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## REVIEW ESSAYS

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### RURAL DEVELOPMENT QUESTIONS IN LATIN AMERICA \*

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*UNDERMINING RURAL DEVELOPMENT WITH CHEAP CREDIT.* Edited by DALE W. ADAMS, DOUGLAS H. GRAHAM, and J. D. VON FISCHKE. (Boulder, Colo.: Westview Press, 1984. Pp. 307. \$25.00.)

*AGRICULTURAL CHOICE AND CHANGE: DECISION MAKING IN A COSTA RICAN COMMUNITY.* By PEGGY F. BARLETT. (New Brunswick, N.J.: Rutgers University Press, 1982. Pp. 189. \$22.50.)

*NATURAL RESOURCES AND DEVELOPMENT IN ARID REGIONS.* Edited by ENRIQUE CAMPOS-LOPEZ and ROBERT J. ANDERSON. (Boulder, Colo.: Westview Press, 1983. Pp. 360. \$29.00.)

*AGRICULTURAL DEVELOPMENT IN THE THIRD WORLD.* Edited by CARL K. EICHER and JOHN M. STAATZ. (Baltimore: Johns Hopkins University Press, 1984. Pp. 479. \$37.50 cloth, \$16.50 paper.)

*AGRICULTURE AND ECONOMIC DEVELOPMENT.* By SUBRATA GHATAK and KEN INGERSENT. (Baltimore: Johns Hopkins University Press, 1984. Pp. 371. \$28.50 cloth, \$12.95 paper.)

*AGRICULTURAL DEVELOPMENT: AN INTERNATIONAL PERSPECTIVE.* By YUJIRO HAYAMI and VERNON W. RUTTAN. Revised and enlarged edition. (Baltimore: Johns Hopkins University Press, 1985. Pp. 491. \$29.50.)

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- FOOD PRODUCTION AND PUBLIC POLICY IN DEVELOPING COUNTRIES: CASE STUDIES.* By JAMES A. LYNCH, JR., and EDWARD B. TASCH. (New York: Praeger, 1983. Pp. 360. \$37.95.)
- DEVELOPMENT STRATEGIES IN RURAL COLOMBIA: THE CASE OF CAQUETA.* By ROBIN RUTH MARSH. (Los Angeles: UCLA Latin American Center, University of California, 1983. Pp. 236. \$22.95.)
- THE DILEMMA OF AMAZONIAN DEVELOPMENT.* Edited by EMILIO F. MORAN. (Boulder, Colo.: Westview Press, 1983. Pp. 330. \$25.00.)
- IMPLEMENTING RURAL DEVELOPMENT PROJECTS: LESSONS FROM AID AND WORLD BANK EXPERIENCES.* Edited by ELLIOTT R. MORSS and DAVID D. GOW. (Boulder, Colo.: Westview Press, 1985. Pp. 243. \$23.50.)
- TECHNICAL CHANGE AND SOCIAL CONFLICT IN AGRICULTURE: LATIN AMERICAN PERSPECTIVES.* Edited by MARTIN PIÑEIRO and EDUARDO TRIGO. (Boulder, Colo.: Westview Press, 1983. Pp. 248. \$35.00.)
- HIGHER-YIELDING HUMAN SYSTEMS FOR AGRICULTURE.* Edited by WILLIAM FOOTE WHYTE and DAMON BOYNTON. (Ithaca, N.Y.: Cornell University Press, 1983. Pp. 331. \$37.95.)

Latin American countries are coming through an economic depression as deep as the "Great Depression" of the 1930s. In much of the region, average income in 1985 had regressed to where it was a decade ago.<sup>1</sup> In the current situation, the poor have suffered heavily, and one hears little talk of rural development, only of recovery. Despite the array of still miserable international prices for primary products, austerity programs weighing heavily on low-income recipients, price distortions, other macropolicies often discriminating against small-scale rural producers, and considerable domestic chaos in some countries, it is nevertheless time to resume a discussion that almost came to a standstill during the crisis.

For a time, agricultural development and rural development were considered synonymous, but in the 1970s, some efforts were made to distinguish between them. In 1975 Uma Lele defined rural development as "improving living standards of the mass of the low-income population residing in rural areas and making the process . . . self-sustaining."<sup>2</sup>

In its extreme version, rural development implies that a net inflow of resources to institutionally reformed areas may be necessary to rejuvenate the sector before it can be expected to provide resources to other sectors of the economy (in a process often called the "sectoral squeeze"). In the days of "industry first," development specialists seemed to feel that all resources would flow out of the sector in a process of economic transformation that would lead ineluctably to growth.

It is now fairly widely recognized that this process does not happen smoothly, much less automatically.

Recent literature exhibits a fairly broad consensus on the requisites of rural development in Latin America. First, rural producers should be encouraged to produce efficiently within the constraints of sound practices to preserve the environment. If they do, they will add to the country's wage goods and export earnings and hence attain the incomes that make savings and investment possible. Efficient producers will also stimulate the industrial goods markets. Second, a stream of inputs (including appropriate technology) and the means to purchase them should be facilitated. Third, basic economic infrastructure such as irrigation facilities, roads, warehouses, communications, and power installations should be provided to assist production and the smooth functioning of market forces. Fourth, profit margins wide enough to encourage agricultural production should be available. Fifth, farm employment by means of colonization at the arable frontier and redistributive land reforms should be fostered, especially those that press idle latifundio land into production. Sixth, nonfarm rural and urban jobs should be opened up by a growing economy and by a technological development path aware that unemployment and underemployment are already serious and that the labor force continues to grow more rapidly than available opportunities. Seventh, basic needs should be satisfied at least minimally, which implies that institutions such as clinics and schools should be created. Eighth, social conflicts engendered by wide disparities of income and resources now existing should be ameliorated by means other than repression. Ninth, a set of institutions providing for optimal participation at the grass roots by rural dwellers in their own development should be encouraged, as should the coordination of bureaucracies designing and administering state policies. Tenth, wherever possible, the private sector should take the lead. But in the majority of cases, where insufficient demand or extreme resource concentration makes private-sector initiative infeasible, or where savings are inadequate, the public sector must take a positive role.

Some of these issues have merited more discussion than others in recent literature. I will focus on the issues reflected in the publications under review and those I consider most important in the Latin American context, attempting to show how theoretical concepts of rural development differ among scholars. I will also pinpoint gaps in the recent scholarship on rural development. Then I will discuss the beneficiaries of rural development programs in the past as well as the different treatments given to the key issue of technology in agriculture.

*Understanding the Points of View*

Scholars and policymakers may agree on the requisites of rural development, but because of differences in country focus, individual judgments, and ideologies, they argue about priorities, constraints, trade-offs, and optimal paths to the goals. Thus conceptualizations of rural development problems in Latin America published in the early 1980s seem to fall into several broad categories illustrating ideological tensions within the rural social sciences.

The first conceptualization is based largely on growth of the economy and agriculture in particular. Correspondingly, a number of the development works referred to here express an almost abiding faith in the neoclassical economic model and the pure science paradigm to reveal why actors in the development drama perform as they do in matters ultimately concerned with earning income. Growth models tend to assume a world of rationality and perfect competition as well as the primacy of investment in industry, which requires above everything growth of production in the farming sector and transference of the agricultural surplus to make it available as inexpensive wage goods (see John Mellor, pp. 136–46, in the Eicher and Staatz collection; also Ghatak and Ingersent, pp. 172–216). Investment also requires perfect knowledge, smoothly functioning markets, fairly homogeneously endowed peasants, and producer-risk neutrality. Cultural and institutional patterns do not impinge upon this economic model. The general assumption is that what is good for the growth of the economy will be good for the poor, that trickle-down functions quite smoothly. These models tend to focus on enterprise, production, and productivity.

A second, broader set of ideas implies that rural development has a qualitative dimension and is always more than agricultural growth. This conceptualization still shows healthy respect for neoclassicism and the fundamental nature of scientific inquiry, but it is more eclectic (possibly even borrowing from neo-Marxist thought and that of institutional economists) and even interdisciplinary at times (see Whyte and Boynton, pp. 277–94). This set of ideas usually focuses on families or individuals within families living in the countryside (and sometimes on migrants in urban areas) and on such issues as incomes, participation in decision making, the organizations serving families and individuals, gender roles, and the tenability of such economic progress. One prevailing idea is that income multipliers do not function smoothly for a number of reasons; at the same time, this conceptualization recognizes that agricultural growth is a necessary, but not sufficient, condition for rural development. For example, it is absolutely essential for agriculture to produce a surplus and transfer it cheaply to the urban areas.

A third group, the work of the *dependistas*, falls into a somewhat different category. Because this perspective has been more frequently discussed in these pages, I have reluctantly omitted it from this essay.

Of the works under review here, the first group of "conceptualizers" includes Enrique Campos-López and Robert Anderson in *Natural Resources and Development in Arid Regions* as well as James Lynch and Edward Tash in *Food Production and Public Policy in Developing Countries*. Both works are quite technical in orientation. Especially growth-oriented are Yujiro Hayami and Vernon Ruttan's *Agricultural Development: An International Perspective*, some selections in *Agricultural Development in the Third World*, edited by Carl Eicher and John Staatz (like the contributions of Theodore Schultz, Edward Schuh, and Claudio González-Vega), as well as some pieces in *Undermining Rural Development with Cheap Credit*, the collection edited by Dale Adams, Douglas Graham, and J. D. von Pischke.

