

# AGRICULTURAL EXPORT BOOMS AND THE RURAL POOR IN CHILE, GUATEMALA, AND PARAGUAY\*

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The economic crisis of the 1980s and the shift to outward-looking development strategies ignited interest in promoting agricultural exports throughout Latin America. In the 1990s, export strategies continue to dominate discussion on agricultural development in the region. Especially for smaller developing countries in Latin America, agricultural and natural-resource exports appear likely to lead efforts to stimulate export growth. Extraordinarily rapid agro-export growth has already been achieved in many countries. From the middle to late 1980s, nontraditional agricultural exports grew at rates of 222 percent in Chile, 78 percent in Guatemala, and 348 percent in Costa Rica. In Paraguay, the most agrarian country in Latin America, agricultural exports nearly tripled during the otherwise difficult decade of the 1980s.<sup>1</sup>

Interest in the impact of agricultural exports on growth, equity, and environmental sustainability has generated a rich literature, which is summarized in Maxwell and Fernández (1989), Barham, Clark, Katz, and Schurman (1992), Murray and Hopin (1992), Redclift (1989), and Thrupp (1994). Proponents of agricultural exports stress the macroeconomic benefits, which include rising foreign-exchange earnings, diversification of exports, and more efficient use of resources. At the sectoral level, improvements in productivity and employment are viewed as positive spillovers of the challenges of producing labor-intensive crops for interna-

\*The research reported here has benefited from the efforts and wisdom of more people than we can acknowledge individually in the available space. Financial support from the following institutions is gratefully acknowledged: the John D. and Catherine T. MacArthur Foundation, the Tinker Foundation, the Centro Paraguayo de Estudios Sociológicos, the Instituto de Nutrición para Centroamérica y Panamá, USAID, the Land Tenure Center and the Latin American Studies Program at the University of Wisconsin–Madison, the Grupo de Investigaciones Agrarias, and the Corporación de Investigación Económica para Latinoamérica.

1. Figures taken from Barham, Clark, Katz, and Schurman (1992, 49) and Weisskoff (1992, 1532).

tionally competitive markets.<sup>2</sup> On the other side of the debate, opponents of agricultural exports often question the scope and duration of the macroeconomic benefits provided, pointing to declining terms of trade, short product booms, and increased dependency on food imports. Most opponents also stress the negative impacts of agricultural exports on the rural poor and the environment. According to this perspective, lessening access to land, insufficient and uncertain labor opportunities, and rising food prices all squeeze the rural poor who are struggling for subsistence. Moreover, environmental degradation may result from intensified use of modern production inputs, low levels of regulation, and the coping strategies adopted by the increasingly desperate rural poor.<sup>3</sup>

These two views have generated an unfortunate gap in thinking about policy-making efforts. The first view encourages a blind faith in export strategies, while the second engenders strong distrust if not complete condemnation. Consequently, the middle ground between these polarized views appears to be endorsement of a distasteful trade-off between a healthy macroeconomy and the costs inflicted on the increasingly desperate rural poor and the deteriorating environment.

This article will attempt to propel the discourse onto a different plane. It will be argued that the distributional outcomes of agro-export booms vary. They neither automatically nor necessarily exclude the rural poor, and the converse is also true. Variation in how agro-export booms impact the rural poor are a function of differences in the underlying microeconomics associated with export booms of specific commodities in distinct socioeconomic contexts. Because the underlying microeconomics can be affected by policy measures, it appears possible to supersede the trade-off between positive macroeconomic and negative sectoral effects. Booms could thus be shaped to include more of the rural poor. The issue of how to reconcile these growth and equity outcomes with environmental concerns will not be explored here.

The article will examine the microeconomics of recent agro-export booms in three Latin American countries that have yielded a wide range of sectoral outcomes due to distinct socioeconomic contexts and varying crop types (orchard fruit in Chile, annual vegetables in Guatemala, and cash grains in Paraguay).<sup>4</sup> Our primary concern in this article is to iden-

2. Most of the literature encouraging growth strategies oriented toward agricultural exports emanates from international institutions and consultants hired to help design these strategies. For a sampling of scholarly articles supporting agro-export strategies, see De Janvry and Sadoulet (1993) and von Braun, Hotchkiss, and Immink (1989).

3. Many academic works offer critical views of the distributional and environmental effects of agro-export strategies in Latin America and the rest of the developing world. Conroy, Murray, and Rossett (1994) cover recent examples of ongoing agro-export pushes in Ecuador and Central America. Examples of recent articles on the equity and environmental effects of agro-exports in Honduras and Chile include Stonich (1991), Stanley (1994), and Schurman (1993).

4. As entry points to the literature on agro-export booms in the three countries, see

tify the microeconomic factors that determine the extent of participation by the rural poor in the booming sector by examining their likelihood of adopting export crops and the boom's impact on their access to land and employment opportunities. These two spillover effects determine whether a boom becomes a vicious or a "virtuous" cycle for poor households.

Underlying the article's empirical analysis is a conceptual model, which will be summarized in the first two sections. The model explains the microeconomic dynamics of how new agro-export opportunities variously affect adoption patterns of export crops, relative competitiveness, and land access for different classes of producers. The model also links the direct effects of adoption and induced change in the structure of landownership to the indirect generation of employment opportunities, noting that variation in rates of labor absorption across different producer classes can lead the effects of employment to vary over time with structural changes induced by the boom in agricultural exports.<sup>5</sup>

Following this conceptual overview, the next four sections will examine recent export booms in Chile, Guatemala, and Paraguay by using data on farms collected from a coordinated set of surveys of rural households in each country (procedures for collecting data are described in the technical appendix). Analysis of this data offers three major findings. First, adoption of agro-export crops by smaller-scale producers is tightly constrained, leaving these producers relatively uncompetitive in the booming sector and the land market. Second, except in the Guatemalan highlands, the resulting problem of noncompetitiveness among small-scale producers induces a pattern of structural change in access to land that works against the rural poor. Third, the employment effects associated with the induced structural change dynamically reinforce the exclusionary or inclusionary nature of changes in land access. In two of the cases, the labor intensity of the particular export crop is enough greater than for traditional crops to ensure a net increase in employment opportunities for the rural poor.

The final section concludes that efforts to make agro-export growth benefit the rural poor require more than market liberalization and an outward-looking policy orientation. Without activist policy, several economic factors conspire against direct participation by small-scale producers in agro-export production. Moreover, policy that leaves small-scale producers uncompetitive in export production is liable to lead to medium-term structural changes that will diminish access to land for the rural poor and dampen overall employment. The article concludes by

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Gómez and Echenique (1988) on Chile; von Braun, Hotchkiss, and Immink (1989) on Guatemala; and Galeano (1994) on Paraguay.

5. We use the term *labor absorption* instead of employment because much of the labor expended on small farms is actually that of self-employed farmers. The term thus refers to the total labor used, whether hired or the farm's own.

drawing lessons from the case studies regarding policies that can make agro-export strategies more beneficial to the rural poor.

**ELEMENTS FOR THEORIZING ABOUT THE IMPACT OF  
AGRO-EXPORT BOOMS ON THE RURAL POOR**

In an ideal world of identical farmers and scale-neutral markets and technologies, large and small farmers alike would be able to participate in agro-export booms. No producer stratum would be disadvantaged by land prices driven up by an economic opportunity beyond its reach. In this imaginary world, agro-export growth would not induce a pattern of structural change that systematically worsens access to land for the rural poor. Employment effects would be similarly easy to understand because all producers would produce the same export crop based on the same mix of land, labor, and capital. Comparing labor absorbed per hectare under the pre-boom cropping pattern with labor absorption of the boom crop would suffice to predict the impact of employment on landless and part-time farming households.

Many analysts discuss agro-export growth as if it takes place in this nonexistent simple world, taking land distribution as fixed and labor absorption as technically determined. Table 1 gives some idea of the labor intensity of export crops in Latin America according to studies culled from the literature that adopt this perspective. As can be seen, the variation across crops is staggering, ranging from lows of 20 to 30 days of labor per hectare to a high of 600 days of labor per hectare (for snow peas). Information on labor absorption generated for traditional, nonexport crops is rather scarce, but figures in the range of 100 to 120 days of labor per hectare would be reasonable for smaller-scale producers in Central and South American agricultural economies.<sup>6</sup> Examined through the lens of these unconditional figures, the labor-absorption effect of export growth could range from large positive to large negative numbers.

