

SUPPLY SIDE AGRICULTURAL POLICY IN LATIN AMERICA

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Low agricultural productivity and the growing gap between rural and urban income has become a prime focus of attention in Latin Americanist development literature. Among the concerns are: widespread malnutrition in both rural and urban areas; periodic food shortages; drain of foreign reserve for agricultural imports; increased rural poverty, both absolute and relative to the urban sector; and excessive urbanward migration.

Governments and international agencies have responded with the establishment of numerous programs aimed at agricultural development. These initiatives have generally taken a "supply-side" interpretation of agricultural development problems. That is, rural poverty is assumed to be caused by low agricultural productivity, which in turn reflects the low quantity and/or quality of physical resources in the farm sector, and the inability or unwillingness of farmers to adopt appropriate farming methods. Therefore, the aim has been to expand and improve the land under cultivation, to introduce land and labor-saving technology, to provide educational and extension services to farmers, and in some cases, to replace individual management with state or cooperative control.

It is argued here that agricultural stagnation and poverty cannot be remedied through these policies. Indeed, supply-side policies, and the assumption regarding agricultural development inherent in those policies, will tend to exacerbate problems of agricultural development. Especially disturbing is the tendency to see supply-side policies as effective measures to reduce income inequality between the farm and non-farm sectors, and to stem the flow of migration from the farm to the city. The two goals appear to be mutually in-

consistent, and neither is served by current agricultural policy.

Farm Poverty and Agricultural Productivity

The close association between low agricultural productivity and rural poverty in developing countries suggests an obvious causal relationship between the two variables. If farmers have access to productive land and effective market demand exists, then higher productivity would clearly provide improved subsistence and higher marketable surplus incomes. Under such circumstances, agricultural policy aimed at increasing and improving physical resources, agricultural inputs, and methods would reduce farm poverty.

Even a cursory examination of farm poverty in Latin America reveals that the required preconditions for successful supply-side policy do not exist. Poverty in absolute terms--that is malnutrition and deprivation--is closely associated with land tenure patterns in which poverty stricken farmers have little or no access to productive land. Among farmers who do have access to productive resources, low money incomes are usually coupled with little or no effective market demand. It might seem that widespread malnutrition and food shortage would be evidence of unfilled demand for agricultural commodities. However, hungry people without incomes do not create effective demand, nor do urban markets where prices are fixed below production cost levels. Effective market demand can also be reduced or eliminated by monopolized distribution and tenure systems that redistribute potential profits away from producers, and by inadequate transport infrastructure that renders markets inaccessible. Such conditions can tell us much about the political and social systems of Latin America, but nothing at all about the ability or willingness of farmers to increase production.

Throughout most of Latin America the physical resource base is more than adequate to provide ample supplies of agricultural commodities with technology already available. Not infrequently, those regions plagued with widespread malnutrition and food shortage are precisely those where vast amounts of land is idle or used for rudimentary pasture, and the majority of farmers are confined to tiny hillside plots that are inadequate even for subsistence production. In most countries a major share of all food is accomplished with traditional methods on that tiny fraction of the land held by poor peasant

farmers.

Ecuador in the mid-1970's is taken here as a case study of agricultural land use and production by farm size. Almost 65 percent of all farms have less than 5 hectares of land but these farms contain less than 7 percent of the land in farms (Table 1).¹

Table 1. Land, Labor and Livestock by Farm Size in Ecuador

	total No. 1 Ha. / T. M. (000)	farm size (hectares) % of total		
		< 5	5-99	100 +
total farms (UPA's) a	517	64.9	31.2	2.1
total land in farms	7,955	6.7	45.2	48.1
cultivated land b	910	32.5	43.9	23.6
total labor c	1,318	52.0	32.7	10.5
household labor	871	63.2	33.0	2.6
permanent (wage)	72	7.3	36.6	56.1
occasional	347	35.1	44.9	20.1
cattle (beef & oxen)	2,919	17.2	40.8	41.3
cows	348	16.9	43.4	39.1
milk production d	1,371	9.4	48.9	41.4
pigs	1,053	45.3	44.4	6.2
sheep	1,034	62.1	27.3	8.2
goats	218	50.3	38.2	8.3

- a) Does not sum to 100% because farms (UPA's : Unidades Productivas Agropecuarias) include farm units that own no land.
- b) Exclusive of cultivated pasture.
- c) Occasional workers are in large part persons who also work their own land as household labor. Therefore, the total farm labor exceeds the total number of farmers.
- d) In liters.

