

# Research Paper

INTERPRETING THE PARCELLATION OF  
PERUVIAN AGRICULTURAL PRODUCER COOPERATIVES

by

Jolyne S. Melmed

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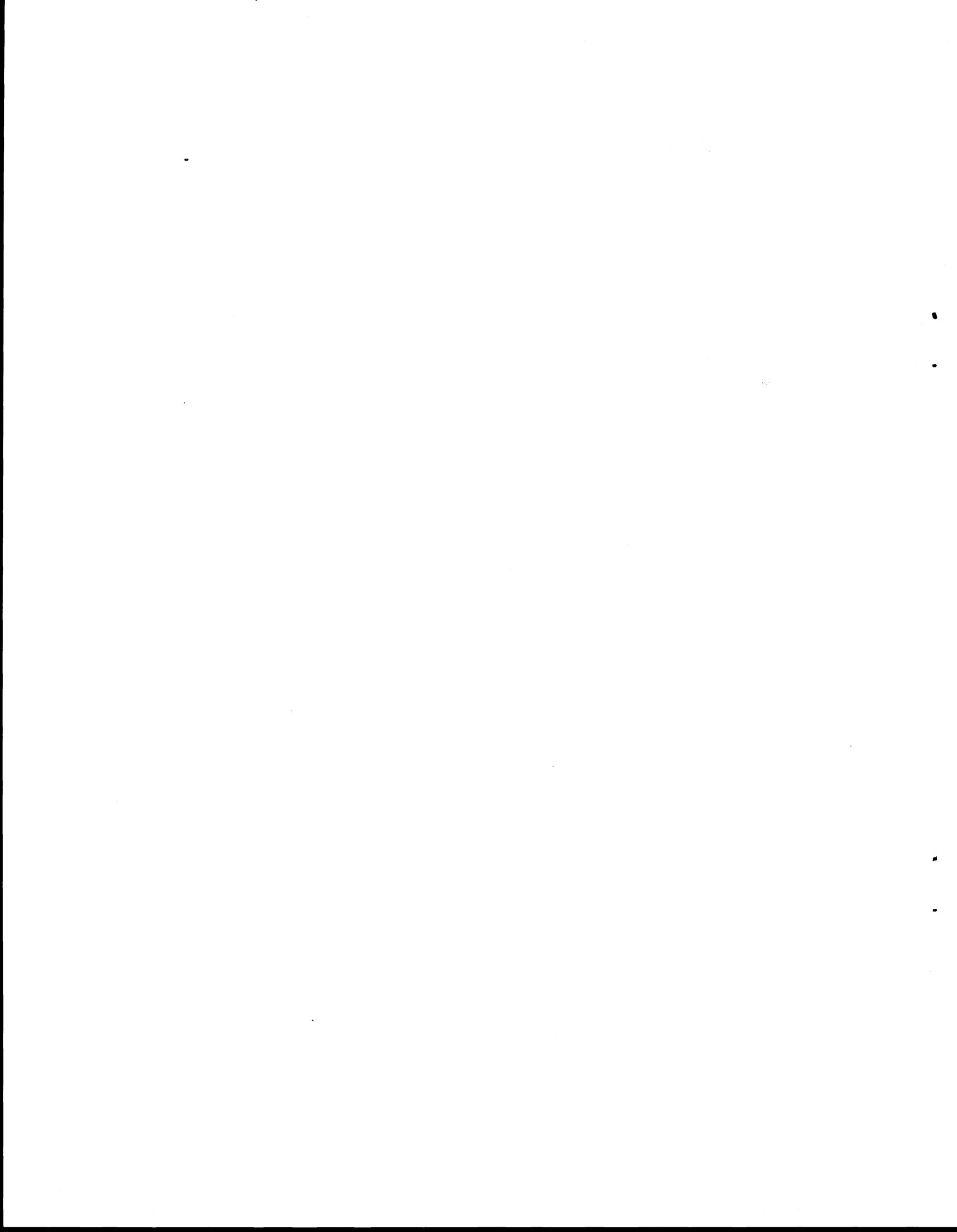
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All views, interpretations, recommendations, and conclusions expressed in this publication are those of the author and not necessarily those of the supporting or cooperating organizations.



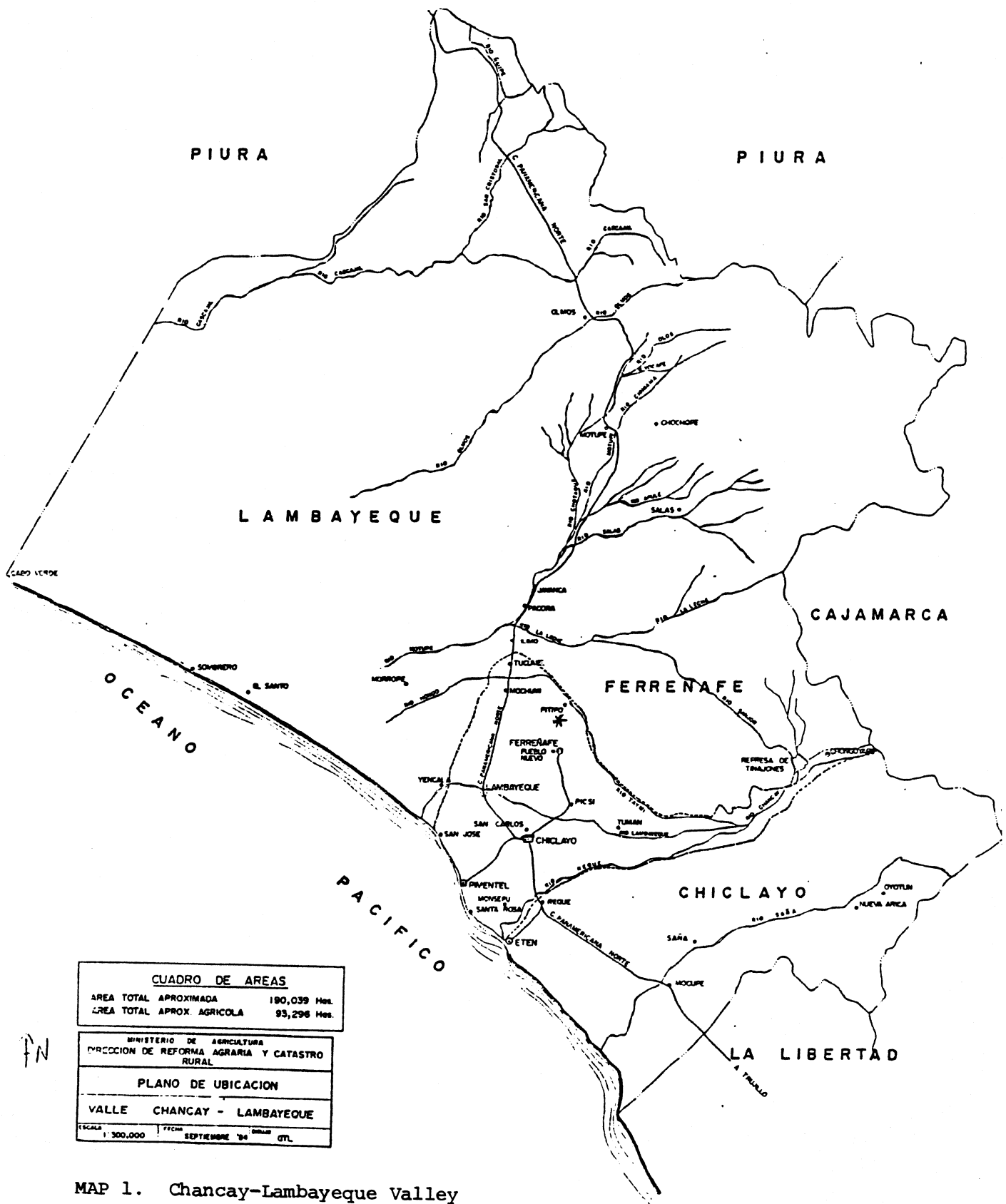
**Interpreting the Parcellation of  
Peruvian Agricultural Producer Cooperatives**

**CONTENTS**

	<u>Page</u>
<b>1. The Setting: Peru's Agrarian Reform and Cooperative Policies</b>	<b>3</b>
The Character of Agrarian Reform in Peru	3
The Goals of Velasco's Agrarian Reform	6
<b>2. The Causes of Parcellation</b>	<b>9</b>
<b>3. Conclusions</b>	<b>33</b>
<b>References</b>	<b>35</b>

MAP, FIGURES, TABLE

Map 1.	Chancay-Lambayeque Valley	v
Map 2.	Cooperatives in Chancay-Lambayeque Valley	vi
Figure 1.	Typical Organization Chart of a CAP	7
Figure 2.	Mean Profitability per Hectare, Chancay-Lambayeque	15
Figure 3.	Mean Profitability per Member, Chancay-Lambayeque	16
Figure 4.	Mean Profitability per Member, Cafete and Chincha	17
Figure 5.	Debt/Equity Ratio	18
Figure 6.	Cost and Price Trend: Sugar	20
Figure 7.	Cost and Price Trend: Potato	21
Figure 8.	Cost and Price Trend: Maize	22
Figure 9.	Cost and Price Trend: Cotton	23
Figure 10.	Cost and Price Trend: Rice	24
Figure 11.	Real Financial Costs	25
Figure 12.	Maize Yield, Chancay-Lambayeque	29
Figure 13.	Cotton Yield, Chancay-Lambayeque	30
Figure 14.	Rice Yield, Chancay-Lambayeque	31
Figure 15.	Sugar Yield, Chancay-Lambayeque	32
Table 1.	Output/Hectare	27



CUADRO DE AREAS	
AREA TOTAL APROXIMADA	190,039 Hec.
AREA TOTAL APROX. AGRICOLA	93,296 Hec.

MINISTERIO DE AGRICULTURA  
 DIRECCION DE REFORMA AGRARIA Y CATASTRO RURAL

PLANO DE UBICACION  
 VALLE CHANCAY - LAMBAYEQUE  
 ESCALA 1:300,000 | FECHA SEPTIEMBRE '64 | DIBAJA GTL

MAP 1. Chancay-Lambayeque Valley



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Parcellation is the process by which collective ownership and management of productive assets evolves into a new set of property rights involving at least some degree of individual management and/or ownership. The parcellation of agricultural producer cooperatives is widespread in Latin America and has also occurred in China. Two points of debate surround this phenomenon. First, why does parcellation occur? And, second, what are the economic implications of the tenure change? These questions are interrelated and their answers together influence one's assessment of the fundamental desirability of parcellation. More particularly, we need to clarify from whose perspective and under what conditions parcellation is desirable.

At a most basic level, that of individual choice, one might assert that if parcellation is a voluntary choice, then the occurrence of parcellation is rational in the neoclassical sense and the individual decision-makers expect their welfare to increase. One might, therefore, want to conclude that parcellation is socially desirable. However, there are problems with this simple conclusion. First, parcellation is typically a democratic choice requiring only a majority vote among the CAP members. The welfare of those individuals who vote in favor of maintaining the cooperative structure will be decreased by parcellation. Furthermore, there often are nonvoting participants in cooperative production such as hired permanent or seasonal laborers. Parcellation may mean unemployment or displacement to lower-paying jobs and, hence, lower utility for these workers. Second, there may be unforeseen consequences of parcellation which could decrease the welfare of those who voted for parcellation. For example, cooperative members who have never operated individual farm units may not be aware of extant market imperfections which are biased against small-scale producers. Such market imperfections may impede the ability of the parceleros to realize their expectations of parceled production.

More generally, the economic implications of parcellation transcend the level of parcelero welfare. Changes in resource use and allocation which occur with the change in farm organization are not necessarily desirable from a more global economic perspective. That is, changes in the structure and performance of the agrarian economy will affect the welfare of other members of the society. Additionally, the immediate choice to parcel is a static, one-period decision which compares the

individual's status under parceled tenure with that under cooperative tenure given a particular historical context and status quo. That parcellation is optimal in a particular context of cooperative production (for example, one in which cooperatives have become financially insolvent) does not necessarily imply that parcellation is always preferable to cooperation. Finally, one must consider other forms of tenure.

Melmed and Carter (1987) analyze the consequences of parcellation in the northern Peruvian valley of Chancay-Lambayeque. Chancay-Lambayeque is a major producer of rice and sugarcane. Agrarian reform transferred huge commercial estates into cooperative production units beginning in 1969. Parcellation began de facto in 1978 and, by 1986, sixteen of the twenty-two nonsugar-producing CAPs were parceled.<sup>1</sup> The basic conclusion of the Melmed-Carter research is that while parcellation was an individually rational decision given the recent economic and political history of cooperative production in Peru (and also an expedient solution to the cooperative crisis from the perspective of a government which did not have many resources to allocate to nor political interest in revitalizing cooperatives), there are consequences of parcellation which call into question the general desirability of completely individualized tenure.

This conclusion rests on descriptive and statistical analysis of primary and secondary data collected by Melmed in 1986. Primary data on production (that is, input use and yields) and household characteristics were obtained for a sample of ninety *parceleros*. Using a list of farms generated from the Ministry of Agriculture's land registration maps, thirty producers were randomly selected from each of three ex-CAPs which differed in the degree to which a service cooperative was maintained. Similar data for production prior to parcellation were also collected from the accounting records of each of the three ex-CAPs in the sample. Additionally, time-series data on aggregate agricultural production and on prices in Chancay-Lambayeque were obtained from studies by local research institutes.