Although the figures reported in table 1 are somewhat informative, reality is complex in ways that limit their usefulness. As will be discussed, farms of different sizes vary in terms of their access to factor and product markets and the effective prices they face in them, especially in the dualistic agrarian structures characteristic of Latin America. This "size-sensitivity" in market access and prices creates behavioral differences in the use of land, capital, and labor across farm units. Small farms, with their access to relatively cheap family labor, would be expected to utilize labor more intensively than large farms that hire workers. But small farms may be more limited in their ability to produce certain crops because of constraints arising from limited resources. More generally,

6. See our figures in this article. See also Carter (1989) on Nicaraguan production of food crops and von Braun, Hotchkiss, and Immink (1989) on highland Guatemalan food crops.

TABLE 1 Summary of the Literature on Labor Intensity of Export Crops

Source	Crop	Labor Required (days per hectare)	Seasonality
Young (1987)	cauliflower	21.4	89% over 3 months
	broccoli	27.2	92% over 3 months
	tomatoes	91.3	51% over 3 months
	asparagus	324.0	69% over 3 months
	strawberries	300.4	51% over 3 months
Cruz (1992)	fruit (grapes, kiwi)	150–200	two-thirds temporary work
Weller (1992)	strawberries	150	highly seasonal
	pineapples	100	many permanent jobs
	melon	100	highly seasonal
	yuca, papaya mangos	50 <50	labor at harvest mostly permanent jobs
Noé Pino and Perdomo (1992)	melon	210	highly seasonal
	shrimp (artisanal)	109	4-month cycle only
Glover and Kusterer (1990)	asparagus	133	mostly permanent jobs
Goldberg (1974)	cucumbers	105	50-50 seasonal
	honeydew	28	most labor at harvest
Von Braun (1989)	broccoli	150	
	snow peas	600	

size-sensitive markets create a class correspondence that links a farm's scale and wealth to its production and survival strategies.<sup>7</sup>

Simply put, no export crop has a single rate of labor intensity that could be used to gauge the employment effects of a boom, as the numbers in table 1 seem to imply. Thus whether agro-export growth is inclusive of the rural poor at a sectoral level depends on at least three factors: whether small-scale units participate directly in producing the export crop and enjoy the higher incomes generated from it (which we call the "small-farm adoption effect"); second, whether the export crop induces a pattern of structural change that systematically improves or worsens the access of the rural poor to land (the "land-access effect"); and third,

7. In other words, the behavior that defines an economic class can be understood in terms of rational choices, as stressed by Elster (1985), Roemer (1982), and others. Classes result from the interaction of constrained individual choice or agency with the structure of endowments and market access. We argue that market access is fundamentally shaped by information, as will be discussed.

whether agricultural exports absorb more or less of the labor of landless and part-time farming households (the “labor-absorption effect”).

Who is producing the boom crops determines how intensively they are produced—that is to say, how much land is allocated to them and how much employment is generated. In the short term, the employment generated by an export boom depends on the size distribution or class of the farms that initially begin to produce a particular export crop. Large farmers are likely to produce any given crop with less labor per hectare than would small farmers. In combination, the small-farm adoption effect and the labor-absorption effect can have positive and negative impacts on the rural poor. The most positive outcome would be one in which small farmers adopt a labor-absorbing crop on most of their land, resulting in high direct participation and greater labor opportunities for the rural poor. The most negative outcome would be one in which small farmers find their participation thwarted by resource constraints and the labor intensity associated with larger farms drops below the levels of previous crop choices. In between these two extremes is the ambiguous outcome of relatively low direct participation by small farmers but accompanied by increased labor absorption associated with production of the new crop on large farms.

In the medium term, an agro-export boom will also tend to induce a pattern of structural change in land distribution that depends on how the adoption patterns and relative profitability of different classes of producers affect their competitiveness in the land market. If the small-farm adoption effect is minimal and the returns to successful large-scale adopters are substantial, then the effect on access to land will tend to generate further changes in net employment by shifting land from smaller producers to more competitive large-scale producers. This effect may in turn reduce the initial effect on labor absorption, unless the labor absorption of export crops is enough greater than that of traditional crops to outweigh the effect on access to land.

The full impact of export growth on the rural poor thus depends critically on the interacting effects of differential adoption, induced structural change, and labor absorption. The interaction can be positive, with structural shifts in land to small-scale producers who thus benefit directly and also generate more employment per hectare. The interaction can also be negative, as it was in seventeenth-century Britain and post-World War II Central America, where diminished access to land for the rural poor and weak labor absorption resulting from rapid agrarian growth led to social controversy and political instability.<sup>8</sup> The growth booms in contemporary Latin America present varied experiences that tend toward

8. For an excellent account of the socioeconomic crisis resulting from the cotton and cattle booms in Central America, see Williams (1986).

more exclusionary growth processes. The next section will explore briefly the economic factors that explain the potential for variation and the bias toward exclusion operating in Latin American agro-export booms.

#### ECONOMICS OF CLASS COMPETITIVENESS AND INDUCED STRUCTURAL CHANGE IN AGRO-EXPORT BOOMS

Two fundamental factors determine the economic competitiveness of different classes of producers categorized according to farm size or wealth: the extent to which members of the class adopt export crops and how profitable they find the production of these crops to be. Together, these patterns of land use and profitability shape an economic "ability to pay" for land (also known as shadow value), which also reflects competitiveness in the land market. The economic forces of an export boom can be mapped in terms of the relation between producer classes (as determined by farm size and wealth) and the shadow value of land. These two factors combined determine the "class competitiveness regime." To the extent that some classes of producers value land much more highly than others (that is, they attribute a higher shadow value to land), they have the incentive to buy land and induce structural change.

After reviewing the primary microeconomic forces that shape the shadow value of land, we will consider how the land market itself functions to promote or retard structural change induced by an export boom. How smoothly the land market works will depend on the transaction costs associated with land sales. The fluidity of land transfers in turn shapes the extent of induced structural change associated with an agro-export boom.

#### *Crop Characteristics, Constrained Markets, and Class Biases*

Crucial to understanding the potential direction of structural change in landholdings is determining whether biases based on farm size exist in producing or marketing export crops that could favor one class of producers over another. This broad question will be examined to begin with by considering how the characteristics of an exportable crop, in the presence of markets constrained by unequal access to information and wealth, can create farm size or class biases that render a crop relatively more profitable when cultivated by farms of one size rather than another. The theoretical underpinnings here (developed in greater detail in Carter, Barham, Mesbah, and Stanley 1993) arise from the perspective that when information is costly and asymmetrically held between parties to a contract, competitive markets may operate differently than according to the conventional scenario of competitive markets in which all producers have access to commodities and inputs at the same market prices. Although



the economics of imperfect information have important ramifications for the theoretical optimality of market economies, our discussion uses imperfect information theory to identify the microeconomic features that create size-sensitive prices and different degrees of access to markets.<sup>9</sup>

In the presence of costly and imperfect information, seven crop characteristics can produce class biases.

*“Interactive Labor Intensity”* / Some crops are responsive to interactive labor, meaning that the quantity or quality of output can be notably increased when laborers make constant and careful choices. For example, careful harvesting of snow peas requires the laborer to decide constantly whether to harvest a particular plant and individual pods on each plant now or later. This crop characteristic creates a potential advantage for small family farms that supervise their own labor.

*Working-Capital Intensity* / In part because of rigid standards for product quality and uniformity, many export crops require intense use of purchased inputs and thus large amounts of working capital to finance them. High working-capital requirements for any export crop create a bias against small farms to the extent that capital markets favor large farms.<sup>10</sup>

*Human-Capital Intensity* / The technical complexity of export crops and their associated inputs may create high returns to managerial ability and other attributes of “human capital.” If operators of smaller units are less educated and technically skilled than operators of larger units and if managerial skills are difficult to obtain, then crops intensive in human capital may be biased against small farmers.