The second category includes most of the other volumes focusing on matters with which sociologists, anthropologists, and political scientists are wont to needle economists. William Foote Whyte and Damon Boynton, Robin Marsh, Elliott Morss and David Gow, and Peggy Barlett all discuss such challenges to economic elegance as how to define the firm when extended kinship networks are involved and how to allocate funds for training situations, the aged, and the ill. Other problems discussed are how to handle barter transactions, informal credit arrangements, and reciprocal labor trade-offs as well as how to treat peasant community matters and expenditures like compulsory work projects, ceremonial funds, fiestas, *compadrazgo* exchanges, and obligations due the *patrón*. Many of these exchanges have been spun off to the public sector or consigned to the marketplace in industrialized countries, but in rural Latin America, they are included under the rubric of family relations or represented as in-kind transactions between families or between families and communities. The likelihood that a family will not always act as though it were an economic firm is always a problem when family farming is analyzed. But in a Latin American context, these problems present more difficulties than in analyzing a family dairy farm in Wisconsin.

Some of the selections in the Eicher and Staatz volume, parts of the theoretical treatment of Subrata Ghatak and Ken Ingersent, and the work edited by Martín Piñero and Eduardo Trigo attempt consciously to bridge the two positions; other authors do not recognize the necessity or even the desirability of an effort at reconciliation. Eicher and Staatz's anthology of some of the best recent writing, *Agricultural Development in the Third World*, is notable in ranging over the entire ideological spectrum from Alain de Janvry to Schultz and Schuh. Ghatak and Ingersent's *Agriculture and Economic Development* brings much of the

relevant agricultural development theory from the neoclassical economic development perspective together, although they unfortunately exclude the recent distributionalist thrust and the question of what to do about the resourceless. These two works, together with Hayami and Ruttan's revised *Agricultural Development* and its insightful complement edited by Piñeiro and Trigo, *Technical Change and Social Conflict in Agriculture: Latin American Perspectives*, would form an ideal basis for a graduate course in rural development in Latin America. Country applications could be added, such as Lovell Jarvis's excellent *Chilean Agriculture under Military Rule*, which concludes that during the first seven years under Pinochet, agricultural underemployment and unemployment rose rapidly, the latter from 3 to 15 percent; wages in agriculture descended to their 1965 level; and the economy grew not at the 5 percent annual level claimed by the government but by only 1.7 percent.<sup>3</sup> P. Lamartine Yates's *Mexico's Agricultural Dilemma* also could be included<sup>4</sup> (perhaps coupled with a work to soften Yates's severe neoclassical edges, such as Judith Adler Hellman's *Mexico in Crisis* or Steven Sanderson's *The Transformation of Mexican Agriculture*).<sup>5</sup>

One problem encountered in all this literature, regardless of ideological perspective, is that the referent group is often portrayed as rather homogeneous. The rural owner or tenant-cultivator is often thought of as the focal point of rural development. In reality, enormous social differentiation exists among rural dwellers in Latin America that is important to policymakers. Renters, the subject of a number of learned articles over the last decade or so, presumably act in ways different from owners.<sup>6</sup> Tenants in Latin American agriculture include the rapidly disappearing service renters as well as the cash tenants and many types of sharecroppers. Moreover, while the vast majority of those living in rural areas are poor, all renters and owners are not. For example, the landlord class is still enormously powerful in most countries and has a set of distinct class alliances. All the authors include assisting owners with limited resources and tenant farmers under the general rubric of rural development, as do Whyte and Boynton (although some, like de Janvry in the Eicher and Staatz volume, would be loathe to call them farmers). But in Latin America, these two categories are only part of the group that must be included when rural areas are to be developed. Only some of the rural poor have enough land and capital for a family to make a living. Often, a larger and expanding group in most countries has inadequate land or none at all, a point that de Janvry understands, as do the *dependistas*. Conventional tools of production economics do not help much in analyzing this large subgroup.

One can break down the "rural poor" into those with claims on some resources at one end of the spectrum (the "upper poor") and those with no land at all on the bottom (the "poor poor"). Although

welfare cases exist that can probably be helped only by income transfers, jobs would be the answer for the majority. As for the large group of "middle poor," some semiproletarians develop intricate strategies to enable them to survive (for example, some migrate to other rural areas for work or go abroad as day laborers or work in other cities for part of the year). Distinguishing between members of this rural poor group—those who have some claim on land (and the degree to which their claim is valid) and the rest who have none—presents a major analytical problem because distinct policies must be implemented to reach different categories.

Another complication is suggested by recent contributions to the literature. Some scholars, particularly those in agricultural economics, seem to view the problems in Latin American agriculture as so similar to those in capitalist Asia that few adjustments are needed to apply Asian solutions to the Latin American context. But significant differences exist between the rapidly evolving Latin American campesino community and that of Asian peasants. Several distinctions can be found in Latin America. First, agrarian structure is usually more polarized and communities appear more dominated by landlords. Second, sectoral and overall distribution of income is more inequitable. Third, moneylenders seem to be less important. Fourth, a marked tendency exists in some countries (especially in Central America) for peasants to grow domestically consumed crops (for rather unorganized markets) while larger commercial farmers grow export crops or crops to feed the urban middle class. Fifth, farmers seem to have more diverse portfolios, with large farmers also investing in industry and other commerce, thus making their interest in agriculture vastly different from that of farmers who put their savings into the farms where they reside and their taxes into their communities. Sixth, types of tenure are distinct: communitarianism, production cooperatives, and resident farm-labor forces characterize land tenure patterns of some Latin American countries, but they may coexist within a rapidly evolving and predominant capitalist institutional pattern. Seventh, many countries now have an agricultural subsector of farms, some large (as in Mexico) and some small (as in Chile), where an agrarian reform or colonization was attempted that must be contended with. Eighth, in the last twenty years or so, Latin America has been moving rapidly toward replacing precapitalist institutional forms with capitalistic forms—year-round-service tenants are being displaced by "as-needed" day labor, for example.

The key point is that much of the theoretical literature on rural and agricultural development comes from analysts of Asian data, while much of the more eclectic (or methodologically hedged or impure) analysis of rural development comes from those with Latin American expertise. This divergence produces not only differing viewpoints but



differing levels of analysis; and this very fact has impeded communications between groups of scholars analyzing rural Asia and those analyzing rural Latin America (a situation also true of Latin Americanists who have studied Argentina or southern Brazil over the past several decades vis-à-vis those who know only northeastern Brazil and Guatemala). This methodological problem of achieving a proper level of abstraction and then analyzing the situation will soon demand serious attention from scholars of rural development. Perhaps unfortunately, many of these kinds of theoretical battles among social scientists over the causes and dynamics of rural development will be fought out in Africa during the next decades, where agrarian institutions are even more diverse and complicated than in Latin America (see Lele and Eicher, in the Eicher and Staatz volume). Whether that struggle will benefit African countries will depend on the skill (and the humanitarianism) of the next generation of social scientists.

*Background to Current Thinking on Rural Development in Latin America*

A central concern about rural development that evolved in the 1970s is expressed by Whyte and Boynton in *Higher-Yielding Human Systems for Agriculture*:

Now that growth theories that once were widely accepted and that confidently predicted broad-based improvements in living standards in less developed countries are in question, practitioners, researchers, and scholars in all the disciplines have been groping toward new definitions and new approaches to development. From this experience a fresh consensus is emerging: that economic development and technological progress must be designed and implemented so as to combine growth and equity, and that rural development strategies must begin to yield direct benefits to the great majority of rural people. (P. 17)

This concern was not part of scholars' thinking when the economic progress of nations in Latin America was discussed in the 1950s. W. Arthur Lewis set the agenda for the first fifteen years of development economics when he stated in 1955 in *The Theory of Economic Growth* that "first it should be noted that our subject matter is growth, and not distribution." Although Lewis wrote of balanced growth, it was clear that he regarded industry as fundamental to the process. He thought that a good bit could be done to advance growth through utilizing plentiful labor (Eicher and Staatz, pp. 3–13; Ghatak and Ingersent, pp. 26–122).

By the 1970s, increasing attention was being paid to matters of distribution—first of resources, land, and power, then of jobs, later of incomes, and finally of services, or (as they came to be called) basic needs. It is useful to outline how these ideas evolved in the literature in order to supplement the treatment of this material by Staatz and Eicher



(pp. 13–22) and Hayami and Ruttan (pp. 11–72, 329–415). While its genesis could be described in many ways, rural development in the Latin American context seems to have emerged from the general literature on growth and development and from studies on peasantry, land tenure, and reform in the mid-1960s and early 1970s.<sup>7</sup>

In 1970, missions sent by the International Labour Organization to Colombia and other countries found widespread and growing unemployment in poor countries despite the fact that GNP had grown more rapidly there than in industrialized nations.<sup>8</sup> The ILO pleaded for an international reorientation of development policies that would target the employment objective of development. In much the same manner, the Full Employment Act in the United States altered its development path in the late 1940s. The ILO looked for employment possibilities in the tertiary sector, which it eventually called the *informal sector*. More emphasis was placed on agriculture because a great deal of the unemployment found in the urban areas was thought to be due to premature migration from the countryside.