This information, particularly the historical data, is used in this paper to address the question of why parcellation occurs. The view presented is that we cannot infer from the advent of parcellation that cooperative production is simply an untenable institution. Rather, it is argued that while there are structural weaknesses in the design of agricultural producer cooperatives which often limit such enterprises in achieving their potential, the crisis of cooperatives has been greatly influenced by historical circumstances. The arguments made in the paper are primarily supported by examples from the Peruvian experience with cooperative land reform. Section one presents a brief account of the history of cooperative agriculture in Peru. The causes of parcellation

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1. Large agroindustrial cooperatives which produced primarily cane sugar have been excluded from the parcellation process because of administrative and financial complications.

are then analyzed in section two. The paper concludes with the suggestion that restructured cooperatives or mixed-tenure forms which combine the advantages of cooperative and private tenure may be a preferable alternative to parcellation. The implications of the discussion presented herein are combined with a brief synopsis of Melmed and Carter's analysis of the consequences of parcellation in support of this argument.

## 1. The Setting: Peru's Agrarian Reform and Cooperative Policies

### The Character of Agrarian Reform in Peru

Nineteen sixty-nine began a turbulent time for Peruvian agriculturalists. Land tenure changed drastically in response to economic crises both in the late 1960s and in the early 1980s. This section describes agrarian reform as it occurred in Peru.

Prior to the agrarian reform of 1969, Peruvian land tenure consisted primarily of a highly inequitable latifundia/minifundia system. Barraclough and Domike (1966, 395) indicate that in Peru in 1966, 88 percent of all farm units were classified as "subfamily: farms large enough to provide employment for less than two people with the typical incomes, markets and levels of technology and capital now prevailing in each region." These families owned only 7 percent of the country's agricultural land. On the other hand, 82 percent of the land belonged to the 1 percent of all farms classified as "multi-family: farms large enough to provide employment for over twelve people." In addition, coastal agroindustrial estates which employed mainly wage labor coexisted with semicomunal peasant villages in the Sierra region.

The idea of using cooperative land reform to redistribute land in a more equitable fashion was first proposed in the late 1920s by Victor Raúl Haya de la Torre, the first leader of Peru's Popular American Revolutionary Alliance (APRA) party. [APRA was Latin America's first multi-class party and has, from the onset, been the "number-one adversary" of the Peruvian military (Niedergang 1971, 455).] The idea reappeared in 1956 under the leadership of President Manuel Prado and, then, again in 1964 under the leadership of President Belaúnde. However, under these regimes, no action was taken. Pressure for the reform built in response to continual agricultural stagnation (Havens et al. 1983) and to increasing social tension arising from the gross inequality of wealth distribution. Finally, in 1969, under the nationalistic military leadership of General Velasco, a massive land reform was instituted in hopes of redistributing wealth and spurring productivity. A switch to collective tenure ensued.

The creation of reform enterprises was accomplished rapidly in the coastal areas by initially expropriating all farms over 150 hectares in area (Havens et al. 1983). Lastarria (1988) indicates that the extent of land redistribution and the number of rural families benefited by Peru's reform were greater than in any other Latin American country. However, although the reform was quite wide-ranging, there remained a

large number of middle-sized commercial enterprises as well as mini-fundistas and landless peasants. Cleaves and Scurrah (1980) provide information on landownership before and after reform which indicates that the goal of reducing the unequal distribution of land was partially achieved. However, the beneficiaries of the collective reform were mainly the permanent workers of the expropriated estates.

The reform created three tenure types. The organizational forms mandated by the reform law were: agricultural producer cooperatives (CAP), agrarian societies of social interest (SAIS), and peasant communities. Kay (1982, 150) defines the first two as follows:

**CAPs:** an indivisible production unit in which ownership and usufruct of all productive assets are collective . . . [workers] participate in CAP management through democratically elected bodies. Profits are only distributed after a series of obligatory deductions for reserve, investment, social security, education and development funds.

**SAIS:** like the CAPs but membership extends beyond the former estate workers . . . owned and managed by a service cooperative made up of workers from expropriated estates and a number of neighboring peasant communities designated as land reform beneficiaries . . . many consumers do not work on production units but continually receive part of the profits for infrastructural development. The rights of members to farm individual plots and to pasture animals on SAIS land continue where they existed before.

The last type, peasant communities, extended the pre-existing peasant group tenure of the highlands by allocating some of the expropriated estate lands to these villages, though cultivation occurred primarily on individual plots. It was planned that both SAIS and peasant groups would eventually become CAPs; however, this transition never occurred.

On the coast, CAPs prevailed. In contrast, the highland CAPs and SAIS were much larger than the estates which preceded them and met with more resistance from the local peasants. In fact, a de facto mixed reform occurred in the highlands as approximately one-half of the collective land remained in individual production units. This inability to enforce collectivization may be attributed to the nature of the pre-existing tenure system. Whereas the coastal peasants were used to working under central management and were, thus, more agreeable to the collective system, the highland CAP and SAIS members were more accustomed to smaller, more individualized activity. McClintock notes that while members of a peasant community "were bound by a common heritage and kinship and typically shared many community activities," land was cultivated individually (McClintock 1981, 71).

After the reform of 1969, 43.5 percent of Peru's agricultural land was owned by CAPs<sup>2</sup> (Cleaves and Scurrah 1980). By 1977, there were 1,358 CAPs. The average size of the coastal CAPs in 1974 was 2,364 ha. and the average number of members was 251, implying an average of 9.4 ha. per member (McClintock 1981, 91). The large average size of the CAPs reflects the existence of huge, agroindustrial sugar enterprises. Data presented in Gonzales (1985) indicate that the average size of the CAPs in the north-coast state of Lambayeque, the site of data collection for this study, is 865.8 ha. for the nonsugar-industry cooperatives (7.05 ha. per member) and 16,378 ha. for the sugar enterprises (the size of the sugar enterprises varies between 1,000 and 21,000 ha.).

The CAPs were located primarily in the coastal regions and are the focus of this analysis. There are two main reasons for this focus: (1) coastal agriculture in Peru is important because it produces for export and is the predominant source of rural/urban trade (Carter 1984a; McClintock 1981; and Caballero 1984); and (2) the CAPs most closely approximate fully collective enterprises.

At this point it is useful to present an aside on defining various types of participatory firms.<sup>3</sup> Ireland and Law (1982, 4) define a labor-managed firm as "an enterprise where members jointly engage in production of goods and services, where control rests with members in that the important policy decisions of the enterprise reflect the desires of members, and where income of members depends on the residual or surplus of the enterprise and the rules the enterprise adopts for sharing it." Notice that a distinction between owners and workers may still exist. Many agricultural labor-managed firms have the added feature that members jointly own the means of production (including land). The expression "fully collective enterprise" in this paper refers to an agricultural firm with all of the above characteristics. This broad characterization suits the Peruvian CAP model. Within the general model of the fully collective enterprise, the rules of the game can vary considerably. The next few paragraphs detail the rules particular to the Peruvian reform cooperatives.

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2. Prior to the reform, this land constituted the large-farm sector. After the reform, only 1.5 percent of the land was in private holdings greater than 100 hectares, whereas before the reform, 45 percent belonged to this size category.

3. It is useful to consider the nature of participatory firms in order to define more precisely the organizational structure of concern. Many variants of the labor-managed firm model of production are observed empirically. In the literature, the many variants are referred to under a few common labels, each with a more or less defined connotation, for example, commune, collective, cooperative farm, and so forth. The attributes of each institutional arrangement are critical to arguments regarding the productive performance of such enterprises.

Initially, the rules for the organization and functioning of the CAP were stipulated by the legal decree DS 240-69-AP, El Reglamento de Cooperativas Agrarias y Sociedades Agrícolas de Interés Social. A later law, El Reglamento de la Ley 15260, refined the original decree and became the general law of cooperatives (Ley General de Cooperativas). Bonfiglio (1985) discusses the working structure of the CAPs as specified by the cooperative law. His discussion is summarized below.

Figure 1 is a typical organizational chart of a CAP. While this picture shows the general operational structure of a CAP, it is not very revealing about the relationship among the different governing levels. In particular, the relationship among the general assembly, the administrative council, and the management is not as strictly hierarchical as depicted.

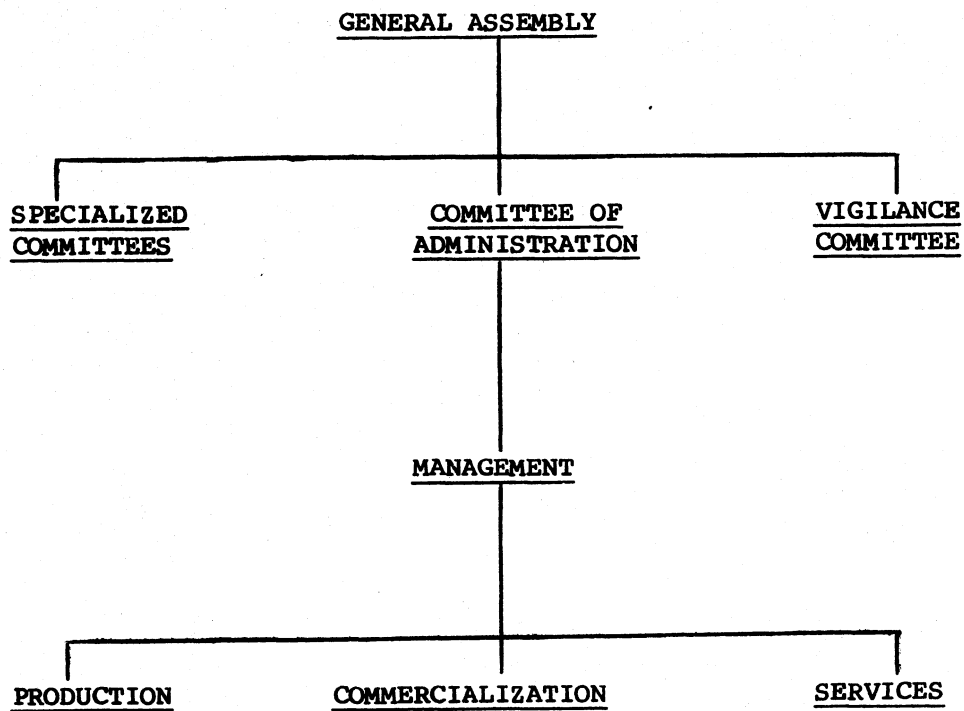
In all CAPs, the general assembly is the supreme decision-making body and carries out functions such as election of council members, oversight of financial statements, allocation of profits among members, oversight of production plans, and so forth. The administrative council is responsible for general administration--completing any required paperwork, disbursing financial resources, appointing a manager with the legally required characteristics, and the like. The manager, then, directs the day-to-day operation of the cooperative. The manager also participates in the general assembly and administrative council with voice but not vote. Bonfiglio notes that within this structure, the relative power in the cooperative lies with the manager. This is important because the cooperative law puts many conditions on who can be selected as a manager, generally requiring that the manager be hired from outside the CAP.

Bonfiglio also points out features of the Agrarian Reform Law (D.L. 17716) which reduced the extent of self-government achieved in the CAPs. In particular, while the agrarian debt was outstanding, the following restrictions were placed on the cooperatives: (1) CAPs were not permitted to sell the lands or capital goods of the enterprise; (2) wage and indirect income increases had to be approved by the Dirección General de Reforma Agraria (the government's agrarian reform agency); and (3) CAPs had to follow the required standards for personnel, for example, the manager, and any technical or administrative directives given by the agrarian reform agency. Bonfiglio states that, as a consequence of these rights maintained by the state until the agrarian reform debt was cancelled, the state was able to impose its choice of managers on the cooperatives when desired.

#### The Goals of Velasco's Agrarian Reform

Some pragmatic goals of the Velasco reform were to modernize agriculture; to increase the domestic food supply in order to support industrialization; to generate funds for industrialization by giving incentives for investment of expropriation benefits;<sup>4</sup> to maintain advantages of large-scale production such as irrigation management, lower costs of technical assistance provision, machinery and marketing

FIGURE 1  
Typical Organization Chart of a CAP



SOURCE: G. Bonfiglio, "Carácter de la gestión en empresas de la costa creadas por reforma agraria (1972-1978)," in Las parcelaciones de las cooperativas agrarias del Perú, ed. Gonzales and Torre (Chiclayo: Centro de Estudios Sociales "Solidaridad," 1985), p. 47.

services, and so on; to integrate the indigenous communities into the national economy; and to eliminate the power of the landed elites (Havens et al. 1983; Kay 1982). Niedergang (1971) suggests that the political goals of nationalization of foreign interests and of breaking the power of the APRA-dominated agricultural labor unions were also served by cooperative land reform in the coastal agroindustrial region.

Thus, the reform was both to be compatible with Peru's overall development plan, which was basically one of import-substitution industrialization (ISI) (Kay 1982) and to satisfy the demands of the revolutionary pressures. The agricultural sector, it was thought, could feed the growing urban labor force and the peasants would no longer be dominated by the landed elites. Petras and Havens (1981) indicate that the reform enterprises, while socialist in nature, were compatible with Peru's ISI development: "The agrocooperative set-up, apart from eliciting political support from the peasants to the regime, was seen as providing export earnings to help finance industrial growth and as growing inexpensive food to lower the costs of reproducing industrial wage labor in the cities." After considering the aforementioned motivations for Velasco's actions, Niedergang (1971) and Gal (1971) comment that the choice of cooperative land reform was practical rather than strongly ideological in motivation. The practical value of cooperative reform in Peru is emphasized by the fact that, as noted previously, this type of reform has been considered by leaders of various ideological positions.