*Measurement of Price and Quality Measurement* / Export crops often face rigid quality requirements, with prices heavily discounted for product that is inferior in quality. Because of small farms’ ability to mobilize self-supervising, interactive labor, they may be able to produce higher quality outputs. Yet the smaller scale of such farms becomes a liability to the extent that ascertaining product quality is expensive and spot-checking a

9. The economic theory of imperfect information suggests that labor and capital markets are likely to be intrinsically imperfect in agrarian economies. For overviews of this literature, see the essays in Bardhan (1989). The imperfect marketability of family labor (because of marginal unemployment or other considerations) and the costs of recruiting and supervising hired labor imply that the effective cost of family labor is lower than the market wage. In addition, capital markets are systematically biased against smallholders, rationing them out of the market or offering them credit at unfavorable terms (for an overview of capital-market theory, see Barham, Boucher, and Carter n.d.). Factor markets are said to be “size-sensitive” in that the effective cost or shadow prices of factors vary according to farm size.

10. Most theories regarding preferential access to capital for large farms are built around the dual problems of small farmers having limited collateral while the costs of information are fixed.



small lot (for pesticide residues, for example) can cost as much as spot-checking a large one.

*Product Perishability, Continuous Processing, and Gains from Vertical Coordination* / An example of an economically perishable crop is sugarcane, which loses value rapidly if not processed soon after harvest. Because processing facilities (such as sugar mills and vegetable-freezing plants) tend to offer economies of scale but must cover high fixed costs, product perishability creates incentives for vertical coordination that schedules agricultural production so as to guarantee continuous and smooth and hence economical use of installed processing capacity.

*Investment Gestation Period* / Fruit trees and other crops requiring large initial investments that pay off only after some years pose special problems for small farmers. In the first place, access to loans for the initial financing is likely to be problematic. Second, poorer individuals will find it a hardship to tie up most of their capital in activities that require long gestation, especially because unexpected consumption and other needs could demand various uses of their wealth.

*Output and Relative Price Risks* / Export crops are generally riskier than traditional food crops. First, they may be subject to larger fluctuation in quantity or quality of output. If working-capital requirements are high, these fluctuations in output create large financial risks. Second, the export price relative to food and other consumer prices may also vary. This "relative price risk" worsens when the export crop is neither edible nor storable. Without adequate insurance and future markets, the probability that an individual will face a subsistence crisis if the crop fails or demand falls is directly tied to the individual's wealth, savings, and capacity to self-insure.

In sum, while most if not all agricultural production processes exhibit constant returns to scale that are understood as a technological characteristic, factor and product markets constrained by lack of information and wealth tend to create biases based on farm size and wealth. Most of the crop characteristics mentioned favor large units, although two of them (interactive labor intensity and measurement of price and quality) may favor smaller production units. The direction of these biases matter because the units in the size category that enjoys greatest profitability for the crop would be expected to adopt that crop more frequently and more intensively than farms facing severe negative biases.

#### *Contracts and Institutions Mitigating Class Biases*

Certain mechanisms of collective action and contractual relations have the potential to mitigate some of the competitive disadvantages of

small farms. For example, producer cooperatives can seek out technical assistance to help eliminate biases that might be created by the human-capital intensity of the good or by issues surrounding measurement of price and quality. Contract farming and sharecropping are two contractual forms that can mediate or compromise between crop characteristics like interactive labor intensity (which prevents larger farms from being competitive) and working-capital intensity (which constrains smaller farms relying on family labor).

In contract farming, an exporter or other contracting agent provides working capital and technical assistance to smallholders who are unlikely to be able to access these goods independently in the markets. The bundling or interlinking of these services involves the contractor in the production process, allowing smallholders to use a standing crop as collateral for credit and other services provided. Involvement of the exporter or processor in making agricultural decisions can also facilitate some of the benefits of vertical coordination.

Despite the important economic advantages offered by contract farming and other contractual partnerships, they are frequently criticized for being decidedly unfriendly to owners of small-scale farms (Clapp 1988; Glover and Kusterer 1990; Watts 1990). These criticisms have focused on the risk to which contract farmers are exposed and the low and fluctuating prices they receive for their crops. Unfortunately, the risk exposure of contract farmers is not an accidental attribute of contractual partnership. As the economic theory of incentives makes clear, in environments of imperfect information, the provision of incentives creates risk exposure. In other words, it would be impossible to remove the risk borne by contract farmers without also destroying the incentives needed to make the contractual form work. The ill effects of risk can be exacerbated by unequal bargaining power between farmers and processors in determining after the harvest the quality and amount to be purchased and the price (see Clapp 1988). These bargaining problems of small producers can be diminished by relatively high levels of competition among contractors and by collective bargaining by farm cooperatives that contribute to higher prices.

In the final analysis, contract farming and sharecropping are compromises that result from multiple market imperfections. Their ability to incorporate small farmers into an agro-export boom as direct producers is contingent: it may be possible in some places or for a while. But as a compromise measure, contract farming cannot always be counted on to ensure positive direct effects from agro-export production on the rural poor.

One example of the changes that can occur in contract farming is found in highland Guatemala export vegetable production. One major exporter (ALCOSA) shifted from large-scale direct production to direct

contracts with small farmers after discovering that the labor cost advantages possessed by small farmers outweighed any problems that might arise in scheduling production, delivering working capital, and providing technical assistance to multiple small producers (Kusterer, Estrada de Batres, and Xuya Cuxil 1981; von Braun, Hotchkiss, and Immink 1989). But although the contract-farming regime appeared to be the competitively dominant way of organizing production of vegetables for export, its dominance is proving to be short-lived. Recently, exporters have begun to shift away from contract farming, at least with the smallest-scale producers, because of the increasing costs associated with quality measurement in contract farming. In particular, problems with pesticide residues on Guatemalan exports have been threatening the entry and price of Guatemalan products in the U.S. market. Exporters have found it necessary to supervise the production process more intensively. Unfortunately, intensive supervision of smallholders' use of pesticides appears economically infeasible because of the costs of monitoring and spot-checking. Exporters are thus reintroducing direct production and contracting only with larger-scale growers.

In sum, the short-term effects of agro-export growth will be determined by how export-crop characteristics, markets constrained by information and wealth, and mitigating institutional arrangements shape participation by small farms and other producers. Over time, variations in economic returns by different sized farms will generate incentives for structural change by affecting the value of land as perceived by these farmers.

### *Induced Structural Change*

The short-term levels of participation by different classes of producers and the medium-term patterns of structural change are linked by the "competitiveness regime" of the agro-export crops. In other words, more competitive producers (those better able to adopt and produce the crops profitably) will tend to value land more highly than other producers and be willing to pay other producers a price that will induce them to sell their land. Just as access to credit and wealth can affect the adoption and profitability of boom crops by enabling producers to overcome high requirements of working capital or to finance long gestation periods for perennial investments, a producer's ability to afford to buy land will be similarly affected by these factors. Differential valuation of land is therefore positively related to credit access in two ways: scarcity of capital affects land valuation directly because it restricts production strategies and profitability; indirectly, capital scarcity affects the capacity of producers to finance land purchases.<sup>11</sup>

Finally, the degree to which differences in class competitiveness

11. In other words, the scarcity of capital shapes the rate at which producers discount the future flows of income possible with the purchase of an additional unit of land.

induces patterns of structural change will depend on how local land markets function, particularly in the face of transaction costs associated with transfers between producers on different scales. For example, transaction costs may make it prohibitive for smallholders to buy small pieces of land from a much larger unit because of negotiation, subdivision, and legal costs. Conversely, it may be expensive for wealthier individuals to consolidate a single holding out of multiple smallholdings. Land markets therefore may be segmented, making the effective price of land different in the two markets. This kind of segmentation can create barriers to induced structural change driven by differences in competitiveness among strata, blocking the shift of land from less to more competitive classes of producers. The precise nature of the medium-term effects on both land access and generation of net employment thus depends not only on the competitiveness regime but on the fluidity of the land market.