For the most part these farms are located in the highlands where the median farm size ranges from less than one hectare to two or three hectares.² These farms are operated by poor peasants using traditional tech-

nology and methods with little access to government sponsored efforts aimed at modernization of farming practices.

Nonetheless, these farms contain almost one-third of all land in crops, and employ more than half of all farm labor. They contain about half of the pigs, sheep, and goats, and about one-sixth of the cattle and milk cows. At the other extreme, farms with 100 hectares or more control almost half the land but have only about one quarter of the land in crops, and make use of only about one-tenth of the labor. These large farms produce a substantial share of the beef and milk, although not in proportion to the land resources controlled.

The small farms produce a large share of all food crops, including potatoes, rice, yuca, corn, barley, wheat, and most vegetables (Table 2).³ They also produce about one-sixth of the important commercial crops of coffee and cotton. The figures presented in Table 2 actually understate the portion of total production achieved on smaller farms using traditional methods. In low-land areas poor farmers usually control more than 5 hectares of land.⁴ In the case of many tropical products, including yuca, plantain, and bananas, a substantial portion of the output on farms with from 5 to 99 hectares is produced with traditional methods.

A comparison of land use and output reveals that the smaller farms are generally less productive per hectare than are the larger farms. This may reflect the adoption of modern farming practices on some of the larger farms. It is also apparent that the differences in productivity between the small and large farms is not great. Even though most small farms use only traditional methods, and have relatively little support from publicly sponsored programs, the average output per hectare used is not substantially lower than that of the larger farms. High output with traditional methods is achieved by the lavish application of labor, and especially, highly motivated household labor.

The view that income inequality between the farm and non-farm sectors is caused by low productivity is inconsistent with the fact that such inequality also occurs in the technologically advanced countries. Income disparity between the farm and non-farm sectors in rich countries is coincident not with low productivity but over-production and excess supply; thus government efforts are directed toward reducing surpluses and maintaining artificially high

Table 2. Land use and commodity output by farm size in Ecuador

	total output (000) M.T.	in percent of total					
		< 5		5-99		100+	
		land	output	land	output	land	output
plantain	722	8.1	8.1	77.7	78.0	14.3	13.9
potato	364	35.2	33.8	39.0	40.3	25.8	25.9
rice	340	24.0	24.7	43.9	38.0	32.2	37.3
yuca (cassava)	136	22.6	20.7	67.6	66.1	9.9	13.2
corn (feed)	104	20.6	18.0	61.0	58.7	18.4	23.4
corn (food)	79	57.5	52.5	34.7	36.1	7.8	11.4
barley	63	42.2	39.7	35.6	36.9	22.2	23.4
wheat	37	31.6	26.7	38.6	35.9	29.9	37.4
onion	50	55.1	58.7	40.9	38.7	2.6	2.7
cabbage	24	70.7	71.4	24.5	24.0	4.8	4.6
tomato	21	35.5	34.0	44.6	45.9	19.9	20.1
sugar	2,229	1.0	0.9	7.0	6.2	92.0	93.2
banana	2,076	4.9	4.4	42.5	39.7	52.7	56.0
coffee	201	16.4	16.6	68.2	68.8	15.5	14.5
orange	70	8.9	8.8	59.2	56.3	31.9	34.9
cacao	55	6.0	6.4	61.0	59.6	33.1	34.0
oil palm	35	0.1	0.1	10.4	9.9	89.5	90.0
cotton	27	17.0	16.8	50.5	52.7	32.6	30.6

prices.

The 1930 Depression in the United States provides a clear example of agricultural stagnation resulting from faltering demand. It was clear that the physical resource and technological base was more than adequate. "Dust-bowl" conditions in the Midwest notwithstanding, the problem could not be ascribed to natural calamity. Agricultural stagnation was obviously a result of the collapse of the market economy; therefore, steps to stimulate demand were required.

Government efforts to clear the market through public purchases of agri-

cultural products and other efforts to prop up prices and thus stimulate demand, were probably too cautious to have been effective. However, the massive increase in demand resulting from the war effort after 1940 did bring about farm recovery.