As stated earlier, another major goal of the reform was to increase agricultural productivity. Initially, the reform achieved this as is witnessed in increasing output and wages. McClintock (1981, 247) summarizes the overall improvement between 1969 and 1976 as follows: "Overall, the Peruvian agricultural product, to which cooperatives contributed about half, grew approximately 7.8 percent in 1970, 3 percent in 1971, 0 percent in 1972, 2.4 percent in 1973, 1.8 percent in 1974 and 1 percent in 1975, for an average annual rate of 2.7 percent for the six years, versus an average annual rate of -1.3 percent for the four years 1965-1969." Both McClintock (1981) and Caballero (1984) note that this production growth occurred mainly in the coastal agroindustrial enterprises, secondarily in the production of crops for direct urban consumption, and the least in the highland enterprises. Additionally, disaggregated data in Maletta (1986) indicate that for some crops such as rice and sugarcane, which show lower growth rates in the postreform period than in the prereform period, mean absolute production levels were higher than in the prereform period.

The positive rate of overall growth reversed after 1976. Kay (1982, 161) states that in 1977, agricultural production grew 0.0 percent and declined by 3 percent in 1978. Several factors contributed to the reversal. First, the late 1970s was a period of severe inflation

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4. Niedergang (1971, 460) reports that if the expropriated landowners promised to invest in industry, they would be paid their compensation within five rather than twenty years.

and a general worsening of the macroeconomy. Second, a severe drought occurred in 1977-78. Finally, by the late 1970s, labor discipline problems were arising in the cooperatives. By the 1980s, Peruvian agriculture had once again stagnated. Correspondingly, structural change from collectivized to parceled production began apace and still continues.

Pressure for parcellation in Peru stemmed both from the bottom (expressed in member dissatisfaction) and from the top (expressed in contemporary government policy). By 1980, the cooperatives faced a growing financial crisis with decreasing profitability and worker motivation. Informal conversation with Peruvian colleagues indicates that, to some people, it appears that the government's interest in parcellation reflects the desire for a politically expedient and cheap solution to the country's agricultural problems. As in Chile, the ideological mood in Peru at the onset of parcellation was capitalist and in favor of private commercial agriculture. Additionally, it would have been costly to help the cooperatives out of their financial crisis and much of available money was being targeted to help quell the civil conflict in the Sierra region.

The structural change in response to the reform-sector crisis was initially quite varied by valley and by crop type. Weiner (1985) describes five basic types of structural change that occurred: (1) sectorization (the breaking down of a large CAP into a few smaller CAPs); (2) continuation of collective production after sales of parcels to disinterested members; (3) complete parcellation; (4) parcellation of landholdings with maintenance of some communal services including management and credit allocation; and (5) assignment of parcels to members with maintenance of some land under collective ownership and some communal services to individuals. He then details the extent of complete parcellation in many valleys of the coast. The range is very wide, from 100 percent of the enterprises in the valleys of San Lorenzo, Alto Piura, and Santa, to only 32 percent in Ica (Weiner 1985, 146). The later two forms of organization reflect the suggestion in the law<sup>5</sup> allowing parcellation that a service cooperative be formed. However, by late 1986, complete parcellation had become dominant in the coastal reform sector. Subsequent legislation requiring that permanent nonmember workers (eventuales) be given land and the need to sell machinery and other capital to pay the debts of the CAPs led to the dissolution of most mixed-form enterprises.

## 2. The Causes of Parcellation

The parcellation dynamic emerges out of the nature of collective enterprises and as a result of the impact of the political, economic, and social environment in which these enterprises operate. Within the

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5. In 1982, DS 001-82 AG legalized parcellation. This law and other legal precedents to parcellation are discussed on pp. 13-14.

literature which discusses labor-managed firms (LMF) in agriculture,<sup>6</sup> much attention is given to internal, or labor-supply, problems which seem inherent in the LMF model of production and which motivate the questioning of the collective enterprise. Internal problems stem from the behavioral decisions of individuals within the organization. Most frequently cited as bases for labor indiscipline are inadequate (in terms of incentives) remuneration systems and free-rider and rule-enforcement problems. Typically, it is argued that the relation between labor effort and income in LMF is not direct, and that therefore there is a tendency for free-riding. Additionally, it is argued that even when remuneration rules tie income directly to a member's productivity, the single-stranded nature of relations between supervisors and workers in private agriculture allows labor discipline to be more easily enforced than in the worker-managed firm. Thorough discussion of these issues is found in Carter (1984a, 1984b, and 1984c), Carter and Kanel (1983), Kanel (1982), Jensen and Meckling (1979), Kanel, Reed, and Carter (1985), and Putterman (1985b). It is often suggested that such problems make LMF unstable production entities which will inevitably be characterized by low productivity since effective enforcement of behavior is generally lacking.

In addition, a body of literature on Latin American agriculture (as well as Chinese, Israeli, and Soviet agriculture) highlights forces outside the control of members' current individual or group actions that appear to affect the performance of LMF. (Such factors will be referred to as "external" or "macro-environmental" factors in this paper.) Specifically, these issues are treated in Weiner (1985), Caballero (1984), Carter (1984c), Eckstein et al. (1978), Kay (1982), McClintock (1981), Nolan (1983), Stavis (1979), Mendez (1982), Feder (1974), Putterman (1984; 1985b), and Carter and Alvarez (1988). Some examples of "external" conditions enumerated in the literature are variations in technology, variations in weather, the initial resource base of the enterprise, macroeconomic conditions (for example, prices, subsidies), specific government policy aimed at LMF, government control of enterprise behavior, and managerial/administrative corruption. These conditions all affect enterprise profitability. Note that similar arguments can be made for private firms as well. However, two points need to be considered when comparing performance across organizational institutions. First, collective enterprises often begin operation with a low level of initial capital stock (both physical and human) relative to contemporary large-scale enterprises (or to their predecessors) because of decapitalization which often occurs with land reform. Second, collectives are

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6. The seminal articles on the topic of LMF are Ward (1958), Domar (1966), and Vanek (1970). For more recent literature, see Ireland and Law (1982), Carter (1987), Putterman and DiGiorgio (1985), Bonin (1977), Jensen and Meckling (1979), and Jones and Svejnar (1982, 1985). Bonin and Putterman (1985) provide a rather comprehensive review of the literature on LMF. These works vary in the definition of enterprise structure as well as in the definition of enterprise objectives. Much of the literature is devoted to the behavior of agricultural LMF.

politically and structurally "easier" targets for government policies, managerial corruption, and so on.<sup>7</sup> Thus, they are more likely to face externally induced constraints on their behavior. With these points in mind, the comparative advantage of various institutional arrangements under particular conditions must be considered.

It appears also that collective enterprises may be inherently less stable when faced with deteriorating macro-environmental conditions. Particularly, the previously discussed labor-discipline problems may escalate, for a variety of reasons (to be discussed later), and lead to enterprise nonviability. Additionally, state controls over various aspects of enterprise administration may limit the flexibility of the LMF in responding effectively to changing economic and environmental conditions (Stavis 1979; Stanfield 1985; and Carter 1984b). For example, Stanfield indicates that control of sales by a state-owned marketing board reduced the ability of collectives in the Dominican Republic to adjust to national-level economic fluctuations. This is also true in the case of the sugar-producing agroindustrial cooperatives in Peru.

Finally, several authors (Kay 1982; de Janvry 1981; and Caballero 1984) note the important bearing that a country's overall development strategy has on the functioning of the agrarian economy. As noted earlier, Peru followed an import-substitution industrialization (ISI) pattern of development. De Janvry, for example, points out that ISI development within disarticulated economies like Peru's implies discrimination against the agricultural sector. Basically, the industrialization strategy creates an environment of which many of the aforementioned external forces are an integral part. Thus, say authors like Kay and Caballero, in the context of ISI, state-dominated collectivized agriculture is predictably unstable in the long run.

As discussed in the literature, parcellation has been attributed to both the inherent behavioral dynamics of cooperative enterprises and the impact of the political, economic, and environmental climate in which these enterprises operate. While both types of explanation are important, neither argument alone is sufficient to explain the phenomenon. The current trend toward parcellation is better understood as the result of a cycle of interaction between these internal and external forces. The static choice to parcel depends on individuals' perceptions about enterprise profitability in the coming year, which are influenced, among other things, by labor-discipline problems and productivity (see Melmed 1987). Labor-discipline problems, however, do not generally

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7. Typically, the members of cooperatives have no political clout to bargain in the legislative process. Also, because cooperatives often originate as part of a government agrarian reform process designed to serve multiple goals of the government, tax and other legislation regarding cooperatives is easier to impose than it would be in the private sector. Finally, those with control of the financial resources of the cooperative do not face the same accountability as do corporate managers. Other members often have to recourse to curb corruption.

arise until after several years of cooperative production. Carter (1987) observes that typically there is a period of high productivity, seemingly cooperative behavior, followed by increasing labor-discipline problems and declining productivity. In general, the performance record of agrarian reform cooperatives is mixed; the length of the period of successful production varies among enterprises. In the Peruvian case, for example, the reform sector initially achieved its main goal of increasing agricultural productivity. However, the positive rate of overall growth reversed after 1976 (see discussion on pp. 8-9).

This pattern can be understood by reviewing the historical context of the contemporary choice to parcel. In particular, a worsening climate (for example, economic recession and weather crises) can induce the degeneration of a situation in which individuals coordinate their actions to their mutual benefit to a situation in which cooperative members act in an uncoordinated manner.<sup>8</sup> The latter situation is characterized by low productivity and lower utility for all cooperative members. Parcellation follows as an individually rational response to frustration over stagnant and unprofitable collective agriculture.<sup>9</sup> The degeneration of cooperation occurs as individuals lose their original willingness to cooperate in response to signals which indicate that their future gains from cooperation are threatened by economic and/or political forces.

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8. An example in which such dynamics are apparent is the case of the Honduran agrarian reform enterprise *Empresa Asociativa Campesino de Isletas* (EACI). Briefly, this "worker-managed" banana plantation began production after the government expropriated from Standard Fruit Company (SFC) land devastated by Hurricane Fifi in 1975. The members of EACI rapidly brought the lands back into cultivation and achieved productivity levels equal or greater to productivity under the management of SFC. After a short time of successful production, EACI was faced with military and state intervention in the management of the enterprise, corruption which severely strained the finances of the firm, and other financial distortions which led EACI to a position of severe indebtedness by the mid-1980s. Labor strikes and declining productivity began after 1979. The behavioral dynamics of EACI clearly support the hypothesis that external events can induce the degeneration of cooperative behavior (structurally, EACI also has weaknesses which limit its ability to achieve its potential productivity; however, the overwhelming factors in the failure of EACI appear to be external). EACI is a somewhat unusual example because both its external and its internal problems are pronounced. Melmed (forthcoming) is a case study of the EACI experience.

9. Note that land reform cooperatives were typically formed as an equitable redistribution of land that was assumed to be more productive than simply allocating single plots to individual peasants. Thus, at first, it may seem incongruous that reversion to individual small-plot agriculture would be favored. However, the socioeconomic context of the tenure choice at the time of parcellation is often quite different than the socioeconomic context at the time of initial collectivization.

Examples of signals or occurrences which might negatively influence cooperative members' labor-supply decisions are numerous in the history of Peruvian and other Latin American land reforms. The discussion in the remainder of this section uses the descriptive and quantitative data from Peru described in the introduction to the paper. The data primarily reflect the experience with parcellation in Peru's northern coastal valley of Chancay-Lambayeque. Additionally, anecdotal evidence from other countries is used in the discussion.<sup>10</sup>

An important influence on the ending of cooperative organization of production is political change unfavorable to cooperative agriculture. In Peru, the agrarian reform and the institution of production cooperatives were implemented and fully supported by the military regime of Juan Velasco in 1969. McClintock (1981, 205) notes, however, that by 1975 peasants showed an "awareness that the Velasco military government was unstable and that this may imply the end of cooperatives."<sup>11</sup> By 1975, the Velasco regime had been replaced by the more conservative military government of Morales Bermúdez. María Vidal Cobian (1985) states that in 1978 the Bermúdez regime approved a plan of restructuring the cooperatives. The resulting law was directed mainly at the highland SAIS; however, a critical element of the plan was that it legalized direct state intervention in the affairs of the cooperatives. While the Bermúdez plan for restructuring of reform enterprises was deactivated, subsequent legislation opened the way for parcellation.<sup>12</sup> In 1979, the government pardoned the agrarian debt, which was the first step in allowing legal parcellation. Peruvian Law DL 22748 was then passed extending definite title to the agrarian reform lands. Prior to pardoning the debt, landownership was essentially controlled by the government. Under the original agrarian reform law, the state maintained legal domain over the capital assets, including land, of the cooperatives until the reform debt was paid. Finally, in the early 1980s, the following legal changes occurred allowing and, perhaps, encouraging parcellation. In 1980, another option of restricting the cooperatives was introduced, *El Cambio de Modalidad Empresarial*. In 1981, DS 147-81 AG legally allowed structural change either upon the decision of cooperative members or by the Ministry of Agriculture's fiat. The law first met with social resistance; however, the contemporary political mood continued to move against cooperative institutions. Eresue et al. (1985) report a statement issued by a government official in 1982

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10. Many cooperatives sold machinery, etc., to repay the collectively accumulated debt before parceling. Others divided the debt among parceleros or maintained a service cooperative which is charged with, among other things, managing the debt. For some cooperatives, however, none of these solutions was apparently feasible.

11. This statement shows the importance of having a government in office which will structure policies, such as those regarding credit allocation, in a way favorable to the given institutional organization.