By the 1970s, economists such as Bruce Johnston had already written lucidly of the greater difficulty of reaching the poor in countries that were dualistic or bimodal in their institutional patterns.<sup>9</sup> He compared these countries to those like Japan, which he called *unimodal*. The problem was that many more developing countries were bimodal than were unimodal. Bimodality implied that countries would enjoy what increases of productivity and incomes they could muster in a subsector of richly endowed farms that adapted capital-using, labor-saving technologies borrowed from developed countries, while the lagging sector—often poor peasants, landless workers, and migrating labor—remained backward, forgotten, and (to the neoclassicists' puzzlement) underemployed. The leading sector contained the lion's share of the land and the capital; the lagging sector, often the majority of the populace. Wyn Owen wrote that this lagging sector would have to remain so because of lack of ample resources in poor countries to develop it more fully.<sup>10</sup>

The recognized paradox in bimodal development was that the leading sector grew and its participants enjoyed increased incomes while the lagging sector's majority were left behind in poverty. A few individuals moved from the lagging to the leading sector as jobs were created, but most could not because employment generation was too slow (or growth in the labor force was too rapid). A system of unimodality, in contrast, implied a fairly uniform farm size across the entire sector, which tended to employ labor-using, capital-saving technology and to rely heavily on the fruits of the divisible inputs (like fertilizers and new cultivars) of the "Green Revolution." Bruce Johnston and Peter Kilby illustrated the difference between contemporary less

developed countries following the two paths by analyzing Colombia as a bimodal example and Taiwan as a unimodal example.<sup>11</sup>

Subsequently, economists formerly concerned with growth recognized that although the overall records of some economies were fairly satisfactory during the 1960s and early 1970s, numbers in poverty also were increasing (Eicher and Staatz, pp. 13–14). Some believed that market forces would eventually afford an enduring solution, but most were not so sanguine. Irma Adelman, Bruce Johnston, and John Mellor targeted their analyses in the rural sector and searched for reasons to explain its lethargic employment and production response.<sup>12</sup> Their findings seemed to favor land reform early in the process, at least before broad-based development can occur. The enormity of the problem was documented by Adelman, whose analyses showed that the bottom 40 to 60 percent of the population (the majority of those in rural areas) were becoming worse off as growth proceeded. Arguing from a historic perspective, she noted that such an occurrence had not happened after land reforms in Japan, Korea, and Taiwan. Adelman also asked what should happen after reform, an aspect she regarded as a necessary, but not sufficient, condition for rural development. Here again, Korea and Taiwan offered lessons, and at this point (and only at this point), she joined issues with Theodore Schultz, who earlier had written of the primacy of investing in human resources (or, in more common parlance, education).<sup>13</sup> Adelman believed that the time period after agrarian reforms would inevitably be fraught with some social tension and instability, and she espoused the East Asian solution of strong central government, at least for a time, leaving to political scientists the probably unpalatable answer to the question of “for how long?” At this juncture, Adelman believed that a viable manufacturing sector could be designed.

Adelman’s work, coupled with the literature on bimodalism, lent some respectability to those who believed that agrarian reform might be important to the process of development in leading to unimodality, as in Japan and Taiwan. Mexico’s rural institutional pattern had long been criticized by scholars as a reform that opened the system to capital and fresh ideas of industrialization and modernization but not to long-term equity. A more equitable income distribution in Mexico prevailed during the Cárdenas period of peak reform (1934–1940). The 1940s and 1950s were a period of import-substituting industrialization, during which time government interest in maintaining the equity gains of the revolution was virtually nonexistent.

In advocating a strategy of “agriculture first,” Adelman and Johnston came to agree with Mellor.<sup>14</sup> Mellor thinks that following land reform in the first stage of agricultural development, the farm sector should be structured so that it absorbs more labor while supplying food

for the nascent industrial sector. He believes that agriculture can be labor-absorbing as well as profitable and capable of attracting investment by using the Green Revolution technology, that is, the package of high-yielding varieties (HYVs), irrigation, proper fertilizers, and seed-bed preparation, which are all location-specific. Mellor notes that much rural spending of additional income generated in rural areas goes for on-farm investment. Starting with simple consumer goods, these farmers will also begin to buy more from the industrial sector. Some of these industries could be located in rural areas, near the supply of labor and raw materials. Later, Adelman termed this process *agriculture-led industrialization*.<sup>15</sup>

In the mid-1970s, scholars began to pay a great deal of attention to the subject of meeting basic needs, a topic with a strong redistributive flavor. The United Nations organizations, the Overseas Development Council, and the World Bank all came to regard services to the poor as “rights” but also as essential for upgrading the labor force, and hence for growth. While some cited the rice ration of the 1970s in Sri Lanka as an exemplary policy for a poor country to use in combating hunger, many proponents thought primarily of a better distribution of services—such as health and education—that were previously enjoyed only by either the rich or the highly educated and talented. The idea that rich countries should participate more actively in this process by redistributing a few of their resources was suggested by the Overseas Development Council, which argued that an additional fifteen billion dollars of foreign aid could meet the basic needs of the world’s poorest billion inhabitants. The council proposed a doubling of foreign-aid flow from the rich nations to the poor ones. From this proposal, Paul Streeten and Sahid Javed Burki imagined the provisioning of basic needs as an organizing principle for development efforts.<sup>16</sup> The goal would be to meet the necessities of poor persons everywhere, including some minimal levels of food, water, clothing, shelter, medical care, education, and participation in decision making.

Another logical progression in this line of reasoning was the integrated rural development (IRD) approach, which is still in currency in countries such as Ecuador and Colombia. For example, Marsh’s *Development Strategies in Rural Colombia* presents community-level data for Caquetá, where IRD is coupled with frontier colonization. Her critique of IRD is that political pressures are inadequate to fund the basic needs program at a level generous enough to provide low-income earners with proper nutrition, hygiene, housing, and education.

The IRD approach was somewhat formalized by Albert Waterston, the Food and Agriculture Organization, AID, and other international entities like the World Bank. Waterston concluded that six elements need to be present following land reform in order to constitute

integrated rural development: labor-intensive production by small farmers, use of off-season labor surplus in building minor development works and infrastructure, labor-using light industry, self-help and self-reliance, implementation by flexible government institutions, and regional planning.<sup>17</sup>

The World Bank joined the distribution chorus fairly early in the 1970s, first in the annual speech of President Robert MacNamara in 1972, and then in a number of empirical studies such as those of Hollis Chenery.<sup>18</sup> Chenery argued for redistributing the growth increment and for reorienting capital formation away from capital-intensive, centralized projects to investments that relate directly to the poor, such as education, credit, and health efforts. Even if growth might be adversely affected in the short run, Chenery argued, in the longer run the poor would raise their incomes and those of other members of the society in a sort of "trickle-up" strategy. Chenery and even MacNamara were less than successful in getting World Bank lending policy to follow their reasoning, however. The World Bank is proud of its loan repayment record and, at the operational level, chary of peasants' ability to repay. Other empirical work followed Chenery's studies, and analysts such as Albert Berry and William Cline argued that an economy's growth rate would, even in the short run, be hampered little by distributionalist agrarian reform policies.<sup>19</sup>

Why was there such an interest in the distributionalist elements in rural development in the 1970s? One obvious reason was the extant situation revealing that growth in most countries was proceeding simultaneously with the growth of unemployment, underemployment, and misery. The poverty problem was shown to be disproportionately a rural problem; and because the population was growing rapidly and the rural poor were having more children than the rural rich, poverty was becoming worse and rural-urban migration more rapid with each generation. Another reason for interest in redistribution was the improved data base generated by individual scholars and by national and international agencies. Some data gathering was sparked by a realization that those who were to administer programs such as the Alliance for Progress had inadequate evidence on which to base their policy recommendations. Through national censuses and some large sample surveys (like the reports of the *Comité Interamericano de Desarrollo Agrícola*), credible cross-sectional and even some limited time-series data (like the agricultural censuses begun in the 1960s in most Latin American countries) became available for the first time. This evidence pointed to the concentrating of resources in the hands of a few. Moreover, many analysts believed that these elites tended to be neither savers nor persons who would invest today so that others could be employed tomorrow (an economic justification for resource concentration often expounded

by historians of the Industrial Revolution). The conclusion was that the Latin American states tended to reward and reinforce the profligacy of the rich instead of providing counterpressure.

Another matter that brought the distribution issue to public attention was the Green Revolution, as seen through the eyes of social scientists like Keith Griffin.<sup>20</sup> Unlike most technology, which is introduced into agriculture gradually and without fanfare, the HYV packages were so dramatic that after a brief and euphoric year or two, the technology spawned detractors who noticed that the income and production benefits were not being distributed very equally. For a time, until a more sensible balance was achieved, the progress brought about by HYVs was consistently debunked; after the dust settled, it became clear that there was something to the arguments of the critics—if not as much as they supposed (see Hayami and Ruttan; also Grant Scobie and Rafael Posada in Eicher and Staatz).

An additional factor was the increased spread of mass communications, which seemed to allow the poor to see clearly how the rich lived and to articulate their needs as demands—to the consternation of many in power. These petitions were widely perceived as legitimate by some members of the First and Third World middle classes, who were also incensed by such events as the coup in Chile, into which they read lost opportunities for the poor. Still another group believed that if the poor were not granted something, the rich might lose everything.

Most of the authors reviewed here focus on development within national frontiers, proposing that growth with distribution is possible and even desirable. Another large group has been troubled with what they perceived as neocolonialism being exercised by rich nations over poor ones. Members of this school proposed the establishment of a New International Economic Order (NIEO). Many of its ideas are cogently presented in ul-Haq's *The Poverty Curtain* (1974)<sup>21</sup> and are also noticeable in the recommendations of UN world conferences held during the 1970s and even earlier. The dilatory response of the industrial countries seems to have been, "No NIEO until you provide basic needs to your own people." What they meant was, "Never NIEO."

All this debate has made it clear that no definition of rural development in the mid-1980s can be limited to growth alone, although the present tenebrous state of Latin American economies combined with concerns about development being focused on the private sector have apparently slowed progress. Conversely, few scholars and policymakers today would take the untenable position that redistribution can make much progress in the absence of growth. The retrogression that hit the poor severely in the recession of the early 1980s and the austerity required to meet the ensuing debt crisis in most countries illustrate the dependence of rural development on the vitality of the rest of the

economy and on the economic health of the developed countries. Basic needs may be entitlements, but they must be financed, and only growth can make that possible.