The mismatch between inelastic demand for agricultural products and the highly elastic productive potential has led to permanent government subsidies for the farm sector in the technologically advanced countries. Governments have been unwilling to face the political and human consequence of unrestrained free market competition. Clearly, the income levels of farmers would be reduced significantly, and many farmers would be driven out of the farm sector altogether in the absence of subsidies. Even the land-poor country of Japan has found it necessary to restrict imports and intervene in the market to prevent the fall of agricultural prices.⁵

It is unlikely that government efforts to stimulate demand and reduce supply will provide a long term solution to the problem of income divergence between the farm and non-farm sectors. Efforts to reduce production through reductions in acreage are usually offset by higher yields, and price supports inevitably produce unmanageable surpluses. The United States has been spared the full consequences of over-production by natural calamity and consequent famine elsewhere in the world, by farm mismanagement in Eastern Block countries (and consequent export markets), and the willingness of some less developed countries to accept (and the U.S. taxpayer to fund) the "dumping" of surplus agricultural products, as foreign aid.

Fundamental Cause of Farm Poverty

The fundamental cause for farm poverty, relative to the non-farm sector, is not explained by either under or over-production. The tendency for farm incomes to deteriorate relative to the non-farm sector is explained by Engel's Law. The demand for most agricultural products is very inelastic; therefore, as incomes increase, the percentage of total income spent on farm products will decline. Unless the percentage of the work force in the agricultural sector declines at a substantial rate, farm incomes must decline relative to non-farm incomes.

The effect of Engel's Law, and the role of farm to city migration in

offseting that effect, can be illustrated in a simplified model. Aggregate farm income (above subsistence production) is equal to the total expenditures on agricultural products by the non-farm population.⁶ On a per capita basis, therefore, farm income can be calculated as the product of the non-farm to farm population ratio and the per capita expenditure of the non-farm population on agricultural products (less processing and transfer costs not accruing to the farm population). For example, assume that the per capita non-farm income is 1000 dollars and 30 percent of that is spent on agricultural products.⁷ If the farm population accounts for 60 percent of the total, then the per capita farm income would be:

$$(40/60) \times (1000 \times 0.30) = 200 \quad (1)$$

In this case, the farm income (above subsistence production) would be one-fifth that of the non-farm income. If the percentage of the non-farm income spent on agricultural products remained constant, then an increase in non-farm incomes would produce a proportional increase in farm incomes; that is, farm income would remain at one-fifth that of the non-farm income. As an example, assume that the non-farm income increased to 1500 dollars; the farm income would then be:

$$(40/60) \times (1500 \times 0.30) = 300 \quad (2)$$

Notice that even though farm income increased by the same percentage as non-farm income, there is an absolute increase in inequality (from 800 to 1200 dollars in this case). In fact, Engel's Law tells us that percentage of non-farm income spent on agricultural products would tend to decline.⁸ Therefore, farm income will tend to increase by a smaller percentage than non-farm income and inequality will increase in relative, as well as absolute terms.

It might be argued that the elasticity of demand for certain agricultural commodities would tend to exceed 1.0 so that higher urban incomes would produce more than proportional increases in demand. This may be true in the short term. For example, higher incomes might promote a shift in diet from grains and tubers to meat and other animal products; or, a new export or industrial market might cause market demand to exceed potential supply in the short term. However, such conditions will usually benefit only a small share of the total agricultural labor force and only for a short period of time. For

most farmers, at most times, the effects of Engel's Law will operate to reduce the farm share of total income.

Income inequality between the farm and non-farm sectors can only be achieved if the percentage of the total population in the farm sector declines. Taking the previous example: assume that during the period that non-farm incomes increased to 1500 dollars, the percentage of the population in the farm sector declined to 55. A constant elasticity of demand for farm products would produce a per capita farm income of:

$$(45/55) \times (1500 \times 0.30) = 368 \quad (3)$$

and, farm income would increase from 20 to almost 25 percent of the non-farm income. A substantial decline in the elasticity of demand for agricultural products (in this case, a decline in the percentage of non-farm income spent on agricultural products to less than 0.25) would still result in a relative deterioration in farm income. However, if the decline in the percentage of the population in the farm sector is sufficient to offset the demand elasticity for farm products, income convergence in relative terms (and if continued, in real terms) is possible. Indeed, given the effects of Engel's Law, there seems to be no other way to achieve income convergence.