12. The following account of the legal changes promoting parcellation is based mainly on Bonfiglio (1985) and Vidal Cobian (1985).

which demonstrates the anti-cooperative spirit: "If the cooperatives decide to parcel, we will give them all our support because we are convinced that this form produces more and gives more employment and better contributes to the personal development of the farmer and his region."

In 1982, legal Decrees 85 and 141 formed the new law of cooperatives which stipulated a change in the name of cooperatives from *Cooperativa Agraria de Producción* to *Cooperativa Agraria de Trabajadores*. Along with the name change, the new law required changes in the internal bylaws of cooperatives including a change which gave the manager rather than the elected president the status of legal representative of the cooperative. Finally, Peruvian Law DS 001-82 AG legalized parcellation. Vidal Cobian (1985) reports that although under this law parcellation was made legal, it was burdensome to the cooperative members because of the requirement of completing a study of the enterprise (which had to include a diagnosis of the economic and financial status of the CAP, enterprise productivity, the accounting records, the social conditions of the CAP, and the potential models for restructuring) at the CAP's expense. She asserts that the promotion of complete parcellation was one means of obviating the need for the new complicated law, thus simplifying and reducing the cost of the process of reform. Also, the required studies often resulted in an official recommendation of parcellation as the best choice for the studied CAP. McClintock (1985) states that many cooperative members felt "compelled" to subdivide the land under the new law.

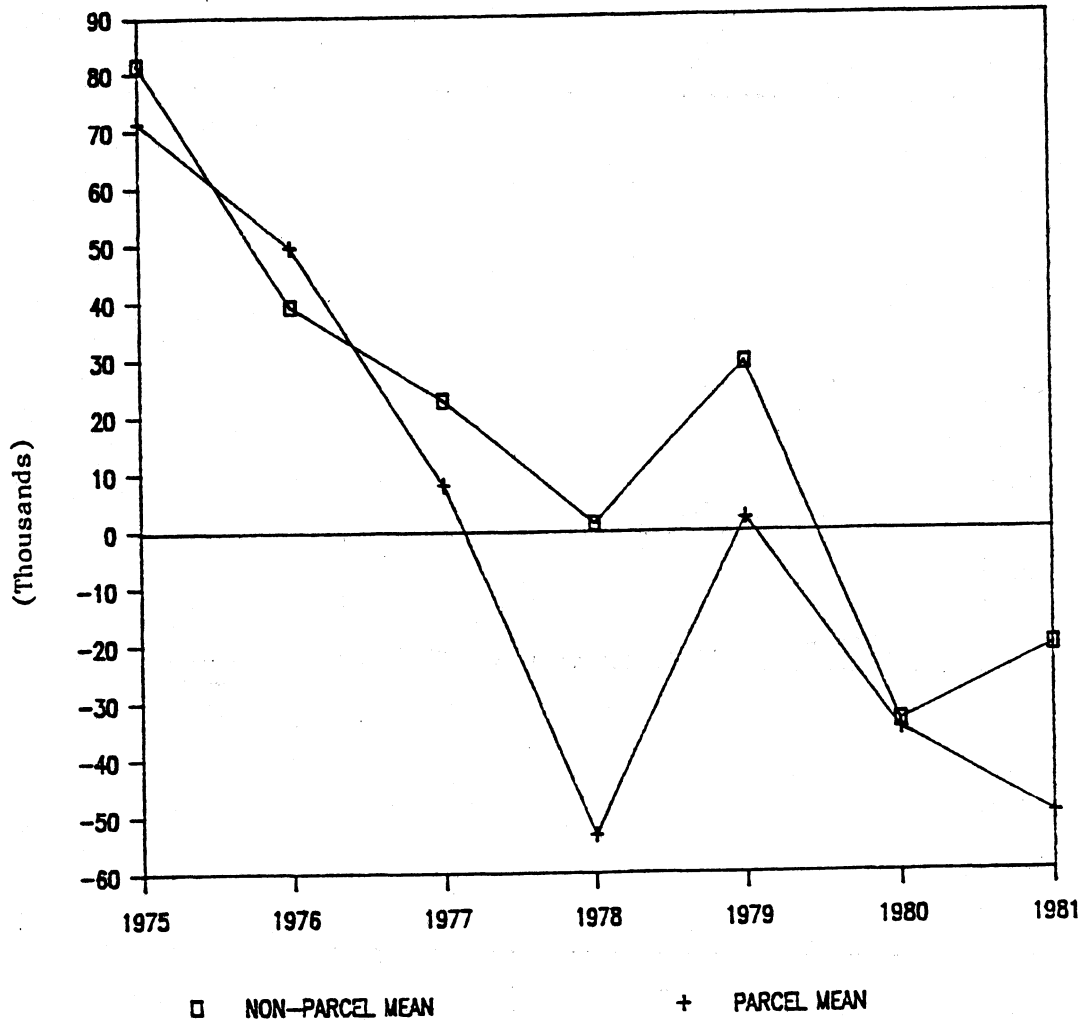
Along with these changes in the official view of cooperatives, the Agrarian Bank's attitude toward servicing cooperatives also became less favorable: "Turning to the Agrarian Bank for new credit, as is customary among Latin American farmers, the cooperatives were frustrated by bank officials' opposition. In their view, the Agrarian Bank was conditioning loans upon parcellation, and the only route to credit and cultivation was thus the division of the cooperative" (McClintock 1985, 19). In addition, McClintock observes, the Agrarian Bank became increasingly stringent in demanding debt payments.

Similar ideological changes preceded the decollectivization of land reform cooperatives in other countries. For example, in Chile, first Allende increased government control over cooperative enterprises and then Pinochet's arrival brought back the "market economy" dominated by powerful family-based networks of financial, machinery, and production enterprises with no interest in preserving the cooperatives.

A second factor in lowering an individual's perception about the prospects for the future of cooperative production may be decreasing profits and increasing debt. Figures 2 through 4 describe the declining trend in profitability of CAPs in Chancay-Lambayeque as well as in the southern coastal valleys of Cafete and Chincha. Figure 5 graphs the debt/equity ratio for twenty of the twenty-three nonsugar industry CAPs in Chancay-Lambayeque. The ratio increases steadily from 1975 and exceeds one after 1979. As McClintock (1981, 221) states, enterprise profitability had an important influence on members' willingness to cooperate. An important question to ask, then, is what factors are

FIGURE 2

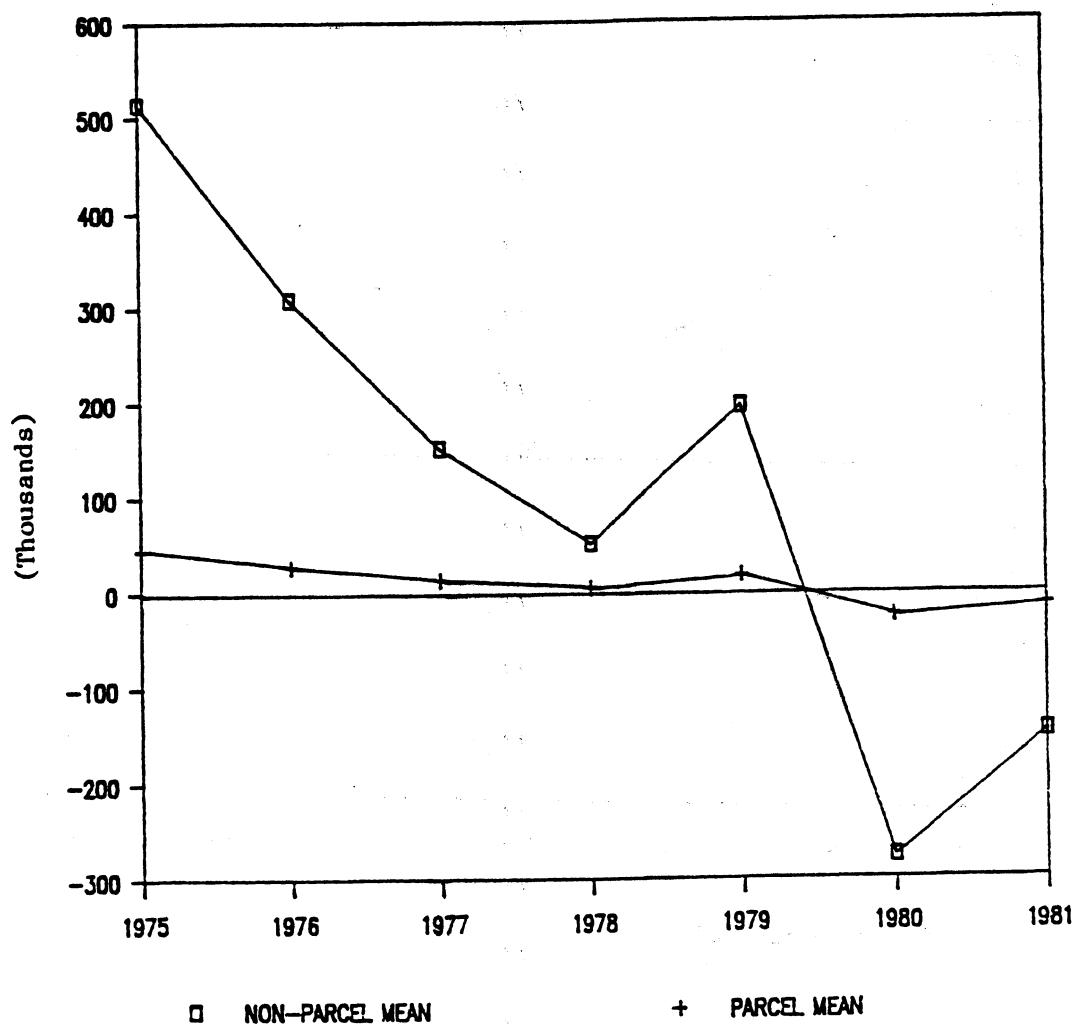
## Mean Profitability per Hectare, Chancay-Lambayeque



SOURCE: Constructed from data presented in CESS (Centro de Estudios Sociales Solidaridad), unpublished data, 1986. Data refer to production under cooperative organization for cooperatives which subsequently parceled.

FIGURE 3

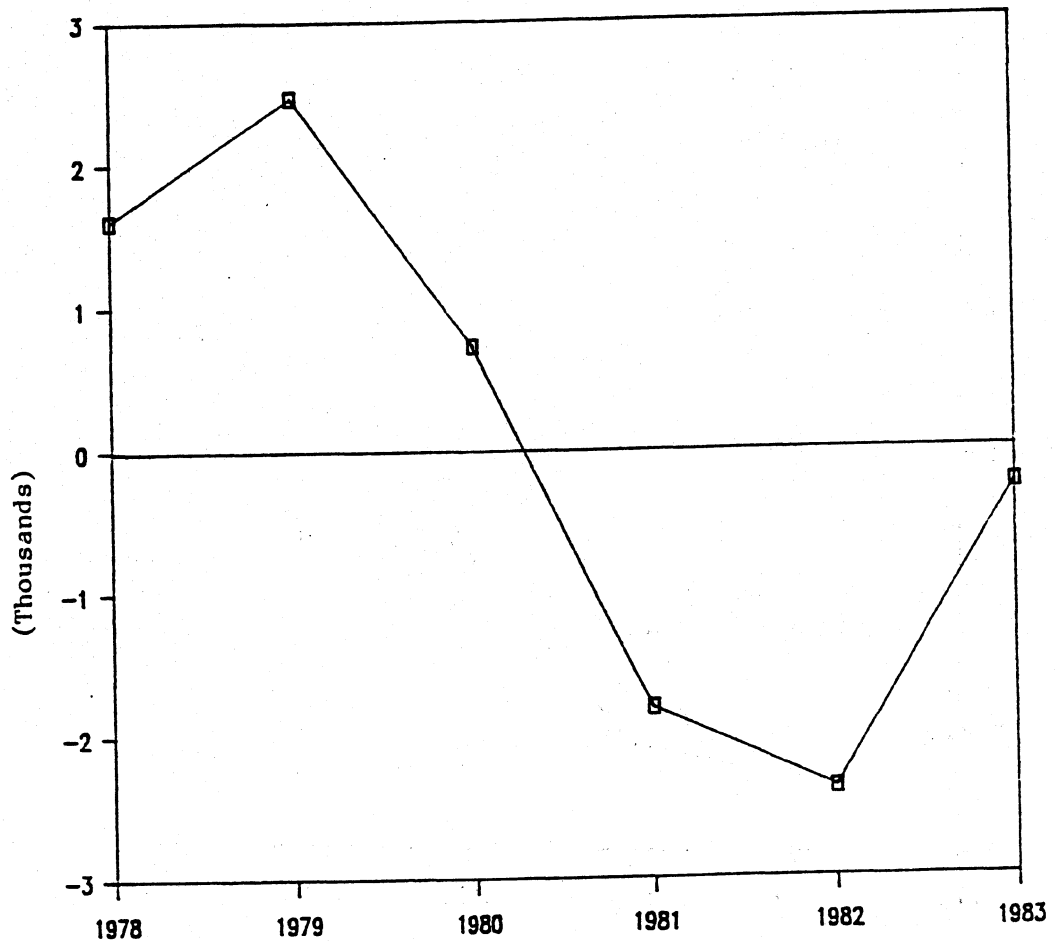
## Mean Profitability per Member, Chancay-Lambayeque



SOURCE: Constructed from data presented in CESS (Centro de Estudios Sociales Solidaridad), unpublished data, 1986. Data refer to production under cooperative organization for cooperatives which subsequently parceled.