With agrarian reforms resulting in a sort of contrived unimodalism, one could rather easily envision success for this kind of development, but enthusiasm for agrarian reforms was sustained only in academic writing—and often not even there. Some analysts fixed their attention instead on how the poor could be reached if bimodality were taken as a given. Judith Tendler, for example, has taken the position that it might be possible to plan progress by taking “end runs” around the rich in terms of co-opting them or even by benefiting them so that they do not jeopardize the flow of public resources to the poor.<sup>22</sup> (Albert O. Hirschman earlier labeled a similar proposal as “reform-mongering.”<sup>23</sup>) Tendler set forth three reasons why rural development programs have been so disappointing: first, they have reached the poor much less than planned; second, they have taken longer to design, negotiate, and execute than was hoped; and third, they have had difficulty in building institutions that could deliver services and goods to the poor. She claims that rural development programs fail because their designers do not attend to the programs’ enemies. New rural projects tend to be found wanting because “they do not attract supportive and powerful interest groups.”

These reasons, coupled with outright opposition from some groups, illuminate some of the problems of the rural development programs. Tendler explained why reaching the poor with rural development projects is easier in Johnston’s unimodal structure than in his bimodal one. She pointed out differences between projects meant to reach the urban poor and those meant for the rural poor: “The urban poor . . . live densely and separated from the urban rich. This makes it easier to target projects on them simply by locating a project in a certain place.” Tendler has maintained that in the countryside, many of the rich live in areas also occupied by the poor so that concentration of investment in a particular locale will not work. But the argument is more complex. She found a broader base of support in urban areas for investments that improve the quality of life directly—health, housing, streets, sewage, light, and water—than exists in rural areas for rural development projects. Because rural projects concentrate on the productive role of the peasant—on credit, inputs, planting practices—they invade the domain of the elite as planters and as employers of the rural poor, a defect that urban projects do not have. Rural development programs are therefore more radical than urban programs. At the same time, they lack the strong political support that can be mustered in cities with neighborhood groups, politicians, and others. Instead, rural development programs have to contend with some rather formidable enemies.



Such institutional matters have received a negligible amount of attention in comparison with that devoted to more conventional economic thought in most recent writing on rural development.

In sum, the feature distinguishing rural development from agricultural development most definitively is that rural development involves social services and human needs such as health care, schools, and water systems that are not usually included explicitly in agricultural development. The requisites for agricultural development alone are access to land, capital (inputs and credit), technology, infrastructure (including irrigation and electricity), research, extension, marketing, transport, and organization. The works reviewed here discuss a number of these issues, covering them as changing technology, agricultural development projects, agrarian communities from a microperspective, expansion of agriculture in the Amazon, farming systems, and credit. Much of what was done in the 1970s reflects the fact that both settlement at the frontier and settlement in urban areas had severe limitations. Ideally, more laborers should be employed and more production should be wrung from each acre, requiring considerable emphasis on developing appropriate institutions and technology. Unfortunately, the peculiarities of rural development under austerity and under conditions of worldwide recession are too current to be included in these volumes. This literature also omits many topics preoccupying growth theorists in the 1970s, such as household production models, decision analysis, risk and response, and estimations of supply and demand functions, to name a few.

*Gaps Where Agricultural Development and Rural Development Do Not Overlap*

In general, in those areas where rural development can benefit from the much more highly paradigmatic field of agricultural growth, advances have lately been made. In the areas where this literature does not overlap, rural development as a separate theme is in conceptual difficulty. For example, most literature leaves aside the enormous problem of what to do with the vast numbers of able-bodied in Latin America who are not equipped by their background and training to migrate to productive employment. Opportunities for this group are limited because industry is becoming more capital-intensive and less in need of large numbers of unskilled workers; international migration is a temporary palliative at best. Crucial to this situation is the fact that many are squeezed off the land because of the decline of service tenancy, the advance of labor-displacing agricultural technology, the collapse of some haciendas, the intergenerational fragmentation of minifundios, and the inadequacy of land reform.



Nevertheless, a large number of rural dwellers do not divest themselves completely of land when intergenerational subdivision exists. Rather, families retain small, inadequate plots (sometimes as a result of a prior land reform). This group is not willing to sell out, yet part-time peasants are not welcome (as they were in Japan) to work part-time in industry, so they use their land as a combination "home base" and "insurance policy" to return to when all else fails. This kind of farming appears to be having an adverse effect on the rural Latin American family.

Exceptions to a lack of treatment in the reviewed literature of this landless and partially landless group are the controversy on choice of technique discussed by Peter Timmer, William Collier, Jusuf Colter, Sinarhardi, and Robert Shaw in the Eicher and Staatz collection, the rural small-scale industry work of Enyinna Chuta and Carl Liedholm, and the land reform conception developed by de Janvry in the Eicher and Staatz collection. Some insights on the matter are also provided in the Piñeiro and Trigo collection. Migration to the frontier, a possible but limited alternative, is one focus of the essays in Emilio Morán's *The Dilemma of Amazonian Development* and the entire emphasis of Marsh's *Development Strategies in Rural Colombia*. Peggy Barlett's *Agricultural Choice and Change: Decision Making in a Costa Rican Community* is also conscious of the problem; but having seen unemployment grow at the level of the community she studied, she is not able to come up with very appealing policy proposals.

The literature of the late 1980s and 1990s must help fill this void. The issue of the semiproletarians and the landless can be treated only in relation to changing agrarian structure in Latin America, an issue touched upon by Piñeiro and Trigo and by de Janvry in the Eicher and Staatz work. Compelling materials on the issue are provided up to the mid-1970s in the April 1982 issue of *CEPAL Review* and in de Janvry's *The Agrarian Question and Reformism in Latin America*.<sup>24</sup>

The issues of landlessness and resource scarcity stem from changes occurring over the past twenty years in Latin American agrarian structure. Several decades ago, agrarian structure still had substantial pockets of precapitalist institutions; now it appears to be driven decisively by capitalism. In most countries where the traditional alliance between agriculturalists and industrialists remained strong, the focus of that change was on modernization without agrarian reform for several reasons: first, reform was not needed for purposes of social control; second, a considerable amount of inequity between social classes was not thought inappropriate; third, increases in agricultural production occurred primarily on large units; and fourth, because the export market was used for growth purposes after import substitution was exhausted, the internal market was largely ignored. In countries like Co-

lombia, Brazil, Argentina, Uruguay, and Venezuela, modernization with little or no reform still prevails.

The evolution of this nonreform policy in Colombia is traced by Robin Marsh in *Development Strategies in Rural Colombia: The Case of Caquetá*. She reports that 0.45 percent of all Colombian farmers received 0.25 percent of total cultivated land, and that "having rejected true agrarian reform as a solution owing to its threat to established latifundismo and capitalist commercial agriculture, the Colombian government was still left with a vacuum in agrarian policy which had to be filled with a policy that would be acceptable to the ruling class, at least minimally sympathetic to certain rural needs, and in line with the requirements of multinational lending institutions" (p. 189). The strategy she delineates is one that encourages *latifundios* to transform their unused land for commercial use, promotes migration to and settlement of the eastern *llanos* and the southern lowlands, and provides latifundios and other small and medium holders with integrated rural services and infrastructure.

The Brazilian situation may change over the current decade. The civilian government's call for reforms signifies that pressures have built up, largely from an increasingly landless or partially landed (and now more organized) peasantry. The population growth has been exceedingly rapid in Brazil, especially in rural areas, and much of the frontier territory most appropriate for agriculture has already been settled. Repression would be an unappetizing choice for an elected government coming into office with promises of reform.

In other countries, some land reform has occurred. Countermeasures have been taken, however, and inequality is again marked. Most increase in production still takes place on large units, and repression is being used in some countries to replace the reforms, as in Mexico, Chile, and Peru.

Beyond this pattern lies a plethora of distinctive cases. In El Salvador, land reform is envisioned primarily as a measure of social control. Reforms in Honduras were reactions to some genuine campesino pressure plus the need for social control. In Guatemala, little modernization and almost no reform have been achieved since they were quashed in the mid-1950s; social control there is now based almost completely on repression. In Nicaragua, deteriorating economic conditions (some doubtless caused by external threat) have caused rapid deterioration in the economic benefits initially brought by the revolution to the poor within that society (see de Janvry in Eicher and Staatz, pp. 263–74).

*The Non-Poor or the Upper Poor as Beneficiaries*

When investment was made in rural sectors of a poor country or region amid a high degree of bimodality or social differentiation, benefits went disproportionately to the leading sector, that is, to the rich (as Marsh and Barlett point out in different ways). The end runs around the elite that Tendler thought possible were rare in the Latin American context over the 1960s and 1970s. The general neglect of the poor is also borne out by González-Vega's work in Latin America presented in the Eicher and Staatz collection; for Honduras, he concludes that outstanding rural credit averaged thirty-five dollars per capita but that only 10 percent of the agricultural sector have bank loans. "Out of every ten families, nine receive no formal loans and one receives a loan of twenty-one hundred dollars. Moreover, among those obtaining credit, 9 percent receive about 81 percent of the total money loaned" (p. 329). González concludes that "low rates of interest have prevented formal lenders from serving marginal clients. . . . Also, low-interest rates have transferred substantial amounts to subsidize privileged borrowers. These administered rates have been fixed at low levels despite changing circumstances, but their rigidity has not prevented the real rates from affecting allocative efficiency, institutional viability, growth, employment, equity and income distribution in the rural areas of LDCs" (p. 330).

