced. Unlike the landowners of prerevolutionary days, the campesinos did not consume imported goods. Unfortunately, neither did they purchase investment goods such as fertilizer, tools, etc. Even more regrettable from a developmental point of view was the inability of the domestic manufacturing sector to provide the clothing, bicycles, transistor radios, etc., which the campesinos purchased.

EDUCATION AND LITERACY BEFORE AND AFTER THE LAND REFORM

The Supreme Decree of August 19, 1936, required all Bolivian haciendas with more than twenty-five colono families to maintain a school for the education of their children. However, as in Puno, Peru, today, many of the Bolivian landowners did not comply with the law. For example, the 1946 ministry of agriculture study reported approximately one-fifth of the sampled haciendas to be without schooling of any type, in violation of the law. Also, where schools were provided, the facilities were reported to be "deficient"; only 11 percent of the school-age children were in attendance, the school buildings were "inadequate," the teachers "underpaid," and the quality of teaching "substandard." The study also pointed out that the Indian tenants themselves were often required to pay the salaries of the teachers. The end result of this latifundio educational system was an illiteracy rate as high as 97 percent on some of the haciendas investigated.²⁸ To the Bolivian landowners, the cost of educating the Indian children on their estates was very real and current, whereas the benefits to them, if any, were intangible and remote. William H. Nicholls recognized this problem when he wrote:

Increasingly, the principle source for financing social overhead, the socio-politically dominant landlord class will rarely be willing to tax itself in order to support such public services as education and agricultural extension.²⁹

In sum, the latifundio land-tenure system was largely responsible for the low educational level and high illiteracy rate of the rural population in

the Bolivian sector of the region before the land reform. Undoubtedly, such a low level of investment in human resources contributed to the relatively poor economic performance of these prereform haciendas.

In the Bolivian sector of the Lake Titicaca region, education has greatly increased since the land reform of 1953. Because the Bolivian campesino was no longer required to work for the landowner and because his small *sayaña* never did require all his family's labor and time, he, and especially his children, experienced enforced leisure. In contrast to the landowners' expenses, the cost of education to him was nominal in both money³⁰ and foregone opportunity and the potential benefit great. William Carter, who also has found education to be permeating the Bolivian ex-haciendas, has given one of the reasons for it:

The new roles of the syndicate leaders, particularly those of the secretary general and recording secretary, require these officials to be men with both a speaking and writing knowledge of Spanish. Since schools are a fairly recent innovation in the rural areas of the Altiplano and just about the only bilingual people are those who have attended formal classes, this requirement practically rules out the elder men as candidates for places of authority. Thus, the very basis of qualification for leadership has been altered. Youth has replaced age.³¹

It should be emphasized that this increase in education is in the form of more education, not a better quality of education. In addition, the Bolivian land reform may not have been the sole factor responsible for the postrevolutionary surge in campesino education and literacy. Apparently, however, the new land-tenure system is more conducive to the development of human resources than was the former system.

POSSIBLE EFFECTS OF THE BOLIVIAN LAND REFORM ON THE PERUVIAN SECTOR

Before summarizing, a slight digression is warranted to analyze the effects of the Bolivian land reform upon the economic performance of the haciendas and human resources in the Peruvian sector of the Lake Titicaca region. Since the Bolivian land reform undoubtedly influenced the Peruvian lawmakers in the passage of the 1964 Punonian agrarian reform and minimum wage decrees, it was also partly responsible for a number of changes in the Peruvian sector of the Lake Titicaca region. Since 1964 there has occurred an exodus of Peruvian campesinos from the hacienda to the indigenous communities and towns within the department as well as to the cities of Arequipa and Lima. In addition, the landowners have been investing in a better breed of livestock and improved agricultural

machinery. These changes have given rise to a greater specialization in ranching and thus to a more extensive use of the land. As a result, labor productivity has undoubtedly increased. For the hacendado, these changes have probably contributed to a more efficient use of the labor resource and a more inefficient use of land. Production for the market undoubtedly has increased, especially the sale of wool abroad.

From a macroeconomic viewpoint the forced migration from the haciendas intensified the population pressure on the *minifundios* ("small peasant farms") and indigenous communities in the area. This caused an increase in the farming of more marginal and less fertile land than that which was lying idle on the large haciendas. In addition, this forced migration to the overcrowded towns and cities increased the numbers of unemployed and poor urban dwellers.