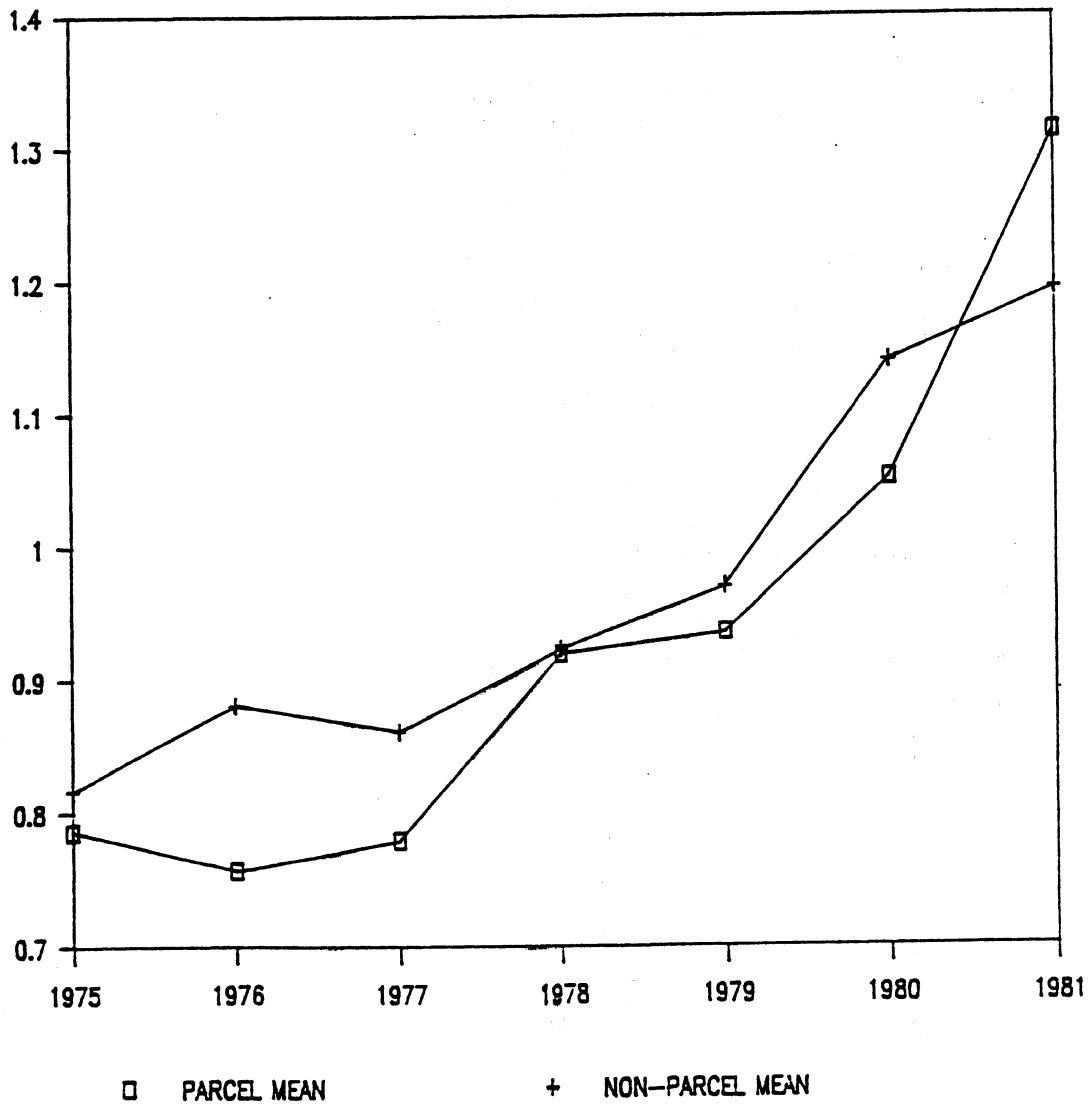
FIGURE 4

Mean Profitability per Member, Cafete and Chincha



SOURCE: Constructed from data presented in M. Eresue et al., "El proceso de parcelación de las cooperativas agrarias del Valle de Cafete," Project presented to the Analysis Group of Agrarian Policy (Lima: Universidad Nacional Agraria, La Molina, 1985).

FIGURE 5  
Debt/Equity Ratio



SOURCE: Constructed from data presented in CESS (Centro de Estudios Sociales Solidaridad), unpublished data, 1986. Data refer to production under cooperative organization for cooperatives which subsequently parceled.

responsible for the observed decreasing profitability and increasing indebtedness?

Alvarez (1983) indicates 1976 as the year when Peru's economy began to suffer a general economic crisis. Some authors, including Caballero (1984) and Gonzales and Torre (1985), point to inflation as a factor which negatively affected farm enterprises. Figures 6 through 10 are elaborated from data presented in Maletta et al. (1986) and indicate 1976 as the year in which inflation began to rise rapidly. These graphs also show the relation between inflation in production costs and in output prices for the five main crops produced in coastal cooperatives. Cost inflation exceeded price inflation in cotton and maize production during the period considered.

Alvarez (1983) notes that the rising production costs increased the amount of credit demanded by the CAPs; hence, financial costs increased. Figure 11 shows the real financial costs of four cooperatives in the valley of Chancay-Lambayeque increasing sharply after 1980. Alvarez indicates that during this same period, beginning as early as 1974, the banks became reluctant to finance cooperative production. The financial status of cooperatives worsened with the general economy. In the early 1980s, some CAPs were forced to decapitalize in order to repay their debts.

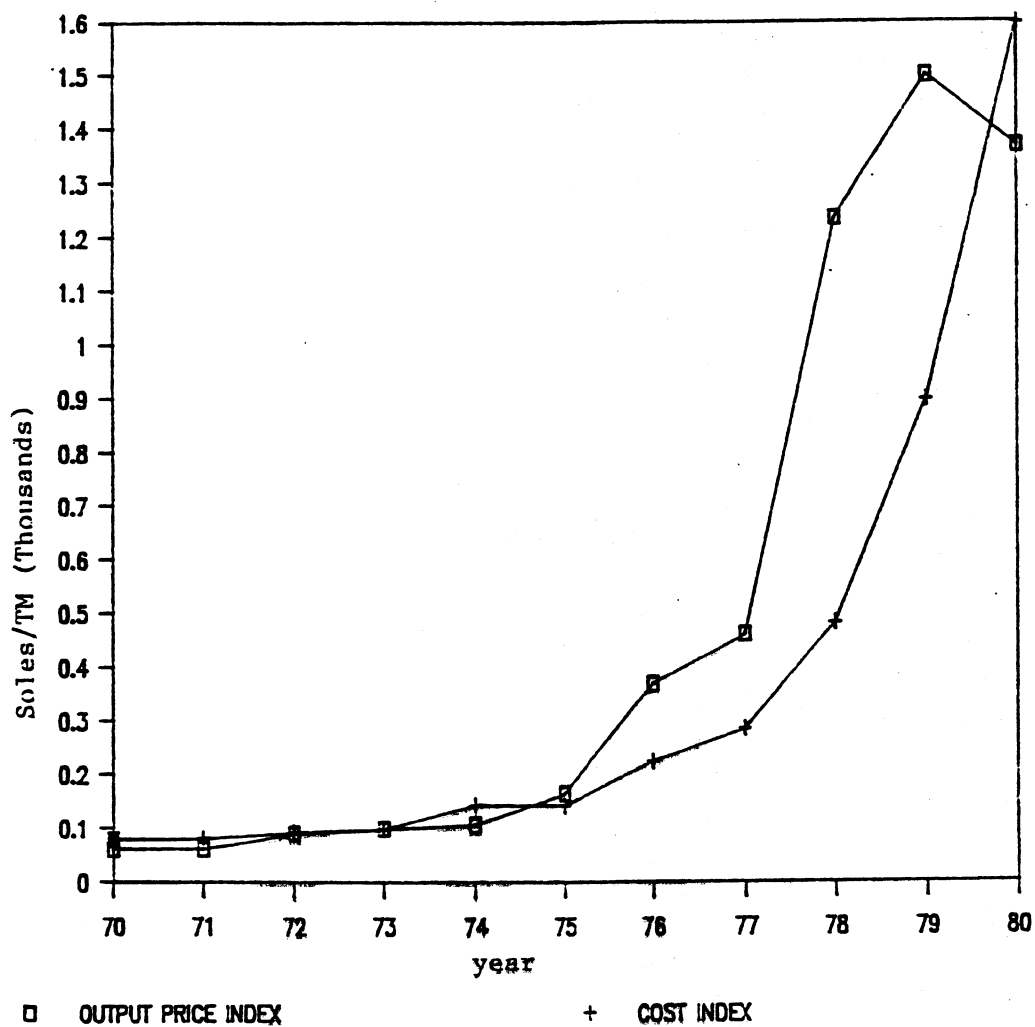
In addition to the changing bank policy toward CAPs, McClintock states that the government, after 1975, adopted "policies that impinged negatively upon the enterprises," reducing "the attractiveness to members of enterprise profits versus wages." An example of such a policy is the 35 percent tax on profits applied to all CAPs after 1975. This policy provided an incentive for the CAP to not show a profit, but rather to distribute any financial excess as wages. Thus, there was a tendency to increase the wage component of income within state-determined limits, thereby reducing income derived from dividing profits.

Finally, McClintock notes that CAPs differed in their initial resource base and that having "a strong initial resource base" was advantageous in establishing a profitable enterprise. Comparing the six non-parceled CAPs with the fourteen parceled CAPs discussed in unpublished research of the Centro de Estudios Sociales Solidaridad (CESS 1986), one observes that the value of assets at the time the enterprise became operational for nonparceled CAPs is 13,032.5/ha (1980 soles) which exceeds the initial asset value of 8,032/ha for parceled CAPs. The average farm size is also greater for the nonparceled CAPs (1,258 ha. versus 585 ha.).

While the external environment was clearly deteriorating in the late 1970s, insufficient information exists to attribute the decreasing profitability unambiguously to external factors. Labor-discipline or productivity problems likely contributed to the decline in profits. Scant data are available on trends in physical output quantities. However, data from an unpublished study done by the Ministry of Agriculture (PADI 1986) indicate that for rice and cotton production, parceled and nonparceled cooperatives in the State of Lambayeque (which includes

FIGURE 6

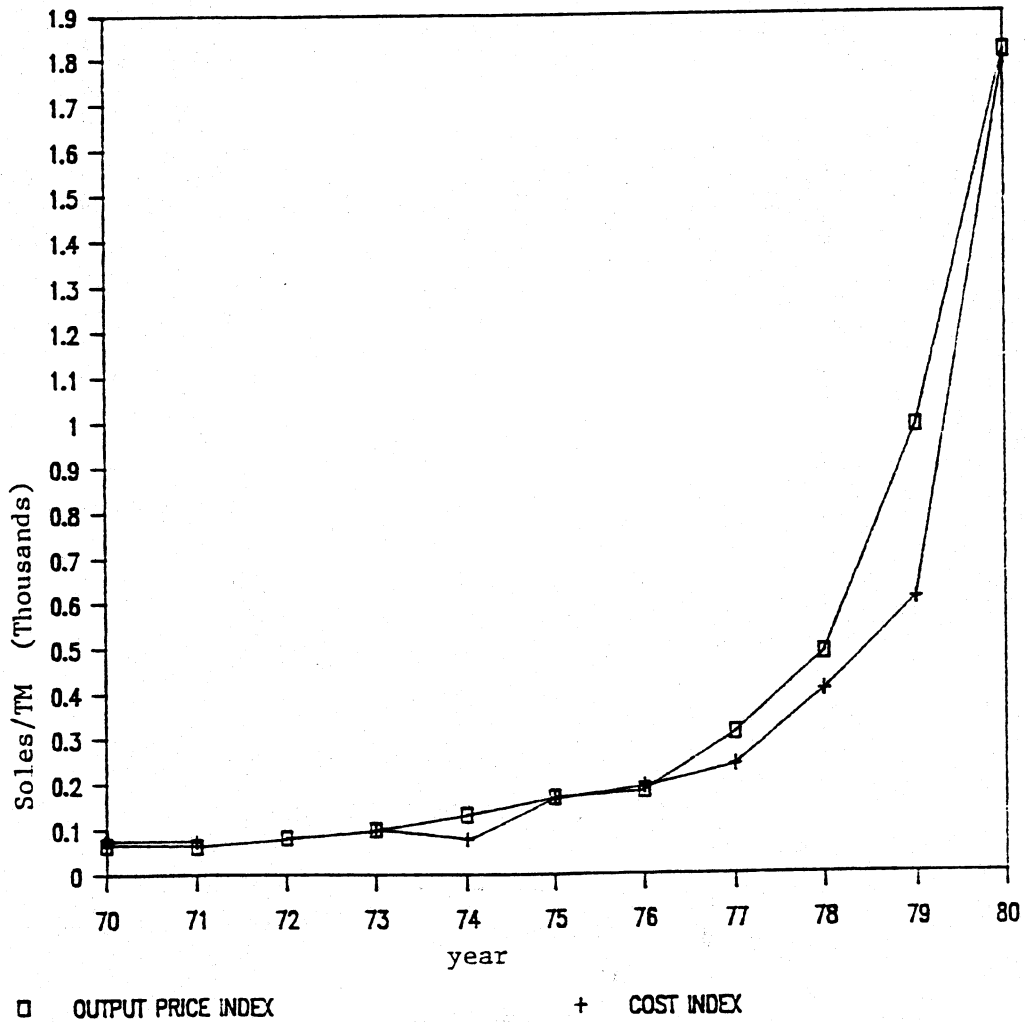
## Cost and Price Trend: Sugar



SOURCE: Constructed from data presented in H. Maletta, M. Eresue, V. Gómez, and R. Gómez de Zea, Perú: El agro en cifras (Lima: Universidad del Pacífico y El Banco Agrario del Perú, 1986).