#### AGRO-EXPORT BOOMS IN CHILE, GUATEMALA, AND PARAGUAY

According to the conceptual framework reviewed in the previous section, the impact of an agro-export boom could expand in several directions, depending on which class biases dominate. In an effort to resolve this conceptual ambiguity and understand better the economics of export booms, a coordinated program of collecting and analyzing primary data was undertaken in Chile, Guatemala, and Paraguay. Conveniently, the different boom crops—fruit in Chile, winter vegetables in Guatemala, and commercial grains in Paraguay—brought a wide range of crop characteristics to the cross-national project. In each country, two types of data were collected from stratified random samples of agricultural producers drawn from a range of operating farm units: production data sufficient to identify current patterns of resource allocation and income; and retrospective information on land, purchases, sales, rental, and other transactions needed to identify life-cycle patterns of land access and accumulation. These data make possible evaluation of the changing patterns of land access and labor absorption in these three countries that account for farm-level constraints and production decisions, which determine the competitiveness of different producers and their expansion capacities.

Figure 1 presents a qualitative summary of the research findings. The horizontal axis measures the employment impact of agro-export growth. Values to the left of zero indicate decreases in total labor absorption, while positive values indicate increased labor absorption. The vertical axis indicates changes in the land access of the poor. Values below zero indicate that the agro-export boom induced structural change that diminished the land access of most small farmers and the rural poor. Positive values indicate improved land access for these groups.

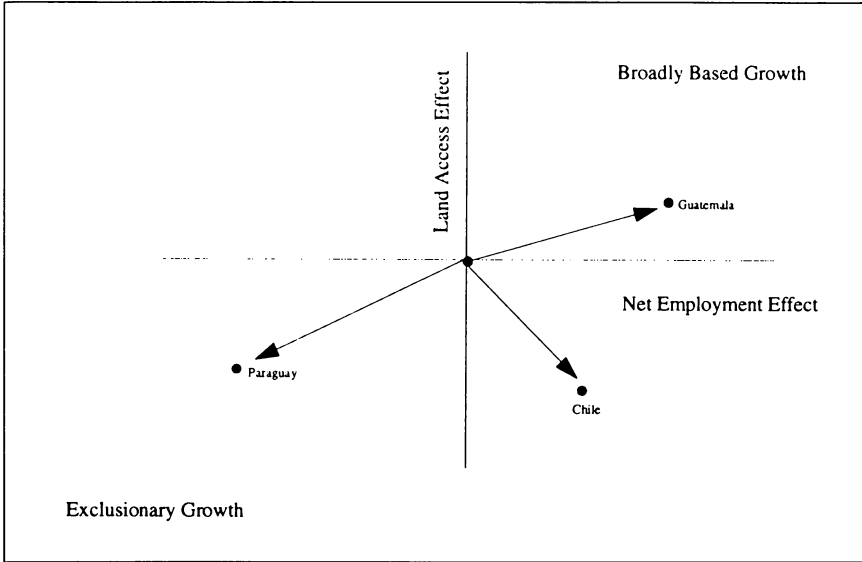


FIGURE 1 Impacts of Growth in Agriculture Exports on the Rural Poor in Latin America.

Agro-export growth trajectories that move the economy into the upper-right quadrant of the figure thus represent broadly based growth experiences with unambiguously positive sectoral effects on poor rural households.<sup>12</sup> In contrast, growth trajectories moving toward the lower-left quadrant are exclusionary ones with negative sectoral consequences for the rural poor. Trajectories in the lower-right quadrant have ambiguous effects on welfare. Land access for the rural poor will have deteriorated, but employment opportunities will have improved. Trajectories moving into the upper-left quadrant are unlikely because they would imply a shift of land to smallholders and a decrease in labor intensity, an outcome that would contradict broad evidence on the higher labor intensity of smaller farms.

Although other indicators could be examined for evidence regarding an export boom's impact on social welfare, these effects on land access and labor absorption are central to the nature of booms. The most contentious export booms have been precisely the ones exhibiting trajectories that doubly squeeze poor rural households by diminishing access to land (or making it more expensive) and reducing employment opportunities (for examples, see Williams 1986). Such effects are important

12. A growth boom that positively affects rural poor households may have ambiguous effects on some individuals, such as women or children. This topic is analyzed in the case of the Guatemalan agro-export boom by Katz (n.d.) and Csete and Woldt (1993).

because they are articulated through markets and market prices, meaning that their effects spill over onto individuals who are not participating in the boom. While comparing the income of sample households before and after the boom would be a way to gauge the impact of a boom on poor households, such data are hard to come by. Moreover, the approach undertaken here, rooted in the economic competitiveness of different strata of producers, helps identify the perhaps mutable constraints that shape the social impacts of export booms.

Figure 1 displays the trajectories for land access and labor absorption in recent agro-export booms in Chile, Guatemala, and Paraguay. The illustrated trajectories are approximate or qualitative summaries of the quantitative estimates discussed in the following sections. The most striking feature of Figure 1 is the variation among the three agro-export experiences. Subject to caveats that will be specified, the Chilean fruit boom appears ambiguous, demonstrating diminished access to land for smallholders but increases in net employment. The Paraguayan grain boom appears highly exclusionary, while the Guatemalan winter-vegetable boom seems to be broadly based. A closer look at the Guatemalan case suggests, however, that it may have unique characteristics and that the broad-based nature of the boom could prove to be short-lived. The positive view of employment increases in the Chilean boom may also need to be tempered, given the highly seasonal nature of the jobs created and the stagnant wage profile of seasonal laborers for much of the boom. At the same time, our emphasis on sectoral-level impacts of agro-export growth does not include the potential spillover effects of the booming sector on the Chilean macroeconomy and trade balance. As noted, one goal of this research is to identify policies that will increase the likelihood of a broad-based growth process so that the macroeconomic benefits of a boom need not be bought at the cost of exclusionary patterns of sectoral growth.

### *The Chilean Boom in Fruit Exports and the Rural Poor*

The historical context for this boom dates back to the mid-1960s, when the administration of Eduardo Frei (1964–1970), faced with stagnating agricultural growth, embarked on one of the most ambitious land reform programs ever undertaken in Latin America. The agrarian reform, extended and intensified by the administration of Salvador Allende (1970–1973), expropriated 43 percent of agricultural land (in quality-adjusted terms). The land reform was curtailed abruptly by a military coup in 1973 and land redistributed in the reform was returned to the private sector. After restoring 30 percent of the land originally expropriated to former owners, the military allocated most of the remaining land in the reform sector to individual beneficiaries as private plots or *parcelas*. By the time



this parcellation was completed in 1979, 48,000 families had received plots of land averaging 10 basic irrigated hectares (BIH).

From 1973 onward, the military also implemented a series of neo-liberal and market-oriented agricultural policies, seeking a greater role for Chile in the international market. Agricultural and forestry exports were promoted heavily. As a result, the total area devoted to fruit crops nearly tripled between 1974 and 1990, and the current dollar value of agro-forestry exports in 1990 was ten times that of 1974. This sustained agro-export growth has garnered widespread admiration for the Chilean export model and the country's neoliberal economic strategy.

The Chilean experience, including the parcellation of the 1970s, offers a quasi-experimental opportunity to study the impact of patterns of export-crop adoption, induced structural change, and labor absorption on the rural poor. As described in the technical appendix, farm-level data were gathered in 1991–1992 from a sample of 207 original *parceleros* located in two different economic environments: one where the production of fruit for export has been booming (the province of Cachapoal, in the northern Central Valley, which contains about a quarter of the land under fruit cultivation nationwide); and another area where production of traditional crops for the domestic market still dominates (the province of Ñuble in the southern Central Valley).

Other studies on fruit producers, for the fruit-growing region as well as the one where the production of traditional crops dominate, reveal the low adoption rate of export crops by small-scale farmers (CIREN 1990, 1991). In the fruit-growing region where the province of Cachapoal is located, farms of up to 5 hectares represent 57 percent of all agricultural units but only 16 percent of fruit growers. Meanwhile, farms larger than 20 hectares represent 14 percent of the agricultural units in the region but 43 percent of fruit growers. In the region that includes the province of Ñuble, 48 percent of farm units are no larger than 5 hectares, but only 15 percent of fruit producers fall into this size category. At the same time, less than 25 percent of farm units exceed 20 hectares, but they represent 62 percent of fruit producers.<sup>13</sup> In both regions, the farmers who have adopted fruit crops are clearly the larger growers.