Whether or not one agrees with González-Vega (in Eicher and Staatz) and Adams and Graham (in Adams, Graham, and von Pischke) that interest rates should be permitted to rise to reflect the scarcity value of money, thus encouraging savings, their work seems to show clearly that those who receive the lion's share of credit benefits are the better-off and, when credit benefits reach the poor, the upper poor. Striking an even more somber note, Piñeiro and Trigo concede that a "natural tendency to concentrate on commercial agriculture has, indirectly, had a detrimental effect on campesino economies. These, because of poor access to benefits from technical change, have progressively lost their ability to compete with commercial agriculture, and have been displaced from the production of crops with dynamic international markets and greater profitability" (p. 238).

Credit and technology are not the only examples; misallocation applies to services. Whyte and Boynton show that U.S. aid made substantial mistakes as it attempted to replicate its land-grant system abroad. "In most developing countries, the prime beneficiaries have been the minority of substantial farmers who can be readily contacted by understaffed extension organizations and can run the risks of innovation . . . associated with progressive farming . . ." (pp. 25–26).

The idea that the poor usually would not benefit directly from efforts at agricultural development was no real revelation to policy

planners, but for a variety of reasons, they tended to skirt the issue because they believed that “trickle-down” would ultimately work. This group was especially heartened to learn that sometimes the upper poor did become beneficiaries—especially as international lending agencies, and later national agencies, focused on a more careful designation of “target groups” when formulating investment plans. Some lenders were not anxious to invest directly in a wide spectrum of the poor, having little faith that loans would be recouped or other assistance would be worthwhile in cost-benefit terms: if industrial development is a country’s goal, then it needs an urban policy of cheap food that necessarily discriminates against rural areas. The industrial sector could easily be choked by a lack of inexpensive wage goods. The question of how much backflow investment in agriculture must be made to prevent the “agricultural golden goose” from dying is a matter of disagreement among economists.

A still more important reason existed for omitting the poor from agricultural development aid: rich groups were still very much in control. Concentration of power in Latin America changed little in the 1970s, but after World Bank publications began appearing with reference to the excluded “lower 40 percent,” it became unseemly for other institutions not to join in targeting this group. Thereafter (until about 1980), a torrent of rhetoric from politicians and a plethora of studies from social scientists fixed on the same issue of including the poorest in developing plans. In fact, the poorest within the poor sector seldom benefited from rural development in the 1970s, even though the will to do so in some cases was genuine.<sup>25</sup> One illustration of this situation is land reform, which the UN estimates to have included 22 percent of potential beneficiaries and 15 percent of the land expropriable at the high point in the 1970s.

In general, de Janvry is correct in concluding that “most land reforms in Latin America have sought their economic results in the impact they have had on the nonreform sector” (Eicher and Staatz, p. 265). Yet within the reform sector in some countries, a small fraction has been able to move itself toward a level somewhere between a family farm and a *minifundio*.<sup>26</sup> This mobility is made possible by three factors: first, the group that participated in reform is already a select, entrepreneurial group within the poor oppressed by extant land-tenure institutions; second, the group’s participation in reform makes it the beneficiary of subsidies of various kinds often directed at the reform sector in the postreform period (also, the group often becomes eligible for subsidized inputs directed at the nonreform sector); and third, after reform, a shakeout takes place in which the least able either sell their land, are cheated out of it, or abandon it.

A majority of reform beneficiaries during the 1960s and 1970s participated to some degree in “the system” before reform, possibly as

service tenants or as share or cash renters. In this sense, reform enabled an already upwardly mobile group to become joint heirs with the agrarian middle class to an economic productionist philosophy that usually included a social ideology of conservation. This situation contrasts with the Mexican reform as described by Schuh: "land reform did little more than devise a means of fixing the worker to the land and bribing him to accept a *miseria*" (Eicher and Staatz, p. 105). To support this strongly worded observation, Schuh cites Eduardo Venezian and William Gamble and could also have referred to Yates.<sup>27</sup>

Yet agrarian reform is but one facet of rural development. The case may be stated more generally: whatever benefits of rural development reached the poor in the 1960s and 1970s apparently enabled the already better-off peasants to rise within the social structure and become upper poor and a few of the upper poor to become part of a middle stratum. This observation should not be a harsh criticism under normal conditions, where it would indicate that some trickle-down had occurred. But it is important to recognize that while a few peasants were moving upward, an even larger group were being dislodged from their previous condition into a poorer state, some into almost nomadic landlessness. The rate of economic growth, together with efforts at rural development and technological adaptation, was not robust enough to foster anything like full employment in the countryside.

Marsh implies that some rural development programs focus intensively on the few in order to avoid the necessity of real agrarian reforms: "The promotion of colonization . . . has required large outlays of government subsidies to provide even minimal benefits to *colono* families. . . . The same quantity of government assistance properly invested in land reform projects throughout Colombia's interior would benefit a substantially larger number of farmers and create greater employment opportunities for the mass of landless poor. . . . [T]he high economic opportunity cost associated with colonization has been justified on political grounds: a means to avoid volatile confrontation with land reform opponents" (pp. 193–94). Marsh concludes from the upsurge of guerrilla activity in the area that the policy may prove unsound and that nothing stands in the way of a concentration of land at the frontier, once it has been cleared and settled by campesinos. Morán also expresses this concern in *The Dilemma of Amazonian Development*.

*The Interrelations between Agricultural Growth and Development:  
The Primacy of Technology*

To deal with rural development, one must examine the agricultural development intimately related to it. Whatever the apt descriptors

for Latin American agriculture over the past several decades, “sectoral stagnation” is not one of them. Unlike in poor recent years such as 1982 and 1983, agricultural production stayed ahead of population growth in the 1960s and 1970s, increasing at an annual rate of 3.4 percent (in value-added terms) and 3.6 percent respectively, according to the Inter-American Development Bank. With a good year in 1981 and some recovery in 1984, the growth trend may prove to be continuing when data are available for the first half of the 1980s, although this outcome seems less likely. But performance in some countries, such as Haiti, Jamaica, and Peru, has been unsatisfactory throughout the past twenty-five years. It is not surprising that Central America fared worse than South America in the late 1970s and the first half of the 1980s, while agricultural performance in Brazil and Colombia over the 1960s and 1970s was surprisingly good.<sup>28</sup> In general, tradable crops demonstrated a better production performance than nontrade items, and commercial crops fared better than subsistence crops. Two-thirds of the increases in production were caused by raising productivity on already utilized land and the other third on land added to cultivation.<sup>29</sup> Both of these production increments, but especially the first category (given the closing frontier), were dependent on infusions of technology into agriculture.

Indeed, the most influential factor governing agricultural growth in the 1970s and 1980s was adoption of technology.<sup>30</sup> Its impact on inhabitants of the sector is a slightly different and more inconclusive matter. Up to 1960, little had been written on the application of technology to agriculture; soon after, analysts recognized that little land existed for agricultural expansion save the largely unknown Amazonia and underutilized latifundios. More reliance therefore had to be placed on expanding production at the intensive rather than the extensive margin, which meant allocating more investment funds to invigorating farming.

In Latin America, technology greatly benefited commercial agriculture, for it was largely capital-intensive. Technology adoption seems to have been a major factor in accentuating the difference between the leading and the lagging sectors within agriculture. In some instances, agricultural growth experienced more underemployment as a side effect, one that especially affected new entrants into the labor force and the aged. While few true Luddites participated in this argument, many analysts recognized that adopting technology created losers as well as winners on the path to increased production. At the end of the period, sector bipolarity was doubtless greater than at the beginning. Consequently, some scholars concluded that a major issue in rural development is how to cushion the blow to the losers in the inevitable process of technological change.

In some cases, the technology utilized in Latin America was bor-



rowed from developed countries without much effort to adapt it. Whyte and Boynton discuss this process in detail, using as illustrations the difficulties attendant upon the corn technology introduced by Plan Puebla (which they consider a top-down project with little farmer participation) and the technology packages in Caquetá, Colombia, where scholars seem to have learned a great deal from campesinos (pp. 36–52). The process of developing indigenous technology progressed somewhat, largely due to work at international centers and the maturing of domestic research institutions begun in the 1950s and 1960s.

These institutions came of age as a response to Theodore Schultz's perhaps exaggerated dictum that "there is nothing to extend."<sup>31</sup> The enormous impact of his *Transforming Traditional Agriculture* (1964) on the work of economists interested in rural development cannot be overemphasized. But as the most messianic exponent of the relevance of the neoclassical model for agriculture, Schultz generally seemed not to take into account the difficulties of technology adoption given the bimodal institutional pattern of Latin American agriculture.

Economists who agree with Schultz that peasant agriculture is "poor but efficient" also believe that the keys to progress are high payoff and cheaply supplied inputs, which combined with fair product prices will widen profit margins for peasant producers, leading to widespread peasant adoption. Schultz believes that rapidly advancing technology stimulates production in the peasant sector. Others argue that peasants could advance through more efficient use of existing technology, but the theoretical advances of the 1970s have been made by taking off from the Schultzian school of thought.