FIGURE 7

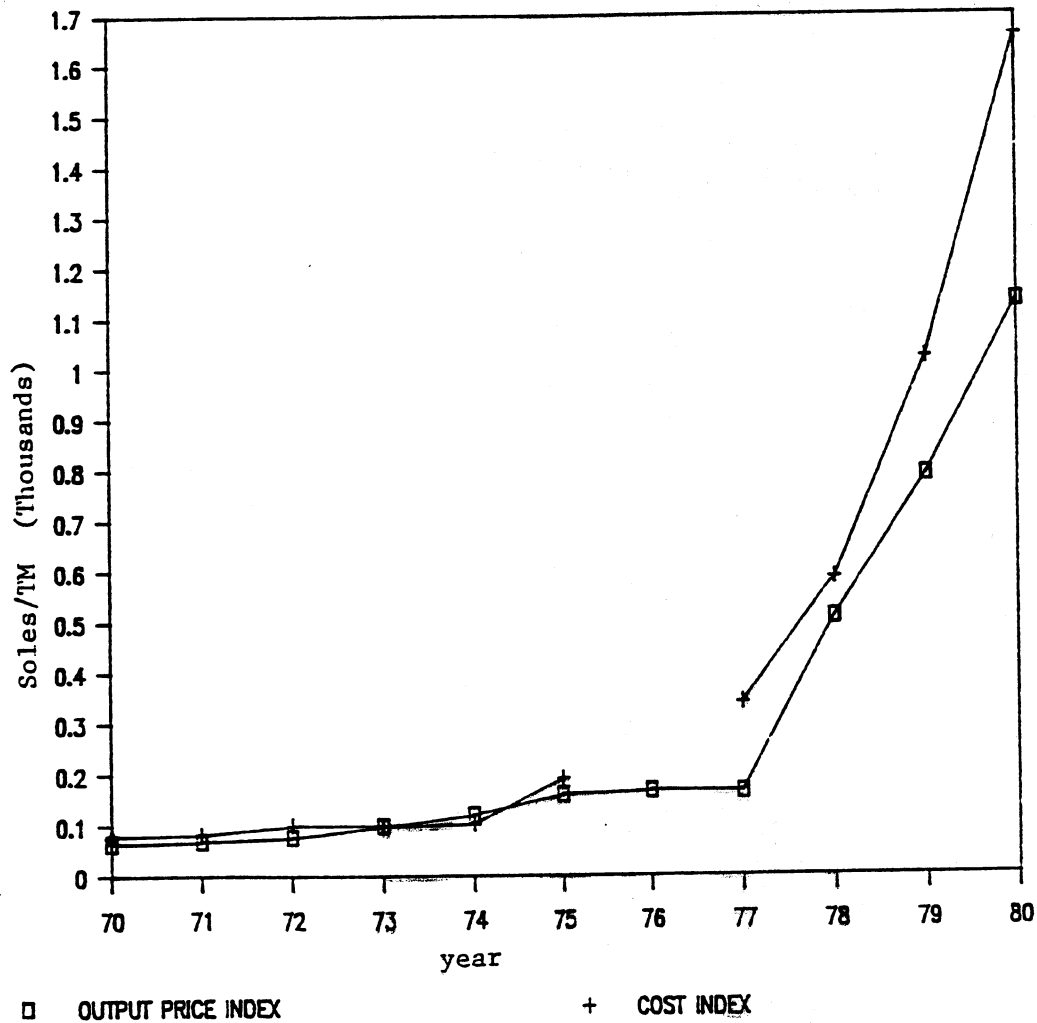
## Cost and Price Trend: Potato



SOURCE: Constructed from data presented in H. Maletta, M. Eresue, V. Gómez, and R. Gómez de Zea, Perú: El agro en cifras (Lima: Universidad del Pacífico y El Banco Agrario del Perú, 1986).

FIGURE 8

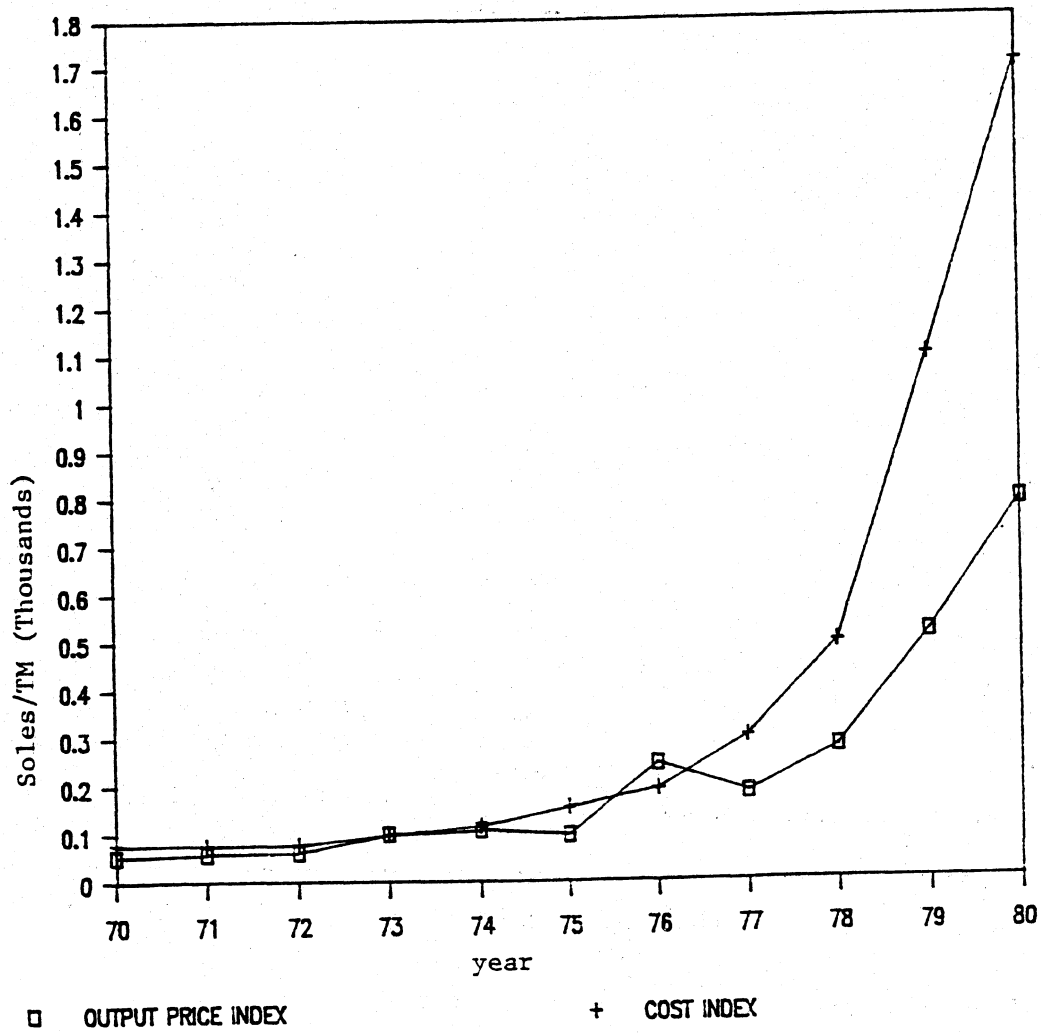
## Cost and Price Trend, Maize



SOURCE: Constructed from data presented in H. Maletta, M. Eresue, V. Gómez, and R. Gómez de Zea, Perú: El agro en cifras (Lima: Universidad del Pacífico y El Banco Agrario del Perú, 1986).

FIGURE 9

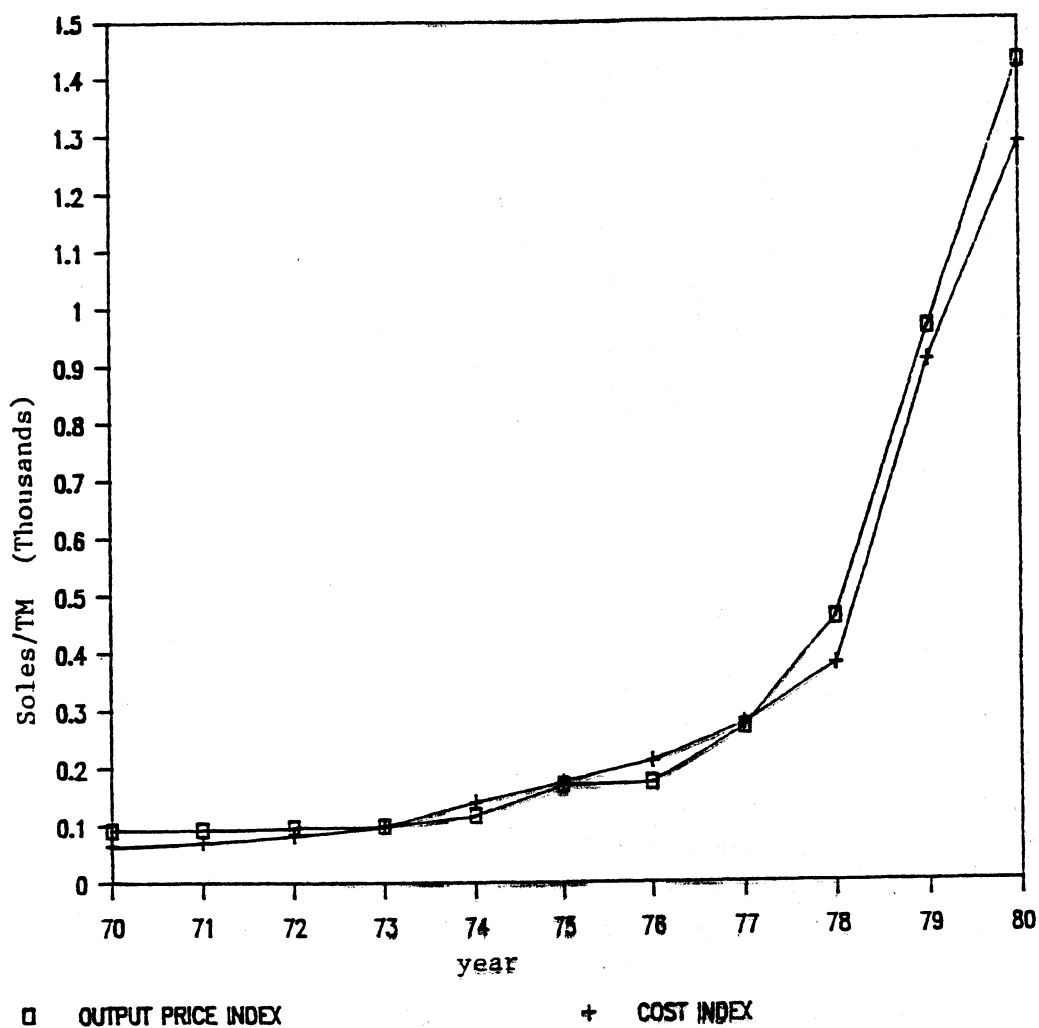
## Cost and Price Trend: Cotton



SOURCE: Constructed from data presented in H. Maletta, M. Eresue, V. Gómez, and R. Gómez de Zea, Perú: El agro en cifras (Lima: Universidad del Pacífico y El Banco Agrario del Perú, 1986).

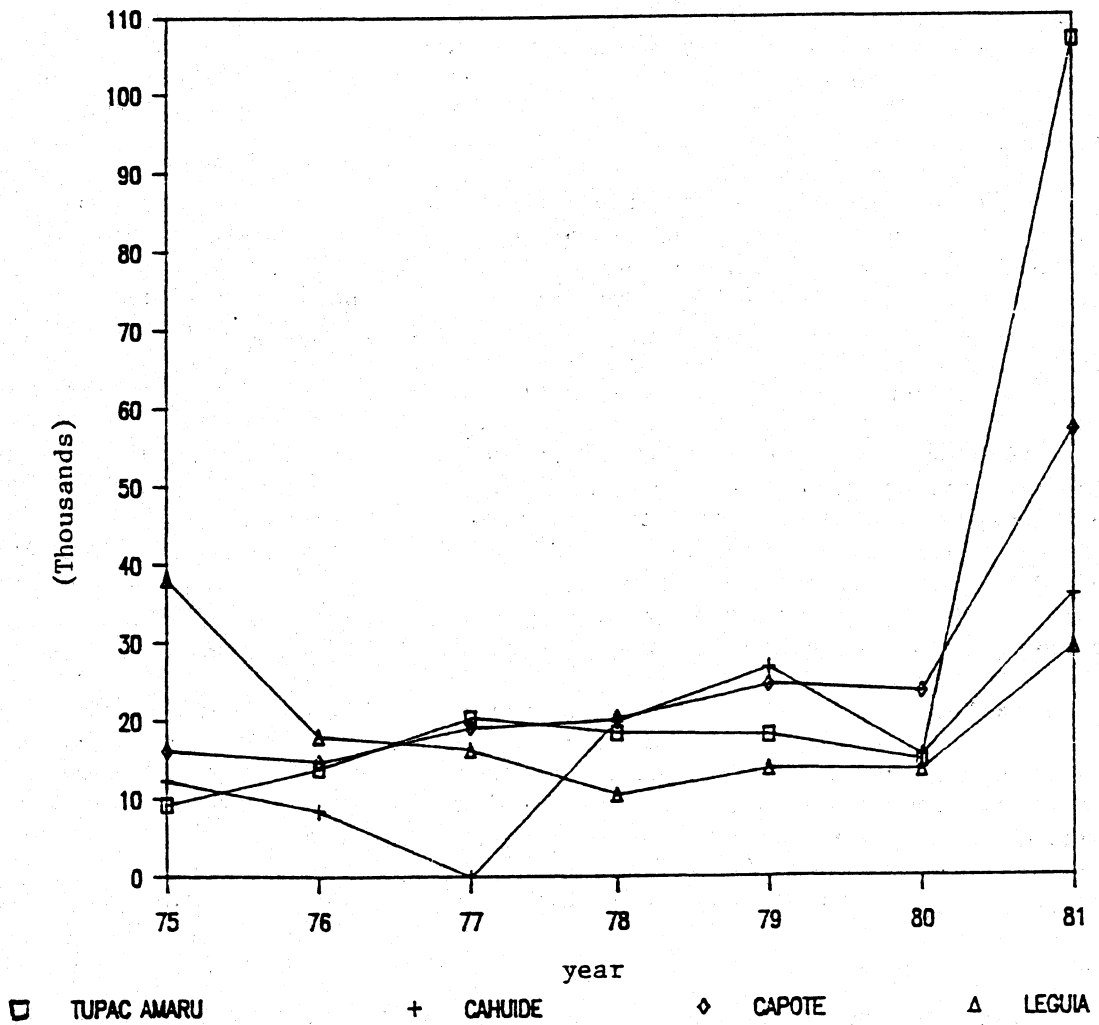
FIGURE 10

## Cost and Price Trend: Rice



SOURCE: Constructed from data presented in H. Maletta, M. Eresue, V. Gómez, and R. Gómez de Zea, Perú: El agro en cifras (Lima: Universidad del Pacífico y El Banco Agrario del Perú, 1986).