The limited extent of export-crop adoption by smallholders can be explained by the specific characteristics of fruit production, which create a bias against smaller production units in an environment of markets constrained by information and wealth. Shifting production to fruit plantations requires sinking large amounts into capital investments that produce no returns during a long gestation period. Fruit cultivation and

13. In the absence of a new agricultural census, the information on the distribution of agricultural properties in the two regions under study is based on agricultural tax rolls for 1989.

export also require standardized production and packaging, which call for large quantities of working capital and access to additional investment funds. In Chile, exporter credit was available for such production, but most smallholders and parceleros were not able to obtain loans. Smallholders also lacked the "human-capital" attributes such as technical expertise in fruit production and the entrepreneurial ability and familiarity with institutions involved in export production, like banks and export firms (Jarvis 1989). Moreover, smallholders were constrained by the reluctance of agro-export firms to contract with small-scale fruit growers because of the transaction costs involved in working with multiple small producers. The absence of well-organized marketing and processing cooperatives further limited participation by smallholders in the export boom.

Moreover, production of the traditional crops that small farmers usually grew for the domestic market became increasingly less profitable from 1973 until the severe economic and agricultural crisis of 1982–1983. Meanwhile, the fruit boom created a strong demand for high-quality parcelero land by individuals with enough financial resources (including easier access to credit) to participate in the boom. As Lovell Jarvis observed, "Squeezed economically, on the one hand, and offered high prices for land, on the other, many parceleros chose to sell out" (Jarvis 1989, 242).

The number of parcels sold in the short period since 1973 has been staggering, especially considering that agricultural land markets in other countries (including Chile before 1975) have been fairly inactive. A study conducted in 1979 by the Instituto de Capacitación e Investigación en Reforma Agraria (ICIRA) indicated that about 15 percent of the land reform assignees had sold their land by June 1978. Rough estimates suggest that at least 30 percent of the parcelas had been sold by December 1979 (Jarvis 1981) and about 40 percent by the end of 1986 (Gómez and Echenique 1988). A recent study on parcelero land sales estimates that at the national level, 57 percent of the original 48,000 beneficiaries have sold their land (Echenique and Rolando 1991).

The data on 207 farms collected for this study show that sales by parceleros have been more prevalent in the northern Central Valley, where production for export crops has been the most profitable (in the so-called *frutícola*, or fruit-growing zone). Land sales have been less common in areas better suited to growing traditional crops (the *policultura*, or mixed-crop zone).<sup>14</sup> Comparing sales data from 1977 to 1991 for the sample of 207 parcelas, the disparity is significant between total parcels sold in the

14. Molina (1987) and Echenique and Rolando (1991) offer substantial evidence of large numbers of sales of land by parceleros in the Región Metropolitana (where export crops dominate) but fewer sales in more remote regions.

predominantly fruit-growing region (54 percent) and those sold in the region in which fruit production has not yet made such inroads (45 percent). Moreover, for the fruit-growing region, the percentage of parcels sold by 1991 increases to 65 percent after excluding parcels located in a more isolated *comuna* where fruit production has only recently become widespread.

Further evidence on the structural effects of these transactions can be obtained by identifying the extent and patterns of mobility that lead to the dominance of one category of producers over others. Tables 2 and 3 record the movement of households between different size categories of landholdings between 1977–1978 and 1990–1991, in the fruit-growing and the mixed-crop regions.<sup>15</sup>

The picture presented in these tables looks somewhat ambiguous at first. On the one hand, all households in the largest categories (larger than 40 BIH) in 1977–1978 remained in those same categories in 1990–1991. In both regions, several large landlords had even accumulated additional land over this period. On the other hand, signs can be noted of considerable upward mobility for households in the smallest categories. In both regions, a number of new farming units had been formed by 1990–1991 by households that had no land in 1977–1978. While this observation seems to signal upward mobility for the landless, closer examination of the background of individual entries in the tables reveals that the new entrants were practically all new actors in the rural economy who enjoyed substantial sources of income outside agriculture. These well-financed new individuals—often professionals—have successfully accumulated land at the expense of parcelero smallholders.

In fact, the mobility tables reveal that many who received parcels during the parcellation no longer owned that land. Among households owning farms between 8 and 12 BIH (the majority of parceleros), only 44 percent in the mixed-crop region and 40 percent in the fruit-growing region remained in that category by 1990–1991. The downward mobility of those in this stratum is all the more pronounced on considering the long downward leap along the ranking scale. In the southern Central Valley, 35 percent of households owning 8 to 12 BIH in 1977–1978 were landless by 1990–1991, and in the northern Central Valley the total was 46

15. Forty parcels in Cachapal and an equal number in Ñuble were selected initially from a group of 207 parcels assigned to beneficiaries of the land reform in 1976–1977, and a “land-transaction history” was reconstructed for each farm unit that currently owns any portion of the parcels chosen. In addition, land-transaction histories were reconstructed for parceleros who had been assigned and subsequently sold any of the parcels selected for the study. In each region, 7 current owners of *reserva* (meaning partially expropriated lands) were also asked to reconstruct the history of their farms with respect to land accumulation from 1977–1978 through 1990–1991.

TABLE 2 Household Mobility and Structural Change in the Chilean Fruit Zone, 1977–1978 to 1990–1991

Size Category in 1977–1978		Size Category in 1990–1991 in Basic Irrigated Hectares								(N in 1990–91 <sup>b</sup> )
<i>in</i> BIH <sup>a</sup>	(N in 1977–78 <sup>b</sup> )	0 (%)	0–1 (%)	1–5 (%)	5–8 (%)	8–12 (%)	12–40 (%)	40–80 (%)	>80 (%)	
0	(8)					25.0	50.0	25.0		(19)
0.1–1	(0)									(0)
1–5	(0)									(3)
5–8	(5)	60.0		20.0	20.0					(2)
8–12	(35)	45.7		5.7	2.9	40.0	5.7			(16)
12–40	(4)						75.0	25.0		(9)
40–80	(4)							75.0	25.0	(6)
>80	(1)								100.0	(2)
Total households	(57)									(57)

<sup>a</sup> Basic irrigated hectares

<sup>b</sup> Number of households

TABLE 3 Household Mobility and Structural Change in the Chilean Mixed-Crop Zone, 1977–1978 to 1990–1991

Size Category in 1977–1978		Size Category in 1990–1991 in Basic Irrigated Hectares								(N in 1990–91 <sup>b</sup> )
<i>in</i> BIH <sup>a</sup>	(N in 1977–78 <sup>b</sup> )	0 (%)	0–1 (%)	1–5 (%)	5–8 (%)	8–12 (%)	12–40 (%)	40–80 (%)	>80 (%)	
0	(12)		33.3			16.7	50.0			(16)
0–1	(1)				100.0					(5)
1–5	(1)									(4)
5–8	(8)	50.0			25.0	12.5	12.5			(5)
8–12	(34)	35.3	2.9	11.8	5.9	44.1				(20)
12–40	(9)					22.2	55.6		22.2	(13)
40–80	(1)								100.00	(0)
>80	(0)									(3)
Total households	(66)									(66)

<sup>a</sup> Basic irrigated hectares

<sup>b</sup> Number of households

percent. Overall, then, the mobility tables reveal little upward mobility by parcelero households.

The stark and rapid restructuring following the parcellation of the 1970s has led a number of observers to comment on the exclusionary nature of Chile’s agro-export growth experience (Jarvis 1989; Cox, Niño de Zepeda, and Rojas 1990; Ortega 1988). Yet these direct exclusionary effects on the land use and access of the rural poor in the northern Central Valley may have been offset to some degree by positive indirect effects from increased employment. Preliminary evidence from the production data gathered in the fruit-growing region reveals that smaller

farms are more labor-intensive than larger operational units for a given crop. But because the direction of induced structural change has also shifted patterns of land use into more labor-intensive crops, the overall impact of the agro-export boom appears to have increased labor absorption.