Early work showing how technology is adopted in agriculture and who benefits from it was done by Willard Cochrane in the late 1950s.<sup>32</sup> Both his and Schultz's work was utilized in a context of growth and development by Wyn Owen, who implicitly took into account the work of the diffusionists.<sup>33</sup> Shortcomings of the diffusionist school, which looked upon communications as the major barrier to agricultural modernization, have been outlined by William Saint and Walter Coward and by adoptionists like Eugene Wilkenning.<sup>34</sup>

Owen described and analyzed the essential process of siphoning off an agricultural surplus necessary for development, a process that William Nicholls, Bruce Johnston, and John Mellor claim to be the sine qua non for agricultural progress (Eicher and Staatz, pp. 136–46).<sup>35</sup> This process results in rich benefits for urban wage earners by bringing them abundant food at low prices. It functions according to the neoclassical model in a perfectly competitive world and most smoothly under conditions of agrarian structure described by Johnston's concept of unimodality. Using what Owen calls the Mill-Marshallian model, the process of technological adoption is begun by prescient groups of early



adopters who push down the long-run average-cost curve for themselves. Because price remains constant, they reap a larger profit margin than those who produce in the absence of that cost-reducing technology. As early adopters are joined by a larger group of adopters who have learned from the vanguard's success, the supply increases and the price drops (farm-directed subsidies will cushion this process in countries having such subsidies).

Progressively less expensive wage goods can then be delivered to urban consumers, relieving the upward pressure on wages in cities. In agriculture, meanwhile, later adopters realize no income benefits, and the profit margin of early adopters proves to be temporary. Nonadopters are squeezed out and are potentially available for employment in other sectors of the economy. If the technology adopted has economies of size, the smaller producer is usually the one displaced. It is the high payoff of this technology for masses of consumers under Owen's "treadmill" assumptions—and not its income benefits to farming per se—that provides the rationale for public expenditures for agricultural research and extension. This investment, coupled with a steady pickup of profitable innovations by the private sector, brings about multiple technological changes that bombard agriculture.

Owen's treadmill is a hallmark of capitalist agriculture. In what he calls the Marxist-Leninist model, food supplies need to be delivered to nonagriculture also, but the means of doing so—forced deliveries—is distinct. In the nonfarm sector under the Mill-Marshallian model, monopolistic competition prevents the full benefits of technological adoption from being transferred to the consumer, with some benefits being retained by the producing firm. In perfect competition, keeping consumers from fully benefiting is impossible except as subsidies of one kind or another are offered through the product or the factor markets.

What factor initiates the process so that technology will be available for use at the level of the firm? One point is especially clear: transplanting technology to the Third World from industrial countries does not often result in appropriate packages. Hayami and Ruttan address the question of how the necessary stream of innovations is generated for agriculture, and their work has produced a growth model. They argue in *Agricultural Development* that research and development, which must precede new discoveries and which ultimately lead to technical progress, are induced by market forces (hence "induced innovation," a term first used by Sir John Hicks in 1932).<sup>36</sup> In agriculture, changes in the relative scarcity of factors of production produce a derived demand for technological innovations that facilitates substituting relatively less scarce and therefore cheap factors for more scarce and expensive ones. For example, in a land-scarce economy, yield-increasing inputs such as fertilizer, irrigation, and new varieties are demanded. Whether labor-

saving or land-saving technology is generated by a society depends on its factor endowments, which in turn yield the technological path that will be followed by the agricultural sector. This path varies from country to country.

In the Third World, this induced technical innovation appears to be blocked by institutional barriers. That is, LDCs lack adequate agricultural research institutions to respond to these market signals and foster the generation and discovery of scientific and technical knowledge. Institutional innovation is needed. Hayami and Ruttan conclude that technical innovation and institutional innovation are complementary.

Hayami and Ruttan claim that innovative behavior in the public sector is usually ignored in the literature of induced innovation. They hypothesize that "technical change is guided along an efficient path by price signals in the market, provided that the prices efficiently reflect changes in the demand and the supply of products and factors and that there exists effective interaction among farmers, public research institutions, and private agricultural supply firms" (p. 88). They postulate a series of steps in induced innovation placing pressure on public institutions to innovate: first, farmers are induced to search for alternatives to expensive factors of production; second, farmers press the public institutions to develop the needed new technology; third, "perceptive scientists . . . respond by making available new technical possibilities and new inputs that enable farmers to substitute profitably the increasingly abundant factors for increasingly scarce factors, thereby guiding the demand of farmers for unit cost reduction in a socially optimal direction" (p. 57); and fourth, demands result that make it profitable for firms-for-profit to supply these cheaper inputs.

Hayami and Ruttan believe the institutional structure to be responsive to what might be called a "public need." The question for critics of Hayami and Ruttan's argument becomes: What is "public need" when society is so strongly bipolar? Whether these institutions really respond to the technological needs of peasants or whether they respond by aiding the commercial sector has occasioned academic wrangling over the last decade. The key question in the Latin American context is: If research institutions respond, will not that response be to pressures from the capitalized, land-rich, and leading sector rather than to the labor-plentiful, land- and capital-scarce (and largely politically voiceless) lagging sector?

Whyte and Boynton take this issue as one of their central concerns in *Higher-Yielding Human Systems for Agriculture*: "If R & D programs are to be the mainspring of accelerated progress involving small farmers, policy makers must make some major changes to give small farmers, as a group, greater control over productive and organizational resources. In this way they become able to hold government staff ac-

countable for performance in the interest of small farmers" (p. 207). As a beginning, Whyte and Boynton recommend more decentralization and even local taxation with organized community control over revenue as well as more impersonal and responsive bureaucratic rules to make government officials more directly responsible to the clientele they serve. The authors also strongly urge more farmer participation in implementing and administering programs, from research and design through program execution. This point is also emphasized by Marsh: "The presumed rural beneficiaries are not included in project planning, investment decision making, or the implementation of programs in their behalf. More important, poor farmers . . . have neither been encouraged nor allowed to form strong organizations to represent and demand their legal rights" (p. 195). David Gow and Jerry van Sant discuss in Morss and Gow's *Implementing Rural Development Projects* five reasons why achieving participation (based on decentralization) is so difficult: a lack of political commitment, bureaucratic resistance, poor project design, inadequate resources, and constraints in the immediate project environment (such as domination by local elites and poor communications networks) (pp. 107–47).

Another issue is what happens to income distribution when technology is adopted, a matter Piñero and Trigo help to untangle in *Technical Change and Social Conflict in Agriculture*. They assert that the income distribution effects of technological change are dependent upon factor intensity of the adopted innovations, price elasticity of product demand, relative factor endowment, and access to new resources and information. Because of the rather high level of investment required, the complexity of biological research, the atomistic structure of firms utilizing technology, and the difficulty of keeping any benefits of the innovation process in the private sector, the government becomes the prime investor in agricultural research.

But according to Piñero and Trigo, the concern is not that this system is worked out according to relative prices. The state determines, through fiscal and monetary policy, who will benefit from adoption, the relative profit advantage that will accrue to adopters, and the extent to which nonparticipants will be penalized. Piñero and Trigo believe that it stands to reason that if power is in the hands of a minority, that group is most likely to be served by governmental decisions. Technology should be thought of as a social as well as a technical issue, and hence a source of conflict—a point not featured by Hayami and Ruttan, according to Piñero and Trigo. A demur to the point that the state is apt to serve the strong minority is that the state in Latin America is relatively weaker than in industrial countries.

Piñero and Trigo's point on power is an old one. It was, after all, the position of the structuralists who wrote in the 1960s about Latin

America; in the 1970s and 1980s, it also became the position of a more radical group of intellectuals in the United States who criticized public expenditure on technology that allegedly displaced labor in Californian agriculture.<sup>37</sup>

The structural points are underlined by de Janvry: "Since monopoly of the land is the basis of the social power of these elites, they will foster only those changes in technology that are not a substitute for land. This will orient the technological path toward mechanical, labor-saving, and generally non-yield-increasing technologies instead of toward biochemical land-saving technologies. . . . Even if the rate of technological change is intense, the social status quo constraint imposed by the traditional elites will bias technology and largely destroy the output growth potential of technological progress" (Eicher and Staatz, pp. 91–92).

In 1985 Ruttan responded to some of these points on agrarian structure: "When the distribution of either economic or political resources is highly unequal, the focus of scientific and technical effort will reflect the resource endowments of that part of the rural community in which economic and political resources are concentrated" (in Piñeiro and Trigo, p. 7). In light of Hayami and Ruttan's ideas put forth in *Agricultural Development*, Ruttan's position presents something of an intellectual puzzle.

Whatever the mechanism, Latin America has been following a rather capital-intensive agricultural development path recently. The reason, according to Latin American cases presented by Piñeiro and Trigo, derives from factor-market imperfections (that is, prices of factors of production do not reflect their scarcity value). Also, the process of technology development is conditioned by the domestic needs of industrialized countries and not by regional needs. Because Latin American institutions are too weak to develop their own unique technological solutions and because this universe of possible technologies for adoption includes efficient, but capital-intensive, techniques, the firm is forced to adopt those that reduce average costs—even though they may result in a higher use of the scarce factor (which in this case would be capital). Piñeiro and Trigo also believe that another problem is the co-opting of public institutions to work on problems of particular interest to groups with political clout.

Piñeiro and Trigo conclude that the process of technical change in Latin America is influenced by three interrelated conditions: first, the rural elite still has considerable power, and the conditions posited by Owen for the smooth functioning of the "treadmill" do not prevail in Latin America; second, individual countries in the region do not adequately recognize that technological innovation is needed for economic progress, and the state is unable or unwilling to mediate the social

problems that technology brings, with the result that benefits of technology are deflected to the few; and third, the inducement mechanisms that Hayami and Ruttan present may have a great deal to do with how technology develops in the industrialized countries, but they are largely irrelevant in Latin America. If input prices in Latin America do not reflect their scarcity value, the induced innovation mechanism cannot function; moreover, farm structure is heterogeneous, so only part of it is emitting the proper signals. Meanwhile, the whole question is moot because Latin America imports its agricultural technology.