FIGURE 11  
Real Financial Costs



SOURCE: Proyecto Planificación Agrícola y Desarrollo Institucional (PADI), unpublished data set collected by researchers in Peruvian Ministry of Agriculture, 1986.

Chancay-Lambayeque) cannot be characterized as exhibiting low-productivity relative to the Lambayeque Valley average. An exception is that cooperative rice yields fell below the valley average during the drought years of 1978 and 1979. Eresue (1985b) similarly suggests that the CAPs in Cafete, on average, over the 1977-82 period, produced yields that exceeded those of other producers in the area.

Similarly, one cannot characterize the cooperatives of Chancay-Lambayeque studied by Melmed (1987) as exhibiting low productivity. Table 1 presents rice yields<sup>13</sup> in kilos for the three studied CAPs during the period of 1974-83 and mean yields for parceleros from each corresponding service cooperative for the 1984/85 crop year. The valley average, which includes both associative and private producer yields, is provided for comparison. Additionally, water levels of the Chancay River, which provides irrigation water for the selected farms, are reported.

The following points summarize Table 1. First, on average, the selected CAPs produced yields exceeding the valley mean. Second, if one breaks the sample period into pre- and post-1980 periods, it appears that the higher yields were produced in the pre-1980 era with a downturn occurring in 1980. Recall from the previous discussion that unfavorable environmental and economic conditions and increasing labor-discipline problems in the late 1970s contributed to a situation in which a financial crisis was imminent for the cooperatives. In addition, 1980 brought changes in credit policy and in the legal system which set the stage for parcellation. Thus, it is not surprising that yields exhibit this pattern of decline. Carter and Alvarez (1988) find a similar "turning point" in the profit data presented in Eresue (1985b). The third point of interest is that the parcel sample average in the 1984/85 crop season (a season of average water availability) exceeds the CAP average over all years as well as the valley average.

Gonzales (1985) also discusses the worsening financial situation of the cooperatives in the valleys of Cafete and Chancay-Lambayeque. He attributes the decreasing profitability of CAPs in Cafete primarily to external factors such as low real product prices. Cotton prices, for example, fell because of the recession in the world markets. In fact, he states that studies show that crop yields did not decrease, and even increased in some cooperatives, during this epoch of declining profits.

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13. The two principal rice varieties cultivated by these cooperatives are Naylamp and Inti. Rice is cultivated using flood irrigation. The rice is harvested mechanically and then sent to a rice-processing mill where it is shelled, packaged, and sent to distributors. Most of the country's rice is processed and marketed by a parastatal enterprise, El Empresa de Comercialización del Arroz (ECASA). ECASA processes rice either directly or by contracting with privately owned rice mills such as that owned by the CAP San Isidro (San Isidro, which was one of Melmed's sample CAPs, is one of the few cooperatives that owns a processing plant).

TABLE 1  
Output/Hectare (kilos)

CROP SEASON	CAP SAN	CAP SAN	CAP CASIMIRO	CAP <sup>f</sup> AVG.	VALLEY AVG.	RIVER WATER LEVELS <sup>d</sup> (million M <sup>3</sup> )	
	ISIDRO	ROQUE	CHUMAN				
1974/75	7166	5128	6766	6553	5150	n.a.	1745
1975/76	7010	6112	7637	6976	5590	1745	898
1976/77	6481	5573	5325	5595	5055	898	1034
1977/78	4892	3367	3141	3788	4346	1034	575
1978/79	6681	5270	5520	5636	5160	575	779
1979/80	-- <sup>a</sup>	5490	5992	5741	5394	779	546
1980/81	6230	5318	5976	5841	6456	546	884
1981/82	4140	4040	5360	4513	4850	884	972
1982/83	2211	3450	-- <sup>b</sup>	2831	4438	972	1456
Average							
1975/83	5601	4730	5714	5324	5160		
Average							
1975/80	6446	5157	5730	5714	5115	(6100) <sup>e</sup>	
Average							
1980/83	4193	4269	5668	4395	5248		
Parceleros							
1984/85 <sup>c</sup>	5942	6481	5885	6048	5899	1448	443
(std)	(1826)	(1561)	(1661)	(1691)			
(max)	(9660)	(8832)	(8319)	(9660)			
(min)	(1380)	(2760)	(1932)	(1380)			

<sup>a</sup> Water problems meant no production.

<sup>b</sup> Already parceled.

<sup>c</sup> The group mean is weighted according to proportion of the total number of cooperatives in the valley represented by each type of CAU.

<sup>d</sup> Water levels for the Chancay-Lambayeque River. Source: Dirección Regional de Agricultura-Oficina de Estadística. Two figures are given for each season because the cultivation period is from November to June.

<sup>e</sup> The figure in parentheses is the average yield for this time period calculated excluding the drought year of 1977/78.

<sup>f</sup> Valley average yield for CAPs.

SOURCE: Data presented in CEDEP (Centro del Desarrollo Peruano), Diagnóstico técnico-económico de la actividad agropecuaria del Valle Chancay-Lambayeque (Lima: CEDEP, 1985), and CESS (Centro de Estudios Sociales Solidaridad), unpublished data, 1986.

Gonzales attributes the decreasing financial stability of cooperatives in the Chancay Valley to the cultivation of less land because of water shortages, the unfavorable relation between product prices and production costs, excessive debt, liquidity problems, and declining productivity. However, as shown in Figures 12 through 15, data given in CEDEP (1985) indicate the following: (1) cooperatives obtain productivity levels which vary around the average productivity levels of other producers in the valley, sometimes achieving greater productivity and sometimes attaining lower productivity; and (2) the trend of declining productivity was not unique to the cooperatives. Thus, again it is concluded that while free-rider problems and decreasing labor effort in cooperative production may have existed prior to the push to parcel in the early 1980s, the external context of cooperative production played an important role in the demise of the CAP model in Peru.

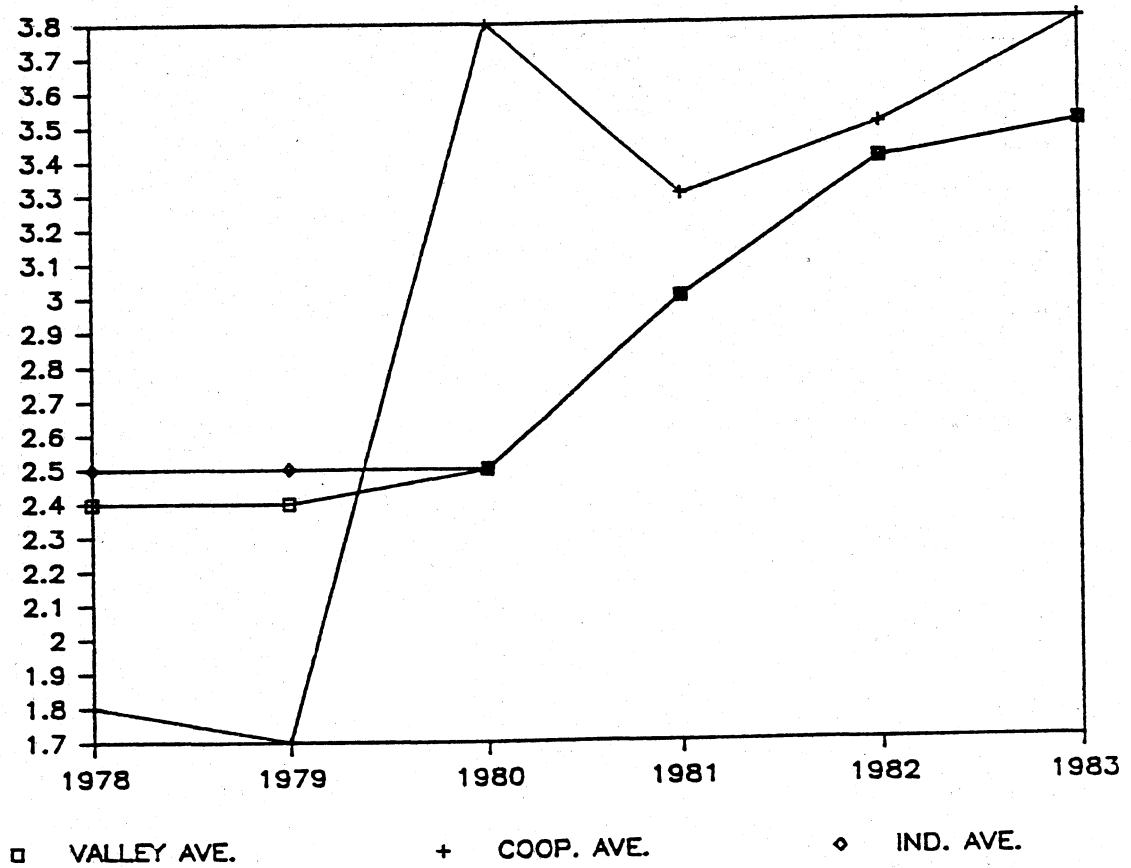
One also needs to consider the effect on the labor-supply behavior of cooperative members of other factors discussed in the descriptive literature. First, for example, one factor which is given attention in the literature is cultural bonding. The Israeli kibbutz and the U.S. Hutterite communities are examples in which cultural ties seem important in achieving group cohesiveness and profitable production. The idea is that culturally enforced social norms will lead agents to place group welfare before individualistic pursuit and will thereby motivate the members of the cooperative to work hard on collective tasks. In the Peruvian case, in contrast, tension between different cultural groups within cooperatives sometimes hindered cooperation (Horton 1973).

A third factor which may affect the labor-supply decisions of members is the degree to which they can effectively participate in the decision-making of the enterprise. Effective participation gives the member a sense of ownership. Often, member participation in the CAP's management was limited because of interference from outside agents. For example, in Peru's sugar agroindustrial cooperatives, the Velasco regime exerted almost complete control over the managerial and administrative functions of the cooperative. The extent of intervention went as far as having a military officer located in each housing complex on the sugar farms. The council elected by members was left to make decisions regarding social issues. Members, thus, essentially became workers for a state farm (Horton 1973).

Another factor which may affect the individual's willingness to supply more intensive labor time (that is, work harder) to the CAP is the relation between management and workers. In any given situation, the less conflict of interest, more trust, and so forth, between management and workers, the greater the cooperative spirit one would expect. An argument in support of this contention is the concept of X-efficiency, which says that workers are willing to put forth more effort, *ceteris paribus*, when the work conditions are better. Various benefits and privileges also contribute to X-efficiency; therefore, the provision of subsidized social services by the CAP should elicit more labor effort. If aware that such services depend on cooperative profits, members have an added incentive to maintain (or increase) the firm's profitability.