While this move toward the lower-right quadrant in figure 1 adequately captures the experience of the northern Central Valley, where the fruit boom is most developed, more recent export growth in the southern part of the Central Valley may be taking a somewhat different shape. The process of land polarization appears more acute in the southern part of the Central Valley, where traditional crop agriculture and animal husbandry continue to predominate. Preliminary estimates of labor absorption and structural change indicate that land in the south is moving toward units that are larger than the expanding units in the northern Central Valley and possibly less labor-absorbing than the units they are replacing. In the southern Central Valley, land transactions are shifting land from parceleros to farms ranging from 12 to 40 BIH and to those exceeding 40 BIH. The impact of these structural shifts on labor absorption remains unclear: farms of 12 to 40 BIH display the lowest employment levels of all farm units, while farms larger than 40 BIH have the highest level of labor absorption (except for the smallest farms). These preliminary estimates point toward medium-term effects that could move the growth path toward the lower-left quadrant of figure 1.

Even though the numbers on labor absorption for the Chilean fruit boom are positive, evaluations of the impact on the welfare of the rural poor need to include two other features of these labor opportunities. First, employment in Chilean agriculture has become largely seasonal. For example, Sergio Gómez and Jorge Echenique (1988) found a dramatic shift toward seasonal employment between 1975 and 1986. Second, until 1989, wage levels for agro-export laborers had fallen below real-wage levels of 1970, reflecting the aggregate slack in Chilean labor markets and the particularly weak bargaining position of seasonal, unorganized, and predominantly female rural labor. What makes these figures on stagnant wages especially striking is that they occurred during an era of dramatic growth in export revenues, implying that the share of labor income must have fallen dramatically during the extensive boom.

### *Broad-Based Growth in the Guatemalan Highlands*

Land distribution in Guatemala is renowned for its extreme inequality. Booms in cotton, sugar, and cattle following World War II significantly exacerbated land inequality (see Williams 1986; von Braun, Hotchkiss, and Immink 1989). In 1979, when the last agricultural census was taken, Guatemala had one of Latin America's most concentrated land

distributions, with a Gini coefficient of 0.85 (1.0 indicates total inequality). Only Brazil might have had a higher level of land concentration.<sup>16</sup>

While farmholdings on the Guatemalan Pacific Coast are large and extremely concentrated, landholdings among the rural poor in the highlands are highly fragmented, with most households owning less than 1 hectare. In the past, labor opportunities for these smallholders have been far from home and have required costly and disruptive seasonal labor migration, mostly to the south coast, where working conditions are difficult (Menchú 1984; Schweigert 1990). Guatemala's record of extreme rural inequality underscores the importance of pursuing inclusionary agro-export growth opportunities.

Survey data gathered from 318 smallholder units in five villages in the central highlands of Guatemala in 1989–1991 provide evidence that the latest boom in winter-vegetable exports was following a broad-based or inclusive path. Within certain limitations (which will be explored later), smallholders were growing broccoli and snow peas (the primary export crops). While labor intensity appeared to decline rapidly with respect to operational farm size, the primary export crops were 50 to 300 percent more labor-absorbing than the traditional activities they had displaced.<sup>17</sup>

In addition, the results of a recent econometric analysis of the impact of the agro-export boom on patterns of land access and accumulation over time show that the export boom has induced a transfer of land from modestly larger to smaller farms. Barham, Carter, and Sigelko (1995) have estimated the impact of the export boom on trajectories of land accumulation for different sizes of highland farm units. They found that the rate of land accumulation by small-scale adopters of nontraditional exports (who farm less than 1 hectare) was significantly more pronounced in the boom period than prior to the boom. On the modestly larger farms (3 hectares in size), adopters of nontraditional exports have not increased their landholdings in the post-boom era because they tend to put little of their land into nontraditional export production (for reasons yet to be discussed). Meanwhile, nonadopters in both categories have been the relative losers among the farm units in terms of access to land, gaining access to less land than they would have in the period before the boom.

As shown in figure 1, this kind of induced structural change would intensify the labor-absorption effects as well as broaden the direct participation by poorer rural households in the agro-export boom. Although recent changes in the export prospects for these households may be affecting these initial inclusionary outcomes, the Guatemalan highland experience is revealing, especially if it proves to be short-lived.

Key features behind the broad-based growth pattern of winter

16. For measures of land concentration in Brazil, see Thiesenhusen and Melmed-Sanjak (1990).

17. See table 1 in Barham, Carter, and Sigelko (1995) for average estimates of labor and capital intensity for the different crops.



vegetable exports include five characteristics: their high requirements for interactive labor (von Braun, Hotchkiss, and Immink 1989); the nature of the contractual linkages with processors that in some instances helped small farmers overcome constraints on working capital; their brief gestation that make possible two crops per season, or even three with irrigation (thus increasing the potential for labor absorption); small farmers' ability to pursue self-insurance strategies without compromising their access to land, by producing a mixture of basic grains and export crops; and a highly fragmented land distribution before the boom that insulated small farmers from direct competition with large-scale production units.

Although the highland Guatemalan agro-export boom has been broadly based, three processes have tempered its impact on rural poor households. As the statistical analysis reported in Barham, Carter, and Sigelko (1995) shows, all but the tiniest farm units are likely to adopt nontraditional exports, but the extent of adoption by smallholders (the amount of land allocated to export production) levels off rather quickly. Smallholders are estimated to be unable or unwilling to devote more than 0.3 hectares to remunerative export crops even when they have 2, 3, or even 4 hectares of land available for cultivation. The resulting low extent of adoption (30 percent of available land in export crops for the average adopter) reduces the potential impact of the boom on the rural poor in two ways: it lowers the amount of household income that might be earned from these crops offering higher returns, and it mutes the potential effects on increased labor absorption and employment.

Barham, Carter, and Sigelko (1995) explain this pattern of limited adoption in terms of the inability of smallholders to capitalize and bear the risk of devoting larger amounts of land to export crops. It is striking that financial market constraints on smallholders appear so pervasive even in a region where these farms have adopted boom crops and done well in the short and medium terms. Unfortunately, these constraints also suggest the need for caution about a second possible dynamic that could undermine broadly based growth: long-term structural change. The reasons are twofold. First, the accumulation potential of smallholders will probably be limited by their inability to adopt export crops more extensively and their difficulty in obtaining the necessary financing. Second, with farms exceeding 4 hectares, the area devoted to agro-export crops climbs sharply, indicating some advantage to larger-scale farms in capitalizing or bearing the risk of export crops.

A complementary but nonrandom sample of larger producers in the highland area (those holding 30 to 200 hectares) identified a class of producers devoting between 60 and 100 percent of their cropped area to the export crops. This subsample has also been accumulating land at a rapid rate. Because the labor intensity of producing winter vegetables falls off sharply even when farm size increases modestly in the 1 to 4

hectare range, a longer-term shift of land to larger-scale and better-capitalized and -insured producers would undercut the land access and employment-generating aspects of the export boom.

Finally, increasing problems with pesticide residues threaten to introduce a third dynamic into the evolution of the sector. In the international market, exporters bear the risk that crops will be rejected for high levels of pesticide residues. Although the 1990–1991 data analyzed here do not reveal any systematic evidence that these new dynamics had fundamentally impinged on the broad base characterizing the Guatemalan export growth process at that stage, they do signal the kinds of microeconomic constraints that might tilt the competitive advantage of producing export crops away from smallholders.

The Guatemalan winter-vegetable boom was initially inclusive, because of the confluence of five factors just discussed. It remains unclear, however, whether the potential breakdown of contractual relations and market access for small-scale producers as well as their problems with access to credit and exposure to risk will allow them to continue playing an important role in agro-export production in Guatemala.

### *Exclusionary Growth in Paraguay*

The Paraguayan economy depends almost entirely on agriculture and related activities. In 1989, 96 percent of total exports consisted of livestock and agricultural and forest products. Like many Latin American countries, Paraguay exhibits a highly skewed land distribution.<sup>18</sup> With almost 60 percent of the population living in the countryside, the unequal distribution of land could become an issue of considerable importance. Yet until recently, Paraguay had not experienced the sort of violent agrarian conflict common to many countries with an extremely skewed land distribution. Nor has the country undergone the rapid and uncontrolled urbanization that has plagued many other Latin American countries, a symptom of rural population losing its access to land.