The result is substantial underemployment in agriculture and unemployment in the economy. But the picture is not completely dismal. In the cases analyzed in Piñeiro and Trigo's *Technical Change and Social Conflict in Agriculture*, labor displacement did not always occur because production expansion was taking place. Also, labor showed some control over its own destiny as some segments became organized (this argument becomes circular: higher-priced labor is in turn a reason for capital intensity). In the case of Colombian sugar processing, the industry mechanized faster, began using job-lot migratory crews for harvest, and stimulated the small-farm sector by buying from small growers who did not or could not organize.

Hayami and Ruttan believe that factor productivity should be closely correlated with factor endowments in these countries. They present worldwide information supporting this point. The authors conclude that in the case of the United States and Japan, "development of a continuous stream of new technology, which altered the production surface to conform to long-term trends in resource endowments and factor prices, was the key to success in agricultural growth . . ." (pp. 197-98).

Piñeiro and Trigo's collection offers detailed empirical studies to show that the induced innovation model has not worked out in Latin America in the way that Hayami and Ruttan predicted. Piñeiro, Trigo, and Raul Fiorentino believe that one reflection of this outcome is the low variability in land productivity in 1960 despite rather large differences in land endowments. The ratio of output per hectare between the lowest and the highest productivity countries in the Latin American countries analyzed by Hayami and Ruttan is 1 to 2.6.<sup>38</sup> The 1985 edition revises this figure to 1 to 10 (p. 120). Comparing Latin America to other parts of the Third World yields great differences (take Mexico and Taiwan in 1980, where the ratio of land productivities was 1 to 38); and for Latin America as a whole compared to industrial countries, the ratios are even greater.<sup>39</sup> Similarly, the ratio between the least amount of output per person and the most among the eight Latin American countries for which data were cited (Argentina is excepted) was 1 to 2.3 in 1960, while the range of least to most productive among all forty-three

countries examined by Hayami and Ruttan was 1 to 70. The ratios are roughly similar, and the point holds for the new data for 1980 presented by Hayami and Ruttan in their 1985 edition. The ratio of output per hectare was 1 to 9.5 for Latin America and 1 to 133 for all countries considered. The ratio of output per person was 1 to 3.5 in 1980 within Latin America compared to 1 to 158 for all countries. Another complication is the extreme performance differences between two different crops in one country and the high variability of performance when comparing the same crop in two countries. Piñeiro and Trigo cannot find the close relation between relative intensity of factor use and factor endowments that Hayami and Ruttan postulate in the Latin American countries they analyze.

If one is to believe, with Piñeiro and Trigo, that technology has something to do with power relationships, it is also true that power coalitions shift in Latin America and that a simple landlord-peasant paradigm will not do for the 1980s. For example, the legitimacy of the landlord as the mainstay of the rural community may be challenged as technology changes. Barlett shows in her study of Paso in Costa Rica that with improvements in transportation, communications, markets, and farm-level technology over the last twenty years, the community has largely shifted from growing corn and beans for subsistence to growing beef and tobacco for export. This shift has caused a major realignment of Paso's social structure. Because the increase in beef production reflects the international price for beef, a shift to a more land-extensive enterprise pattern in one part of Paso occurred as land values were rising and labor was becoming more plentiful. As population has increased, land availability has declined because large landholders have tended to respond to these good international markets for meat. This move makes it difficult, if not impossible, for poorer farmers to rent from the large holders as they traditionally did in the area. Land prices rose markedly as a result—by 1,000 percent in a decade—and rental rates have also increased. As a result, a far more differentiated society has appeared, with a larger gap between rich and poor. One part of the community responded in the Hayami and Ruttan fashion, however. Because access to larger holdings was blocked, existing smaller holders intensified by moving from corn and beans into tobacco production. As a result, a tobacco-growing middle class has appeared in Paso.

The new tobacco technology is complex, risky, and labor-intensive. In Paso, it was introduced by some small- and medium-sized plot owners, but (in Chayanovian fashion, and also as Hayami and Ruttan would have predicted) only by those with ample family labor, wages being a cost item that would make tobacco much more unprofitable and perhaps not worth the risk. Barlett concludes that this crop was introduced for reasons like those outlined by Ester Boserup, who believes



that agricultural technological change is driven by population growth (see also Barlett in Ghatak and Ingersent, pp. 256–76).<sup>40</sup> As population grew in Paso, plots got smaller, fallow periods became shorter and were eventually abandoned, and the soil was depleted; the returns to labor dropped precipitously and Pasanos switched to tobacco and the technology it required. Intensification with tobacco was also the community's answer to the elimination of jobs resulting from the introduction of cattle ranching on larger acreages. But, Barlett implies, tobacco will probably not provide much upward mobility in the future for current smallholders who have not already switched.

This shift in enterprise and technology occasioned various changes, according to Barlett:

In recent years the locus of power has shifted to alliances with national ministries and organizations from which technology emanates. Of the men who could be called "powerful" or "influential" in Paso today none is a large landholder. These new leaders are all small and medium landholders and, with one exception, are widely respected in the community for their mastery of the complex technology of tobacco production. These leaders are not listed by Pasanos . . . [as] "the rich" . . . ; those would be the large landholders. . . . The squeeze of land scarcity has led to complaints from landless families that "there is nowhere to rent." Pasanos of many strata were vocal in their criticism of the large landholders' decisions to put land into fallow or hold it in fallow. . . . The situation increasingly suggests that large owners are above the control or influence of other community members, and this separation from the rest of Paso is clearly one aspect of their decline in local power and influence. No longer are the wealthier families seen as harder workers or more able entrepreneurs. . . . (Pp. 64–65)

The political economy problems attending economic ones are widely discussed in these works, but often in the manner of economists who, upon reaching the end of their analytic rope, invoke "politics." For example, while Adams, Graham, and von Pischke argue in *Undermining Rural Development with Cheap Credit* for an interest rate that more nearly represents the scarcity value of financial resources, they note that the political costs of that move are likely to be substantial because political leaders will find that they can reward clients through financial markets. Credit can be used to reward or enlarge groups that support the government. Furthermore, one way to promote self-sufficiency in a crop is to announce a major increase in the amount of cheap credit directed to it. Also, it is sometimes easy to spur the introduction of a new technology with inexpensive credit or to use it to respond to a natural disaster. These authors conclude, "Political opponents of the regime . . . find it very difficult to attack such efforts; attacks on cheap credit are often regarded as criticism of the activity for which credit is ostensibly provided or of the intended recipients of the loans. The social and economic costs of interest rates kept low by government direc-



tive are so poorly understood, and generally hidden, that cheap credit often appears to be an exception to the economic law that there is no free lunch. The highly concentrated benefits but widely diffused costs of cheap credit make it an ideal form of political patronage" (p. 5).

The issue of public administration in cases of rural development is another knotty problem, especially when services are to be provided for rural dwellers who have not previously pressured public institutions. Regardless of the seriousness of the original effort, bureaucracies become lethargic when their client groups do not hold them continually accountable; and an endemic problem is poor coordination between governmental agencies, between national and international agencies, and between the private and public sectors. In *Development Strategies in Rural Colombia*, Marsh lists six failures of Colombian and World Bank planners in Caquetá: first, they did not sufficiently emphasize funding of basic needs on the frontier; second, they did not incorporate lower-level public administrators sufficiently into decision making at the local level; third, they did not appropriately fund and promise infrastructure in the local communities; fourth, they did not price capital fairly, which made it available only to the richer settlers; fifth, they failed to cushion settlers properly against the exigencies of weather, risk, and uncertainty; and sixth, they did not disfavor livestock production (engaged in by richer settlers) over cropping (preferred by poorer settlers). The faulty coordination of institutions within the sector of government service providing for development is emphasized by Marsh and by Morss and Gow as well.

### *Conclusion*

Rural development in Latin America during the last half of the 1980s will need to recover from an ideology that at times has placed excessive faith in the private sector. So many beneficiary-consumers and producers are potentially involved in the process that only public institutions can be expected to underwrite most of these costs; individual firms-for-profit will not capture even a few of most benefits, although the leading sector will continue to try to influence policy disproportionately for its own benefit.

At the same time that rural development efforts in the region have been hampered by ideological impediments, they have been cursed in the early 1980s by such factors as depression, austerity, bad farm prices, and trade barriers in industrial countries. The prospects for improvement in some of these areas seem somewhat brighter at mid-decade than a couple of years previously.

The implication here is that interest in equity and in the political economy of the peasantry must be revived soon, and development

theory must take into account the region's peculiarities. Moreover, the rural sector must be conceived more broadly than as simply a producer of the agricultural surplus required for growth and development. The issue of what to do with redundant labor resources in agricultural economies that are becoming more bipolar, more capitalistic, and more technologically oriented must be addressed more squarely than in the past. The question of how governmental programs to benefit the rural needy can penetrate more deeply must be considered as well. Limited possibilities for expanding agriculture on the frontier and economic realities that impede concessional resources from foreign sources will turn countries inward to the job of coping imaginatively with the complex issues of rural development. If these rural issues are not squarely faced through constructive economic policies, then dissatisfaction and political action will continue to jeopardize stability, growth, and overall development. To innovate with an entire range of rural development choices requires a more complete understanding of the rapidly changing rural institutional structure of agriculture at country and subcountry levels. It will not do to simply invoke bipolarism in Latin American agriculture for another ten years; the agrarian structure has become far too variegated and complex for such oversimplification.