However, these decrees did reduce the campesino populations on the haciendas and made wage payments to those remaining compulsory, all of which meant a higher income and standard of living for the remaining Peruvian campesinos. The greatest production cost of the sampled haciendas was wage payments. Prior to the 1964 minimum wage decree, this cost was virtually nonexistent. This higher income has indirectly enabled the hacienda campesinos to obtain more freedom, education, and literacy. Unfortunately, there is no way of determining whether these changes would have occurred in Peru had there been no land reform in Bolivia.

SUMMARY AND CONCLUSION

The primary purpose of this chapter was to analyze the socioeconomic effects of the Bolivian land reform upon human resources in the Lake Titicaca region by means of a comparison of Peruvian haciendas and Bolivian ex-haciendas. Most striking was the remarkable similarity in the poor economic performance of those different agricultural units of production operating under dissimilar tenure conditions. Neither the haciendas nor the ex-haciendas were realizing economies or diseconomies of size under existing technological and institutional conditions. Indeed, no definitive value-neutral statement could be made about the relative efficiency of either group. With respect to technology, livestock density per hectare, total production, capital productivity, and production for the domestic market, the haciendas and ex-haciendas in the region were virtually indistinguishable.

The most differentiating feature of these land-tenure systems was their utilization of human resources. On the Bolivian ex-haciendas, the high population density and incomplete use of campesino labor-time largely account for their relatively higher land productivity and employment, as well as their lower labor productivity and agricultural surplus. In spite of the much lower labor productivity on the ex-haciendas, the Bolivian campesinos still earned greater per capita incomes during the agricultural year 1964–1965 and, apparently, enjoyed a higher standard of living. In large part this can be attributed to the lower demand placed on their labor and time by ex-hacienda production, enabling them to seek outside employment and engage in more marketing activity. Finally, the Bolivian campesinos were observed to be better educated, more literate, and better integrated into both the market economy and society than their Peruvian counterparts.

It was also emphasized in this chapter that the Bolivian haciendas in the region were, to a significant degree, mere agglomerations of small Indian *sayañas*. With the advent of the Bolivian land reform, the Indian tenants obtained possession of their *sayañas*, and most of the land previously used exclusively by the landowners was redistributed to new campesinos. Population on the ex-haciendas increased and more marginal land was put into production. As a result, total production increased, labor productivity decreased, and capital (livestock) productivity remained virtually unchanged. Total production as well as market production exceeded prereform levels, largely because of the increased inputs of marginal land and labor. Because no size economies were realized by the Bolivian haciendas, none were lost as a consequence of the land reform. Whether any potential size economies were therefore destroyed by the Bolivian land reform is a purely academic question. The creation of small economic units of production does not, however, preclude taking advantage of size economies through cooperative efforts, if capital funds and new technology were made available to the Bolivian campesinos through state agricultural extension and credit services. Finally, because alternative employment in Bolivia is limited, the increase in marginal subsistence farming might be considered an efficient allocation of resources in the short run.

On the one hand, contrary to the expectations of some land-reform proponents, this analysis indicates that the Bolivian land reform was not a panacea for the Lake Titicaca region's agricultural and economic problems. On the other hand, contrary to the dire predictions of land-reform opponents, no evidence was found to indicate that the region's agricultural and general economic efficiency and progress have grievously suffered as

a consequence of land reform. These results support those who say that institutional changes such as the Bolivian land reform have little effect upon production, productivity, and efficiency in the short run.

However, in the Lake Titicaca region it was man, not land, capital, production, or productivity, who underwent the greatest transformation with the implementation of the Bolivian land reform. The redistribution of land and, above all, labor and time made it possible for the Bolivian campesinos to earn higher per capita incomes from production on the ex-haciendas, to increase their marketing activity, and to engage in outside employment. Their increased income not only raised the campesinos' standard of living but also created an agrarian demand for manufactured products capable of domestic production.

The Bolivian land reform was not merely a redistribution of land, labor and time, or even income; it was simultaneously a redistribution of opportunity, freedom, and power. The campesinos in the region are gradually becoming more educated, literate, and integrated into the social, political, and economic life of the nation. Where previously the campesino paid a labor tax for the land he used, as of 1969 he pays no tax at all and is the owner of productive private property.³² If private property is truly the institution which "turns sand into gold," then these new property owners have as their task what the absentee landowners failed to accomplish. If the existence of a socially, occupationally, and geographically mobile labor force is conducive to economic efficiency and development, then the creation of this institution by the Bolivian land reform augurs well for the attainment of these national goals. Bolivian society is no longer divided into Indians and Bolivians as before the MNR revolution and land reform, and the uncertain future of Bolivia will undoubtedly be greatly influenced by the campesino majority who are now free either to succeed or to fail on their own merits. The full impact of these changes will probably not be realized, however, until at least decades, and perhaps generations, have elapsed.