It is important to note in this regard that Engel's Law describes human behavior, not political policy. The Law is equally applicable under any political system and it cannot be legislated out of existence. As incomes rise, the appetite for additional food and other necessities will, at some point, become satiated. Inforced price increases to offset this effect will produce unmanageable surpluses and income assistance payments to farmers sufficient to maintain farm income would, in time, become an intolerable burden for the non-farm population.

Ultimately, the farm sector will be able to maintain its living standard only through the continual decline in the farm population. To the degree that migration out of the farm sector is stimulated by the relative income differential with the non-farm sector, efforts to increase farm incomes may slow the urbanization process. Success in slowing the pace of urbanization, however, will make it even more difficult to maintain farm incomes. Thus, the goals of income convergence and slowing the flow of migrants to cities are mutually antagonistic.

A population shift from the farm to the non-farm sector will always tend to increase (or slow the decline of) farm incomes. However, the income impact of such a shift will vary depending upon the stage of the process. If the percentage of the population in the farm sector is very high or very low, a population shift from the farm to non-farm sector will have a very large positive effect on farm incomes. By contrast, when the population is about evenly split between the farm and non-farm sectors, a decline in the farm population will have the least effect on farm incomes. It can be shown that the rate of change in the non-farm to farm ratio is equal to the rate of increase in per capita farm income.⁹ This rate, in turn is directly proportional to the degree of decline in the farm population and inversely proportional to a measure of non-farm to farm potential interaction.¹⁰ Stated symbolically:

$$\text{Farm Income Effect} = \text{pop.shift} / [\text{FP} \times \text{NFP} / \text{T}^2] \quad (4)$$

where, pop.shift is the change in the percent non-farm, FP, NFP and T are the farm, non-farm, and total populations. If half the total population is in the farm sector, a shift of one percent of the population from farm to city will produce a Farm Income Effect of 4.0; that is, other things being equal, farm incomes would increase by 4 percent. The Farm Income Effect will increase rapidly if the percentage of the population in the farm sector is either greater or less than 50 (Table 3). When the non-farm/farm ratio is very unbalanced, as it is in most of Africa and Asia where most of the population is in the farm sector, and in the technologically advanced countries, where most of the population is in the non-farm sector, the income effect of migration is very great. In these countries, even a moderate pace of migration from the farm to the non-farm sector may offset the effects of Engel's Law and maintain or improve farm incomes.

It is no accident that the problems income disparity and high migration rates are coincident and that these problems have been especially severe in Latin America over the past two decades. This is the period in which most Latin American countries are passing through the critical middle stage in the urbanization process. Of necessity, extremely high rates of urbanward migration are combined with a relatively low income benefit for the farm sector. Latin American governments would find it very difficult to prevent a relative deterioration in farm incomes even if they did pursue policies that favor the

Table 3. Farm Income Effect of a one percent population shift, by percentage of work force in agriculture

% of population		non-farm ^a to farm ratio	farm ^b income effect
farm	non-farm		
90	10	0.11	11.11
85	15	0.18	7.84
80	20	0.25	6.25
75	25	0.33	5.33
70	30	0.43	4.76
65	35	0.54	4.40
60	40	0.67	4.17
55	45	0.82	4.04
50	50	1.00	4.00
45	55	1.22	4.04
40	60	1.50	4.17
35	65	1.86	4.40
30	70	2.33	4.76
25	75	3.00	5.33
20	80	4.00	6.25
15	85	5.67	7.84
10	90	9.00	11.11

a) ratio of market population and farm population on a per capita basis.

b) percentage increase in per capita farm income resulting from a shift of 1% of the population out of the farm sector and into the non-farm sector.

farm sector, and there could hardly be a worse time for policies that are strongly biased against farmers.

Farm Versus Non-farm Income in Latin America

An examination of changes in the farm population and farm income in

Latin America reveals that in spite of extremely high rates of rural to urban migration the per capita farm income has declined. For the Latin America region as a whole, the percentage of the work force in the agricultural sector declined from 45 to 35 percent between 1965 and 1979 (Table 4).