FIGURE 12

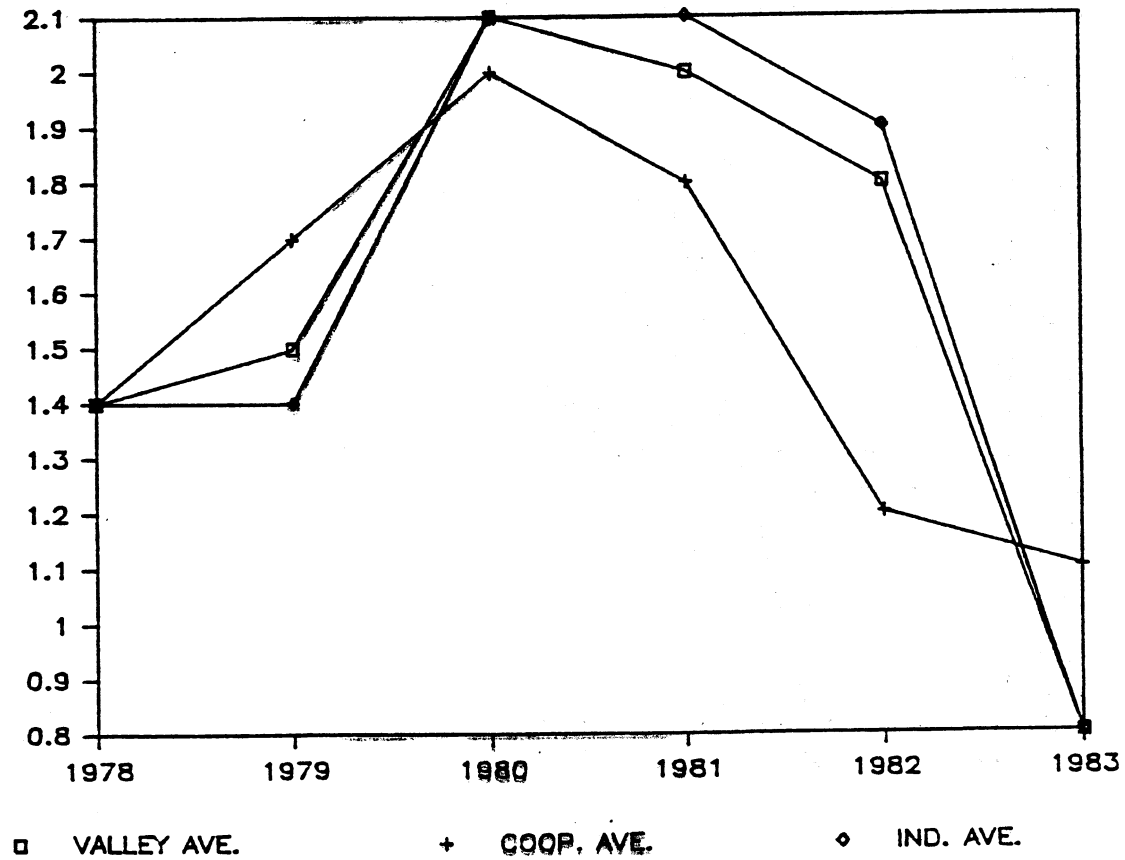
## Maize Yield, Chancay-Lambayeque



SOURCE: Centro del Desarrollo Peruano, Diagnóstico técnico-económico de la actividad agropecuaria del Valle Chancay-Lambayeque (Lima: CEDEP, 1985).

FIGURE 13

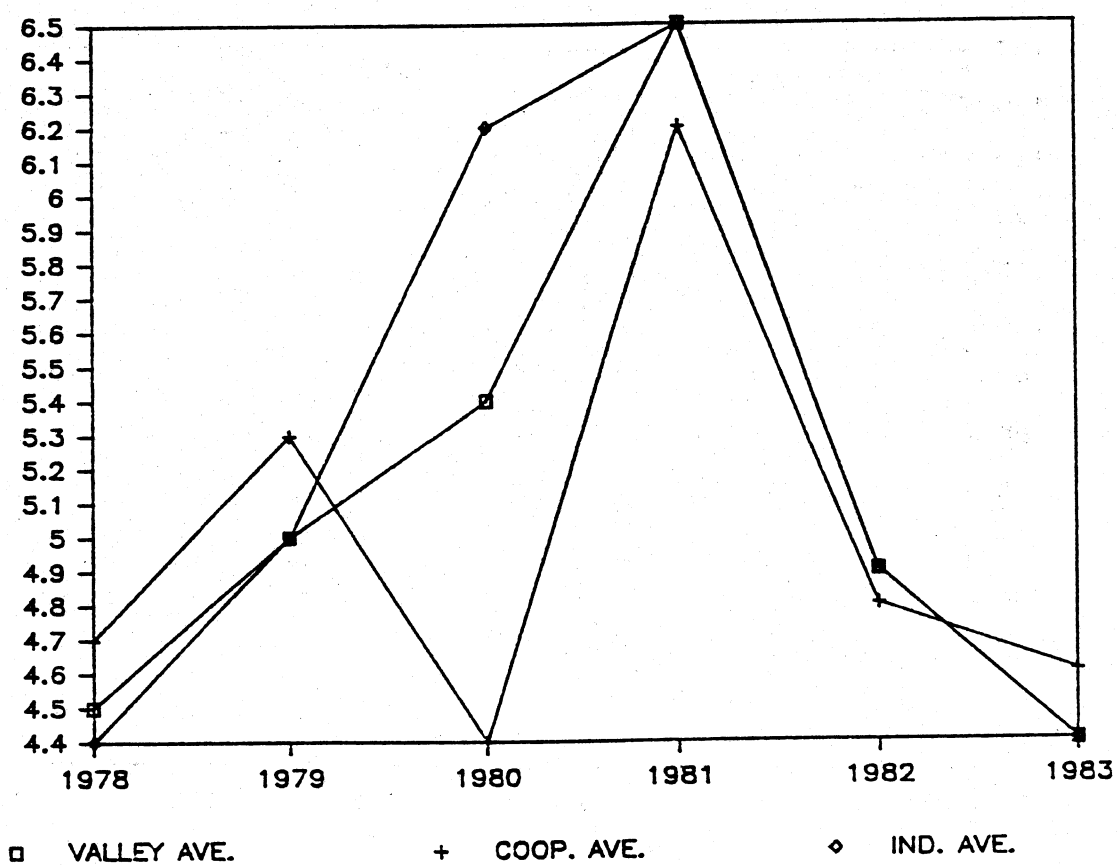
## Cotton Yield, Chancay-Lambayeque



SOURCE: Centro del Desarrollo Peruano, Diagnóstico técnico-económico de la actividad agropecuaria del Valle Chancay-Lambayeque (Lima: CEDEP, 1985).

FIGURE 14

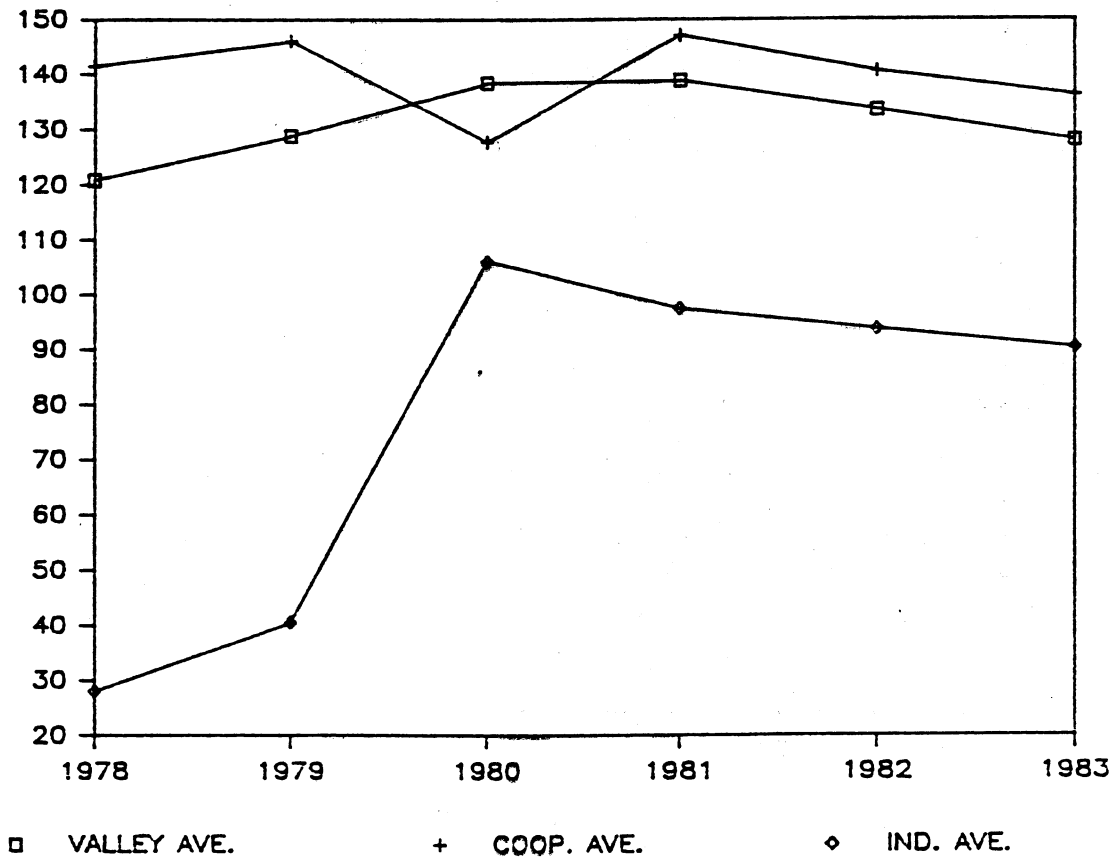
## Rice Yield, Chancay-Lambayeque



SOURCE: Centro del Desarrollo Peruano, Diagnóstico técnico-económico de la actividad agropecuaria del Valle Chancay-Lambayeque (Lima: CEDEP, 1985).

FIGURE 15

## Sugar Yield, Chancay-Lambayeque



SOURCE: Centro del Desarrollo Peruano, Diagnóstico técnico-económico de la actividad agropecuaria del Valle Chancay-Lambayeque (Lima: CEDEP, 1985).

One can also view the management issue from the perspective of workers being aware that the marginal value of their work effort depends on the capability of managers to translate this effort effectively into profits. Therefore, the relative gains for individual members from cooperation versus engaging in other activities such as leisure or private-plot production would be less for cooperatives whose managers are less competent in generating profits, providing benefits, and maintaining trust within the enterprise (for example, because of lack of technical skill, corruption, and so on).

Additionally, in many instances, cooperatives were considered as a transitory institution which could be used for training and education [for example, as in Chile (Jarvis 1985) and the Dominican Republic (Carter and Kanel 1983)] or for mechanization and infrastructural development [for example, as in Mexico (Eckstein et al. 1978) and China (Nolan 1983)]. Education and training may increase the potential profitability of private-plot production. Hence, in the case where free-riding allows members to pursue private-plot or other sideline activities, the differential payoff between cooperation and defection may increase over time as individuals learn technical and managerial skills. As was observed by McClintock (1981), cooperatives often provide the groundwork of training and infrastructural development that enables individuals to farm successfully on their own.

Finally, in some cases, members were aware that the cooperative was intended as a transitory mechanism, as in the Dominican Republic where the farmers were promised individual land titles in the future. Individuals may temporarily cooperate in such cases, but their willingness to do so may decrease as they become anxious to have their promised titles.

### 3. Conclusions

The purpose of this paper was to develop the understanding of the tendency of agricultural producer cooperatives to parcel by examining the history of parcellation in Peru. The thesis presented synthesizes arguments which suggest that parcellation results because of inherent behavioral dynamics of cooperative enterprises and literature which attributes decollectivization to the impact of the political, economic, and environmental climate in which these enterprises operate. The link is established by viewing parcellation as a dynamic process in which events exogenous to the cooperative behavioral model, for example, severe inflation, bad weather, or political change, bring about the degeneration of labor productivity so often attributed strictly to the institutional arrangement. Thus, while the internal structure of cooperative enterprises is inherently open to labor-discipline problems, external factors both directly, by reducing profitability, and indirectly, by inducing labor indiscipline, affect the stability (long-run viability) of cooperative production. Differences in internal mechanisms for maintaining cooperation, for example, in managerial skill and authority, then, allow some cooperatives to survive longer than others when faced with similar external conditions. These arguments

can explain the typically observed trend of first increasing then decreasing productivity of agricultural producer cooperatives as well as their heterogeneous success. Once the conditions of low productivity and declining profitability exist, parcellation becomes a rational choice.

To conclude the paper, some brief thoughts about the desirability of parcellation. In the case of Peru, this author's view is that from the perspective of cooperative members, parcellation was an individually rational response to stagnant and unprofitable agriculture. It was also an expedient solution from the perspective of a government which did not have many resources to pump into revitalizing coastal agriculture. Melmed and Carter (1987) indicate that in a sample of cooperatives in Chancay-Lambayeque, the technical efficiency of production did not decrease with parcellation (although it was suggested that, in their sample, the potential output of cooperatives for any given level of resource use is higher than that of the parceled producers). Average income in their sample increased with parcellation. For these reasons, parcellation was desirable. However, concluding that parcellation is preferred to a particular status quo of cooperative production (for example, one in which the cooperatives had become financially insolvent) does not necessarily imply that parcellation is the optimal institution for organizing agriculture in Peru. In particular, there are social costs (such as those associated with increasing inequality of income distribution, changes away from export-crop production, and the loss of social services<sup>14</sup> provided by the cooperatives) of parcellation which we ought not discount (see Melmed 1987, or Melmed and Carter 1987, for a more detailed discussion of changes in efficiency and incomes).

The arguments presented in this paper suggest that solutions to or, more importantly, prevention of failing cooperative reforms may lie in restructuring the producer cooperatives to minimize the impact of external or nonlabor-related factors which affect the performance of such enterprises. For example, legal changes allowing less outside interference in the government of the enterprise or less burdensome tax policies could be implemented. Cooperatives could be restructured in ways which would increase the gains from cooperation, therefore stemming the tendency for free-riding behavior to escalate. For example, rules might be instituted requiring employment of apolitical managers, strict and professional accounting, allowing members to accumulate share equity, and so forth. Or, perhaps intermediate tenure forms which combine the benefits of parceled and cooperative production, such as those being tested currently in Nicaragua, would be preferable to either parceled or cooperative tenure.

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14. McClintock (1985) also mentions the loss of social services as a cost to parcellation which was likely not considered when the choice to parcel was made.

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