NOTES

1. *Land tenure* is the term used for all rights and relationships that have been created among men to govern their affairs with respect to the land. *Land tenancy* is the system under which land is operated and its product divided between the operator and owner.

2. Erich H. Jacoby et al., *Inter-Relationship between Agrarian Reform and Agricultural Development*, Food and Agricultural Organization of the United Nations (Rome, Italy, September 1953), p. 63.

3. Bolivia, Junta Nacional de Planamiento, *Plan nacional de desarrollo económico y social, 1962-1971* (La Paz, 1961).

4. *Medium properties and agricultural enterprises* were defined as those estates which use wage labor, modern technology, capital equipment, and produce for the market.

5. Víctor Paz Estenssoro, *La revolucion boliviana* (La Paz, 1966), p. 19.

6. See map in figure 1 on p. 306 for the location of the sampled haciendas and ex-haciendas.

7. See ONERN y CORPUNO, *Program de inventario y evaluacion de las recursos naturales del departamento de Puno*, vol. 5 (Lima, 1965), chap. 7.

8. In accordance with the provisions of the Peruvian Ley de Reform Agraria no. 15037 of November 25, 1964.

9. Because the material in this and the following section of the study has been published elsewhere, only the salient findings will be summarized in this chapter. For a more detailed presentation of this economic analysis of the haciendas and ex-haciendas, the reader may consult my "Land Reform and Its Effect Upon Production and Productivity in the Lake Titicaca Region," *Economic Development and Cultural Change* (April 1970), pp. 410-50.

10. This difference in land use was not a consequence of soil fertility, irrigation, or surface configuration. Neither the haciendas nor the ex-haciendas irrigated more than a small portion of their pastures. Also, hilly land is often more suitable for cultivation than level land since it affords some protection against frosts.

11. On two of the haciendas investigated, the administrators personally managed the estates only when their organizing abilities were most needed—during planting, harvesting, shearing, etc. Indeed, this was not always the case; this writer arrived at one of the haciendas with the administrator to find the land prepared and the seed planted, all accomplished without the help of the administrator or the new tractor.

12. See table 14 for a breakdown of these total value outputs by product and producer.

13. See table 15 for a breakdown of this production for the market by product and producer.

14. Although the Bolivian and the Peruvian campesinos owned approximately half as many sheep as the Peruvian landowners, they sold almost no wool. According to the agricultural experts of the Utah Team for AID/Bolivia, there is a potential market for this criollo wool and the minimum wool export value to Bolivia is estimated to be about \$12 million a year. Kenneth N. Roberts et al., *Bolivian Wool: A Source of National Wealth*, mimeographed (AID, January 1966).

15. Sol Tax, *Penny Capitalism* (Chicago, Ill., 1963), p. 12.

16. Theodore W. Schultz, *Transforming Traditional Agriculture* (New Haven, Conn., 1964), p. 131.

17. Philip M. Raup, "The Contribution of Land Reforms to Agricultural Development: An Analytical Framework" *Economic Development and Cultural Change*, 3 (October 1963), p. 13.

18. See tables 16 and 17 for this difference in market price.

19. It has been suggested that the Indians chew coca to deaden the pain of the hard labor they are required to perform. This study seems to confirm this proposition inasmuch as the Peruvian campesinos did work harder than the Bolivians and chewed more coca.

TABLE 14
 VALUE OF AGRICULTURAL PRODUCTS SOLD AND CONSUMED
 (In Dollars)