One reason why Paraguayan concentration of landownership has not proved an explosive issue until recently is that in the past, large landowners tolerated widespread squatting on areas not being used, often a major proportion of their holding. There were also legal ways of laying claim to unused land. From the 1960s onward, an official colonization policy was distributing state-owned land, much of it in remote parts of the interior and border areas, while encouraging private colonization schemes as well.

But according to Luis Galeano's (1994) summary, the means that

18. Unlike many Latin American economies, Paraguay's export sector depends heavily on small-farm production. Cotton is produced primarily by small farmers: almost 70 percent of the area dedicated to cotton in 1981 was on farms of less than 20 hectares. Cotton alone accounted for more than a third of all Paraguayan exports in 1990.

traditionally have relieved land hunger in rural Paraguay have been exhausted. State-owned land available for distribution through the colonization program has been significantly diminished since the late 1970s. Construction of roads into the fertile eastern border areas in the late 1970s and 1980s encouraged many foreigners, especially Brazilians to immigrate to those areas, where land often cost one-tenth the price of similar land across the border (Wilson, Hay, and Margolis 1989, 207). While such immigration fueled an agro-export boom on the frontier, this influx of better capitalized large-scale farmers, who found Paraguayan land prices a bargain, tended to push prices up in the border areas and make land harder for poor Paraguayans to buy. And because land had become more valuable, new squatters were evicted more often. In addition, throughout the 1980s, the national population continued to grow at 3.2 percent, one of the highest rates in Latin America. Michael Carter, Karen Luz, and Luis Galeano (n.d.) reported that the real price of agricultural land has risen at a rate of more than 5 percent a year since the mid-1960s. The confluence of these circumstances left the younger generation with few options for obtaining land to farm as they entered adulthood. As a result, organized land invasions increased throughout the 1980s, some of them ending in violent confrontations. A central challenge facing Paraguay's newly elected democratic government is to find ways of improving peasant access to land in a growing agricultural economy.

In an effort to understand better the microdynamics of agrarian growth in Paraguay, 300 rural households drawn from the *minifundia*, colonization, and Brazilian frontier regions were surveyed in 1991–1992 (see the technical appendix for details on the survey design). Analysis of the data uncovered a pattern of relatively low labor absorption per hectare on large farms. For example, in the frontier department of Itapúa, regression estimates show that labor absorption falls sharply from more than 100 days of labor per hectare on farms of 5 hectares to only 30 days per hectare on farms of 100 hectares. This sharp behavioral differentiation in production signals the size-sensitive prices already discussed. It also establishes strong connections between the short- and longer-term effects of an export boom. In this context, induced structural change that shifts land from one class of producers to another will have pronounced effects on labor absorption.

Analyzing the impact of rapid agricultural growth on peasant access to land shows heterogeneous results across different regions of Paraguay. Carter (1994) estimated life-cycle trajectories of land access on the basis of the survey data.<sup>19</sup> To capture the impact of the boom and the rising land prices associated with it, Carter used a statistical specification that permitted the estimated trajectories to reflect changes in the price of land. In the colonization region, higher land prices after the boom have uni-

19. For details on the estimation procedure, see Carter (1994).

formly depressed the life-cycle trajectory of land access for farmers in all categories.<sup>20</sup> By contrast, in the frontier region, higher land prices have been associated with increased access to land for the largest farmers while dampening access for farmers in the smaller categories. At the national level, this same pattern of unequal land accumulation can be seen in the agricultural census figures showing that the percentage of land in large farms increased during the 1980s in this boom region (Galeano 1992).

The squeeze on peasant land access in the frontier region is entirely consistent with Carter's (1994) estimates of farmers' economic willingness and ability to pay for land. In the frontier region, the sampled farmers' self-reported willingness to pay for an additional hectare of land doubles when farm size increases from 10 to 100 hectares. Indirect estimates, calculated on the economic returns to land, yield a similar picture. These estimates point to an overwhelming competitive disadvantage for smallholders in this export-boom region. Thus the "class competitiveness regime" is strongly tilted against small farmers.<sup>21</sup> In contrast to these results for the frontier region, estimates for the minifundia and colonization regions of Paraguay indicate that the estimated shadow value of land decreases as farm size increases, a factor consistent with the ability of small farms in these regions to maintain their relative access to land as land prices have gone up.

Why has this agro-export boom taken the form that figure 1 portrays as a drift toward highly exclusionary growth that limits both land access and employment for the peasant sector? Two sets of factors stand out. The first set relates to crop characteristics and the relative economic importance of the countervailing class biases they create. The second set concerns the nature of the land market in the boom area.

In terms of crop characteristics, the boom crops (wheat and soy) require relatively little interactive high-quality labor. The advantage in labor costs of small-scale farms using family labor is thus muted in comparison with Guatemala and probably also Chile.<sup>22</sup> The capital access

20. The statistical results for the minifundia region mimic those of the colonization region.

21. At the time of the survey, the market price for a unit of land was about 1.2 million *guaraníes* per hectare (about 900 U.S. dollars at the 1991 exchange rate). At this price, farms smaller in size than about 50 hectares appear to be noncompetitive in that the market price exceeds their economic ability to pay for land.

22. The muting effect is deepened by the mechanization of large farms. While family-labor farms may have a cost advantage in terms of labor, mechanization on large farms circumvents the problem of supervising labor and may lessen the competitive disadvantage they face. Abijhat Sen (1981) noted that mechanization is an option that may reduce the relative competitive disadvantage of large farms hiring a lot of labor when confronted by a small-farm sector able to engage in Chayanovian self-exploitation (defined as the capacity to intensify use of family labor by working at an implicit wage that is only a fraction of the market wage). Sen stressed that large farms often circumvent their high efficiency cost of labor by using machinery. In this region of Paraguay, mechanization may also help get around problems created by the seasonality of agricultural demand for labor.

problem, however, continues to weigh heavily against smallholders in this region. Econometric estimates by Carter (1994) reveal small farms to be much more tightly constrained by capital than large landholders in the frontier region. The interaction of crop and market characteristics thus creates a situation in which small-scale producers operate at a competitive disadvantage.<sup>23</sup> Solving the competitiveness problems of smallholders therefore requires resolving the problem of limited access to capital.

The second factor underlying the exclusionary nature of the export boom in the Paraguayan frontier region is the nature of the land distribution before the boom. Unlike the long-settled core of the minifundia region of Paraguay, settlement in the frontier region took place via colonization projects that typically endowed smallholders with plots of 20 hectares. Thus land in this region was not highly fragmented, but much of it was assigned in blocks too large for smallholders to capitalize and use effectively. The land market in this area was probably not impaired by the kinds of transaction costs that would have been operating in a traditional minifundia area. The land market thus could readily translate the incentives for structural change into actual reshaping of agrarian structure.

To summarize, a microeconomic reality of unequal capital constraints differentiated by size underlies the exclusionary and socially problematic export boom occurring in Paraguay. Some smallholders have been outcompeted in the land market by large farms. Others have simply sold out. Although no reason exists to question the private rationality of these decisions, the resulting shift in agrarian structure has affected the minifundia sector as more and more resources have been shifted to forms of production that absorb less labor. Unfortunately, as the history of Latin America (especially Central America) shows, the Paraguayan exclusionary outcome is far from a special case (see Williams 1986; Brockett 1988; Grindle 1986).

#### LESSONS ON AGRO-EXPORT GROWTH AND THE RURAL POOR

Evidence from the latest push for agro-export growth in Latin America reveals variations in the impacts on the rural poor. Farm-level data gathered in booming regions of Chile, Guatemala, and Paraguay demonstrate that in all three cases the amount of labor absorbed per unit of land in the boom crop decreases as the size of the farm-unit operation grows. The social welfare impacts of the export booms thus depend in the short run on which classes adopt the crops; in the longer run, these

23. Although recent economic theory on agrarian growth suggests that it is generally not possible to say which of these countervailing privileges will dominate (Carter and Zimmerman n.d.), evidence on the rapid accumulation of land by large farmers leaves no doubt that the advantage of having access to capital is dominating in the Paraguayan growth boom for wheat and soy.

impacts depend on the patterns of structural change that shift land between classes (and secondarily, alter levels of employment). If adoption of export crops favors smallholders, as it has in the Guatemalan highlands, then the positive impacts on the rural poor will tend to be magnified, and more and more so over time if the boom renders smallholders more competitive in the land market.