## NOTES

1. World Bank, *World Development Report* (Washington, D.C.: World Bank, 1985). OECD forecasters anticipate that the 1986 average will be a 4.2 percent rate of growth for Latin America, up from a probable 3.2 percent in 1985, as reported in *U.S. News and World Report*, 19 August 1985. The per capita GDP growth rates for 1981, 1982, and 1983 were -1.0, -3.4, and -5.6 percent. Inter-American Development Bank, *Economic and Social Progress in Latin America, 1985 Report* (Washington, D.C.: IADB, 1985), 152.
2. Uma Lele, "The Design of Rural Development," in *Lessons from Africa* (Baltimore: Johns Hopkins University Press, 1975), 19–21.
3. Lovell Jarvis, *Chilean Agriculture under Military Rule: From Reform to Reaction, 1973–80* (Berkeley: University of California Press, 1985).
4. P. Lamartine Yates, *Mexico's Agricultural Dilemma* (Tucson: University of Arizona Press, 1981).
5. Judith Adler Hellman, *Mexico in Crisis*, 2d ed. (New York: Holmes and Meier, 1983); and Steven E. Sanderson, *The Transformation of Mexican Agriculture* (Princeton, N.J.: Princeton University Press, 1986).
6. Anthony Y. C. Koo, "Towards a More General Model of Land Tenancy and Reform," *Quarterly Journal of Economics* 87 (Nov. 1973):567–80. Comment by M. Quibria and Salim Rashid and reply by Anthony Y. C. Koo, *Quarterly Journal of Economics* 96 (Nov. 1981):725–31. See also Steven N. S. Cheung, "Private Property Rights and Sharecropping," *Journal of Political Economy* 76 (Nov.–Dec. 1968):1107–22; Steven N. S. Cheung, *The Theory of Share Tenancy* (Chicago: University of Chicago Press, 1969); J. C. Hsiao, "The Theory of Share Tenancy Revisited," *Journal of Political Economy* 83 (Oct. 1975):1023–31; James A. Roumasset, "Sharecropping, Production Externalities, and the Theory of Contracts," *American Journal of Agricultural Economics* 61 (Nov. 1979):640–47; James Roumasset and William James, "Explaining Variations in Share Contracts: Land Quality, Population Pressure, and Technological Change," *Australian Journal of Agricultural Economics* 23 (Aug. 1979):116–27. In a recent piece, David Lehmann takes a much more pragmatic view of the role played by tenancy, believing that it "fulfills different functions in different contexts." Specifically, he harks back to

- a theme about tenancy that prevailed in early agricultural economics literature—the idea that renting may be a rung in the agricultural ladder leading to ownership. Using fieldwork in Carchi, Ecuador, Lehmann analyzes a group of upwardly mobile peasants and concludes that the type of sharecropping prevalent there “may facilitate the transition to a system dominated by capitalized family farms, on account of its role in enabling [some] people to accumulate land and capital at a relatively early stage in their lives and in providing a mechanism for a gradual transfer of wealth from one generation to the next.” See David Lehmann, “Sharecropping and the Capitalist Transition in Agriculture: Some Evidence from the Highlands of Ecuador,” *Journal of Development Economics* (forthcoming).
7. Tom Carroll, “The Land Reform Issue in Latin America,” in *Latin American Issues: Essays and Comments*, edited by Albert O. Hirschman (New York: Twentieth Century Fund, 1961); Solon L. Barraclough and Arthur L. Domike, “Agrarian Structure in Seven Latin American Countries,” *Land Economics* 42, no. 4 (1966):391–424; Rodolfo Stavenhagen, *Agrarian Problems and Peasant Movements in Latin America* (Garden City, N.Y.: Anchor, 1970); and *Land Reform in Latin America: Issues and Cases*, edited by Peter Dorner (Madison: University of Wisconsin Press, 1971), especially Peter Dorner and Don Kanel, “The Economic Case for Latin America: Employment, Income Distribution, and Productivity,” pp. 41–56.
  8. International Labour Organisation (ILO), *Towards Full Employment: A Programme for Colombia* (Geneva: ILO, 1970); ILO, *Employment, Incomes, and Equality: A Strategy for Increasing Productive Employment in Kenya* (Geneva: ILO, 1972). See also William C. Thiesenhusen, “Population Growth and Agricultural Employment in Latin America, with Some U.S. Comparisons,” *American Journal of Agricultural Economics* 51, no. 4 (1969):735–52; and William C. Thiesenhusen, “Latin America’s Employment Problem,” *Science*, no. 171 (5 Mar. 1971):868–74.
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  10. Wyn Owen, “The Double Developmental Squeeze on Agriculture,” *American Economic Review* 56 (1966):43–70.
  11. Bruce F. Johnston and Peter Kilby, *Agriculture and Structural Transformation: Economic Strategies in Late-Developing Countries* (New York: Oxford University Press, 1975).
  12. Irma Adelman, “Growth, Income Distribution, and Equity Orientated Development Strategies,” *World Development* 3, nos. 2–3 (Feb.–Mar. 1975):67–76; Johnston, *Agriculture and Economic Growth*; John W. Mellor, *The New Economics of Growth* (Ithaca, N.Y.: Cornell University Press, 1966).
  13. T. W. Schultz, “Investment in Human Capital,” *American Economic Review* 51 (Jan. 1961):1–17.
  14. John W. Mellor, *The Economics of Agricultural Development* (Ithaca, N.Y.: Cornell University Press, 1966).
  15. For some recent additions to her ideas on agricultural development, see Irma Adelman, “Beyond Export-Led Growth,” *World Development* 12, no. 9 (Sept. 1984):937–49, and comments on her article in the same journal by H. W. Singer and Tibor Scitovsky.
  16. James Grant, “A Fresh Approach to Meeting Basic Needs of the World’s Poorest Billion,” paper presented at the American Political Science Association meeting, Chicago, 1976; Paul Streeten and Sahid Javed Burki, “Basic Needs: An Issues Paper,” World Bank mimeo, 1977. Some recent additions to Streeten’s ideas on basic needs may be found in Paul Streeten, “Basic Needs: Some Unsettled Questions,” *World Development* 12, no. 9 (Sept. 1984):973–78.
  17. Albert Waterston, “A Viable Model for Rural Development,” *Finance and Development* 11, no. 4 (Dec. 1974):22–25.
  18. Hollis Chenery, Montek Ahluwalia, C. L. G. Bell, John Duly, and Richard Jolly, *Redistribution with Growth* (New York: Oxford University Press, 1974).
  19. R. Albert Berry and William R. Cline, *Agrarian Structure and Productivity in Developing Countries* (Baltimore: Johns Hopkins University Press, 1979).
  20. Keith Griffin, *The Political Economy of Agrarian Change: An Essay on the Green Revolution* (Cambridge, Mass.: Harvard University Press, 1974).

21. Mahbub ul Haq, *Poverty Curtain: Choices for the Third World* (New York: Columbia University Press, 1976).
22. Judith Tendler, *Rural Projects through Urban Eyes*, Staff Working Paper no. 532 (Washington, D.C.: World Bank, 1982); see also Judith Tendler, *Turning Private Voluntary Organizations into Development Agencies: Questions for Evaluation*, AID Discussion Paper no. 12 (Washington, D.C.: U.S. Agency for International Development, 1982).
23. Albert O. Hirschman, *Journeys toward Progress: Studies of Economic Policy-Making in Latin America* (New York: Twentieth Century Fund, 1963).
24. Alain de Janvry, *The Agrarian Question and Reformism in Latin America* (Baltimore: Johns Hopkins University Press, 1981).
25. William C. Thiesenhusen, "Development under Private Auspices: The FMDR in Mexico, an Economic Case," in "Business of Development: Betting on Winners in Rural Mexico," by Martin Diskin, Steven Sanderson, and William C. Thiesenhusen, typescript (Madison, July 1985).
26. William C. Thiesenhusen, "Incomes on Some Agrarian Reform *Asientamientos* in Panama," *Economic Development and Cultural Change* (forthcoming).
27. Eduardo Venezian and William K. Gamble, *The Agricultural Development of Mexico* (New York: Praeger, 1969); and Yates, *Mexico's Agricultural Dilemma*.
28. Inter-American Development Bank, *1984 Report*, 192–98.
29. Luis López Cordóvez, "Trends and Recent Changes in the Latin American Food and Agriculture Situation," *CEPAL Review* 16 (Apr. 1982):14.
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36. Sir John Hicks, *The Theory of Wages* (London: Macmillan, 1932).
37. This material is reviewed in an essay by Philip L. Martin and Alan L. Olmstead, "The Agricultural Mechanization Controversy," *Science*, no. 227 (8 Feb. 1985):601–11; see also *Radical Agriculture*, edited by Richard Merrill (New York: Harper and Row, 1976).
38. An egregious printing error occurred in Piñeiro and Trigo's *Technical Change* on p. 38, in which "excluding Argentina" became "including Argentina." The error does not appear in the original article from which this chapter was taken, "Technical Change in Latin American Agriculture: A Conceptual Framework for its Interpretation," *Food Policy* 4, no. 3 (Aug. 1979):170.
39. Piñeiro and Trigo use Hayami and Ruttan's 1971 edition. In their 1985 edition, Hayami and Ruttan have revised their figures somewhat so that the 1960 figure for labor productivity (the ratio of the value of output to the value of labor) in Chile becomes 11.4 (1985 ed., p. 120) instead of 12.9 (1971 ed., p. 70). This difference is slight, but the figure for land productivity in Paraguay drops from 0.94 in the 1971 edition to 0.08 in the 1985 edition, or from the highest productivity among the Latin American countries to the lowest. The correct range of land productivities utilizing the 1985 figures from Hayami and Ruttan therefore falls between 0.08 for Paraguay to 0.79 for Colombia, or a ratio of productivities in Latin American countries of one to ten. The point that Piñeiro and Trigo make holds through these data changes, however.
40. Ester Boserup, *The Conditions of Agricultural Growth* (Chicago: Aldine, 1965).