Product	Peru			Bolivia		
	Campesinos	Hacendados	Total	Cooperatives	Campesinos	Total
<i>Animal</i>						
Sheep	\$ 5,159	\$ 46,166	\$ 51,325	\$1,117	\$ 18,258	\$ 19,375
Cattle	4,198	14,397	18,595	215	28,665	28,880
Alpaca & Llama	605	65	670	—	3,660	3,660
Pigs	20	—	20	90	3,185	3,275
Wool	200	64,890	65,090	475	1,475	1,950
Milk	—	9,300	9,300	—	—	—
Cheese	3,300	3,185	6,485	525	19,965	20,490
Hides	2,550	3,450	6,000	720	5,955	6,675
Subtotal	\$16,032	\$141,453	\$157,485	\$3,142	\$ 81,163	\$ 84,305
<i>Crop</i>						
Potatoes	\$ 675	\$ 3,995	\$ 4,670	\$ 960	\$ 26,490	\$ 17,450
Quinoa	285	535	820	20	1,100	1,120
Cañahua	340	75	415	—	1,100	1,100
Barley	425	1,800	2,225	125	14,265	14,390
Habas	—	—	—	—	4,790	4,790
Oca	—	—	—	—	15,900	15,900
Subtotal	\$ 1,725	\$ 6,405	\$ 8,130	\$1,105	\$ 63,645	\$ 64,750
Total	\$17,757	\$147,858	\$165,615	\$4,247	\$144,808	\$149,055
Plus	—	4,630 ^a	4,630 ^a	—	—	—
Grand Total	\$17,757	\$152,488	\$170,245	\$4,247	\$144,808	\$149,055

a. This figure is an imputed value for crop production on forty hectares of hacienda IV based upon the performance of the other haciendas.

TABLE 15

VALUE OF PRODUCTS SOLD BY THE PERUVIAN HACIENDAS AND BOLIVIAN EX-HACIENDAS

(In Dollars)

Product	Peru			Bolivia		
	Campeños	Hacendados	Total	Cooperatives	Campeños	Total
<i>Animal</i>						
Sheep	\$1,194	\$ 40,539	\$ 41,733	\$ 978	\$ 7,587	\$ 8,565
Cattle	4,106	14,349	18,455	217	26,861	27,078
Alpaca & Llama	46	—	46	—	3,226	3,226
Pigs	—	—	—	88	2,457	2,545
Wool	—	64,899 ^a	64,899	475	—	475
Milk	—	9,298	9,298	—	—	—
Cheese	1,650	1,097	2,747	145	7,898	8,043
Hides	23	2,604	2,627	—	185	185
Subtotal	\$7,019	\$132,786	\$139,805	\$1,903	\$48,214	\$50,117
<i>Crop</i>						
Potatoes	\$ —	\$ 1,250	\$ 1,250	\$ 120	\$ 414	\$ 534
Quinoa	—	—	—	21	40	61
Cañahua	—	388	388	—	—	—
Barley	—	—	—	125	45	170
Habas	—	—	—	—	266	266
Oca	—	—	—	—	303	303
Subtotal	\$ —	\$ 1,638	\$ 1,638	\$ 266	\$ 1,068	\$ 1,334
Total	\$7,019	\$134,424	\$141,443	\$2,169	\$49,282	\$51,451
Plus	—	1,180 ^b	1,180 ^b	—	—	—
Grand Total	\$7,019	\$135,604	\$142,623	\$2,169	\$49,282	\$51,451

a. Of this figure, \$1,104 is the value of alpaca wool sold; the remainder is the value of sheep's wool.

b. This figure is an imputed value for crops sold by hacienda IV based upon performance of the other haciendas.

TABLE 16
AMOUNTS AND AVERAGE PRICES OF PRODUCTS SOLD AND CONSUMED ON FOUR BOLIVIAN
EX-HACIENDAS
(In Dollars)

Product	Campesino Cooperatives		Campesinos	
	Number	Average Unit Price ^a	Number ^b	Average Unit Price ^a
Sheep				
Rams	36	\$ 7.25	2,336	\$ 4.65
Ewes	186	4.60	1,692	4.30
Lambs	—	—	56	2.15 ^c
Cattle				
Bulls	1	66.65	376	65.40
Cows	2	75.00	76	43.25
Calves	—	—	20	39.35
Llamas	—	—	436	8.40
Pigs	13	6.75 ^d	472	6.75
Hides	379	1.90	3,220	1.85
	Pounds	Average Unit Price ^a	Pounds	Average Unit Price ^a
Sheep wool	1,900	\$ 0.25	5,896	\$ 0.25 ^d
Cheese	1,050	0.50	49,912	0.40
Potatoes	16,000	0.03	883,000	0.03
Quinoa	700	0.03	43,960	0.025
Cañahua	—	—	44,420	0.025
Barley	5,000	0.025	713,220	0.02
Habas	—	—	136,780	0.035
Oca	—	—	530,048	0.03

a. All prices are those received in the market for products sold except where indicated.

b. Total amounts sold and consumed are based upon the statistical averages of those campesinos interviewed.

c. Estimated price based upon the assumption that a lamb, on the average, is worth half the value of an ewe.

d. Imputed prices based upon the market prices received by the campesinos or cooperatives.