In the frontier region of Paraguay, the boom in wheat and soy production has given rise to precisely the opposite interaction. The boom, which directly favors large-scale farmers who absorb relatively little labor per hectare, has occasioned a pattern of structural change over time in which the shift of land to large farms has accentuated the negative impacts of the boom on the rural poor, creating a highly exclusionary growth trajectory that leaves peasants out as both producers and workers.

The Chilean experience falls somewhere in between these two cases. The fruit-export boom has bypassed the traditional minifundia sector and the small-scale farm sector created from the remnants of the agrarian reform. Over time, land has shifted from smallholders to larger holdings. At the same time, export crops on large farms seem to absorb more labor than the traditional crops (and farms) that they displace. The effects on social welfare of this partly exclusionary process have probably been aggravated by the restructuring of the workforce toward more seasonal labor.

What can be concluded from this heterogeneous experience? Conceptually, the best boom crop for the rural poor would be one that they could adopt on most of their land and grow competitively with larger-scale producers. None of the cases examined here revealed such a harmonious outcome because crop characteristics (as affected by imperfect market factors) worked against small-scale producers in one way or another in all three cases. Highland vegetable production in Guatemala, the most inclusive of the three booms, revealed a limited proportion of land growing boom crops among the holdings of small-scale farmers. In the other two cases, direct participation by small-scale producers was limited more severely by the class biases generated by interactions between crop characteristics and important factor markets constrained by information and wealth.

The general policy thrust of most agro-export strategies has been to emphasize labor-intensive crops because they help generate employment. Cases where labor interactivity is high might also enable direct participation by small-scale producers. On the whole, however, more competitive biases seem to be working against small-scale producers than working for them. Medium- and large-scale producers are favored by the working and human-capital intensity of many export crops, price-quality measurement concerns, product perishability and the resulting need for vertical integration, the extended gestation period for investments, and the absence of insurance markets. Small-scale producers seem to be favored only by labor interactivity, highly fragmented holdings that make



land consolidation costly, and (where they exist) contractual relations and cooperative institutions that reduce some of the other biases.

These three factors are not so much advantages as barriers to competitive displacement or mitigating institutions. Moreover, cooperative institutions have been declining in recent years in much of rural Latin America due to reduced foreign assistance, macroeconomic crises, austerity programs, and rapid changes in agrarian structure. From an overall production perspective, the social imperative for developing cooperative institutions has grown less critical, given the rapid modernization of many areas of Latin American agriculture. The political forces to support such efforts are also weaker in many countries, especially in the current climate of austerity and structural adjustment. Fragmented landholdings and their associated transaction costs will buffer competitive displacement only in limited areas, and they may represent a context in which the rural poor can take refuge rather than evidence of abundant opportunities.

This article has set forth a microeconomic argument as to why informed pessimism about agro-export strategies is in order, a perspective that offers more than blind faith in market forces to deliver equity for the rural poor but does not necessarily reject agro-export promotion. A fundamental result is the identification of a policy space for including the rural poor. In most instances, policymakers will have to attempt to overcome constraints on information and wealth in order to avoid biases against small farms. Such efforts require addressing imperfections in credit and risk markets, especially by creating and using alternative cooperative institutions. In other words, a deepening of local market and civic mechanisms will be necessary to improve the competitiveness of smaller-scale farms. The hierarchy and specific options of a policy framework for achieving this task lie beyond the scope of this article, but they have been developed in Carter, Barham, Mesbah, and Stanley (1993).

Three additional reasons argue for policymakers who are concerned about the rural poor in Latin America doing more than sitting back and letting the class biases of agro-export growth play themselves out. One is that some countries, especially in East Asia, have succeeded in developing more inclusive rural policies, which in turn may have played a critical role in their subsequent development successes (see Wade 1990). What remains unclear about the East Asian counterexample is how inclusive outcomes can be made in Latin America without the type of reforms in basic institutional and property rights undertaken in those countries.<sup>24</sup> A second reason for action is that the political, social, and economic

24. Using a dynamic simulation model, Carter and Zimmerman (n.d.) have explored the hypothesis that the initial structure of land distribution shapes the long-term structural trajectory. They explore in particular the "path dependence" hypothesis that the relatively stable, small-farm structures of East Asia are an endogenous result of egalitarian land distributions made at the outset.

consequences of exclusionary growth can be devastating and are therefore worth trying to prevent. The extreme social conflicts erupting in Central America and the extent of Brazilian rural poverty and its spill-overs into issues ranging from street children, urban squalor, and crime to environmental degradation should serve as motivating examples. Finally, policymakers should address the longstanding challenge of finding solutions to the problems of rural poverty rather than merely asking the poor to wait for the market to present them with better opportunities sometime in the indefinite future.

## TECHNICAL APPENDIX

### *Data Description and Survey Design*

The analysis presented in this article draws on coordinated collection of farm-level data on agro-export booms in Chile, Guatemala, and Paraguay. In each country, surveys solicited information that could be used to analyze and compare the agro-export adoption patterns of peasant farms, the effect on land access of shifting competitiveness among producers with farms of various sizes, and the labor-absorption effect created by the new crops and shifts in the underlying agrarian structure. The types of data gathered from individual farms included the farm history of land accumulation and divestment, annual land-use patterns dating back to the inception of the relevant agro-export boom, use of inputs and income by crop for the last year, income and employment in other activities, and access to credit and other potentially important inputs that might affect the decision to begin producing agricultural exports.

Variations in the local agrarian structure required distinct strategies in sample design in each country. In Chile the study focused on the evolution of landholdings in a sample of 13 former haciendas (large estates), 6 in the province of Cachapoal and 7 in Ñuble. These areas were originally surveyed in a 1965 study of large estates in the Central Valley of Chile. A list of the 241 "1977 farm units" that had evolved from the original 13 haciendas covered in 1965 was formed by reviewing the agrarian reform and parcellation case files maintained by the Servicio Agrícola y Ganadero of the Ministerio de Agricultura in Santiago. The list was updated to 1991 using information obtained at the Conservadores de Bienes Raíces (property registry offices) in Cachapoal and Ñuble. A random sample was drawn from the 1991 farm list, and the current owners (or users) of the selected farms were interviewed in 1991 and 1992.

In Guatemala researchers from the University of Wisconsin and the Instituto de Nutrición de Centro América y Panamá collaborated on collecting data from 319 households drawn from five villages in the central highlands. The five villages were deliberately selected from a region

where nontraditional exports of winter vegetables, especially broccoli and snow peas, had been booming: four as participants in the agro-export boom, and the fifth (a more geographically isolated village) as a "control site" (ironically, the control village expanded its participation in the export boom strongly during the year of interviewing). After taking an initial census of the 900 or so households in the five villages, a stratified random sample of 319 households was selected on the basis of farm size. Household interviews took place in 1990–1991. The selected sample reflects the extreme fragmentation of landholdings in this region, with only a small portion (6 percent) owning more than 3 hectares of land, compared with 79 percent owning less than 1.5 hectares of land. The lack of larger holdings in the sample resulted in part from choosing household units in the villages as the sample frame rather than a sample frame based on land. A second (nonrandom) sample of large-scale producers in the same locale was collected later.

In Paraguay random samples of farms were drawn from each of the three regions typically identified as having distinctive socioeconomic environments: the colonization region, the minifundia region, and the Brazilian frontier. For each region, a department was selected: San Pedro for the colonization region, Paraguari for the minifundia region, and Itapúa in the frontier region. A list was then compiled of districts (*compañías*) in each department. For *compañías* randomly selected from this list, a census of local farm units was constructed. A stratified random sample of approximately 100 farm units in each department was then obtained from the census lists. Large farms were oversampled relative to their population numbers to assure sufficient information on their logic and operation for statistical purposes. Interviews were carried out in late 1991.

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