20. However, the larger size of the average campesino animal herd might be viewed as greater savings on their part since livestock is the traditional campesino bank account.

21. *Estudio económico estadístico del Canton Viacha*, mimeographed (La Paz, 1965).

22. Kelso L. Wessel, *Social-Economic Comparison of Eight Agricultural Communities in the Oriente and the Altiplano*, Department of Agricultural Economics of Cornell University, mimeographed (La Paz, June 1966), p. 75.

TABLE 17
 AMOUNT AND AVERAGE PRICES OF PRODUCTS SOLD AND CONSUMED ON FOUR PERUVIAN
 HACIENDAS
 (In Dollars)

Product	Campesinos		Hacendados	
	Number ^a	Average Unit Price ^b	Number	Average Unit Price ^b
Sheep				
Rams	9	\$ 3.75	3,463	\$ 6.05
Ewes	1,825	2.80	4,544	5.40
Lambs	11	1.40 ^a	250	2.70
Cattle				
Bulls	59	45.65	138	50.60
Cows	49	30.70	116	58.15
Calves	—	—	15	44.75
Llamas & Alpacas	119	5.10	13	5.10 ^d
Pigs	3	6.75	—	—
Hides	1,700 ^a	1.50 ^d	2,300	1.50
	Pounds ^a	Average Unit Price ^b	Pounds	Average Unit Price ^b
Alpaca wool	300 ^a	\$ 0.26	2,300	\$ 0.48
Sheep wool	800 ^a	0.15	155,590 ^f	0.41
Cheese	6,000	0.55 ^d	5,795	0.55
Potatoes	27,063	0.025 ^d	159,846 ^a	0.025
Quinoa	9,504	0.03 ^d	17,850 ^a	0.03
Cañahua	11,385	0.03 ^d	2,439 ^a	0.03
Barley	17,000 ^a	0.025 ^d	72,110 ^a	0.025
Milk	—	—	116,221 qts.	0.08

a. Total amounts sold and consumed are based upon the statistical averages of those campesinos interviewed.

b. All prices are those received in the market for products sold except where indicated.

c. Estimated price based upon the assumption that a lamb, on the average, is worth half the value of an ewe.

d. Imputed value based upon the market prices received by the campesinos or hacendados.

e. These figures are estimates based upon the number of animals, hectares cultivated, and average yields.

f. An estimated 95,000 of this figure is an imputed amount for hacienda IV based upon the number of sheep and average yield.

g. Crop production information for one hacendado is not included in these figures.

23. Sample study of haciendas in the department of Puno, Peru.

24. By law, the Peruvian haciendas were required to maintain a primary school only if the number of school-age children on the estate exceeded thirty.

25. ONERN y CORPUNO, *Program de inventario y evaluacion*, pp. 25-26.

26. The rights and obligations varied among colonos within a hacienda. If a colono was a *cuarta persona* ("fourth of a person"), he was obliged to render three labor days of service per week to the hacendado in return for the use of a small tract of land. However, if he was a *media persona* ("half of a person"), he was required to provide the landowner with twice as much labor for the use of twice as much land. Finally, if he was a *persona* ("full person"), he and his family gave the hacendado twelve labor days of service each week for the use of four times as much land as a *cuarta persona*.

27. *Estudio socio-económico en las provincias de Omasuyos, Ingavi, y Los Andes del departamento de La Paz* (La Paz, 1946), pp. 24-26, 85-86.

28. *Ibid.*, pp. 27-28.

29. William H. Nicholls, "An Agricultural Surplus as a Factor in Economic Development," *Journal of Political Economy*, 71 (February 1963), p. 17.

30. At the time of this study, the Bolivian government paid the salaries of the rural schoolteachers and provided technical assistance for the construction of these schools. In addition, Bolivia had no income or land tax.

31. William E. Carter, *Aymara Communities and the Bolivian Agrarian Reform*, University of Florida Monograph 24 (Gainesville, Fla., Fall 1964), p. 59.

32. President Barrientos submitted a bill to Congress in 1968 to tax rural land. As of the date of this writing, however, it has not been put into law.