Meanwhile, the percentage of the gross domestic product from the agricultural sector declined from 16 to 12 percent. Thus, the average per capita production in the farm sector declined by more than 7 percent, relative to the non-farm sector, from 36 percent to 34 percent of the per capita average in Latin America.¹¹

Not surprisingly, countries that had a relatively low percentage of the work force in the agricultural sector in 1965 were more likely to experience relative convergence in agricultural /non-agricultural income distribution. This included Argentina and Uruguay, where the agricultural share of total production is high on a per capita basis, and Chile and Venezuela where it is low. Thus, income convergence appears to reflect the stage of urbanization rather than deliberate government policy.

Haiti is the only country where income convergence is favored by having a very high percentage in the farm sector. Income convergence might have been expected in this case, especially given the large population shift out of the farm sector. Actually, income disparity increased slightly. This suggests that a continuation of current trends over the next few decades, when the percentage farm will be in the 60 to 40 percent range, will cause rural incomes to deteriorate sharply relative to those of the urban population.

Colombia and Nicaragua also experienced significant income convergence between the farm and non-farm sectors in spite of the high percentage of the labor force in the agricultural sector. In the case of Nicaragua, income convergence between the farm and non-farm sector may have been partly a function of a more rapid decline in non-farm income following the revolution. Deliberate government policy may have also raised the relative living standard in the rural sector. El Salvador, Guatemala, Panama, and Peru experienced relatively little change in the degree of income disparity between the farm and non-farm sectors, with the two former countries improving marginally, and the latter three experiencing a slight deterioration.

Almost half the countries, including Brazil and Mexico, experienced a

Table 4. Agricultural labor force and production as a percentage of the total, 1965-1979

	1965			1979			change
	% of total			% of total			
	labor	GDP	ratio ^a	labor	GDP	ratio ^a	65-79
ARGENTINA	18.2	14.5	0.80	13.3	13.0	0.98	22.7%
BOLIVIA	58.2	22.8	0.39	50.3	16.3	0.32	-17.3%
BRAZIL	48.8	14.2	0.29	38.9	7.4	0.19	-34.6%
CHILE	26.9	8.4	0.31	18.9	8.5	0.45	44.0%
COLOMBIA	44.5	29.9	0.67	28.3	25.8	0.91	35.7%
COSTA RICA	46.7	27.3	0.58	35.8	18.5	0.52	-11.6%
DOM. REP.	63.8	28.1	0.44	56.6	18.5	0.33	-25.8%
ECUADOR	54.1	36.9	0.68	45.1	22.8	0.51	-25.9%
EL SAL.	58.9	31.4	0.53	51.0	27.5	0.54	1.1%
GUATEMALA	63.8	31.7	0.50	55.5	28.4	0.51	3.0%
HAITI	77.2	52.1	0.67	67.4	43.9	0.65	-3.5%
HONDURAS	68.4	36.3	0.53	63.0	28.3	0.45	-15.4%
MEXICO	50.3	14.5	0.29	36.9	9.0	0.24	-15.4%
NICARAGUA	56.9	31.8	0.56	43.7	33.5	0.77	37.2%
PANAMA	46.1	24.3	0.53	35.2	17.7	0.50	-4.6%
PARAGUAY	54.5	38.5	0.71	49.3	29.3	0.59	-15.9%
PERU	48.7	20.2	0.41	38.1	14.9	0.39	-5.7%
URUGUAY	17.8	12.3	0.69	12.2	9.9	0.81	17.4%
VENEZUELA	30.3	7.1	0.23	18.7	6.5	0.35	48.3%
LAT. AMER.	44.9	16.3	0.36	35.4	11.9	0.34	-7.4%

a) ratio = GDP / labor; The value can be taken as an estimate of the average production or income per worker in agriculture in comparison with national average income per worker. Therefore, 0.80 can be read as 80% of the national average per worker.

sharp deterioration in the farm to non-farm income distribution. All of these countries were at or near the midpoint in process of population shift from farm to city. Even if these governments had eliminated policies that deliber-

ately favor urban consumers over farmers it would have been difficult to achieve income convergence. In fact, government policies probably contributed to the already strong tendency for farm incomes to fall relative to those in the non-farm sector.

The figures presented in Table 4 probably understate the degree of disparity in farm versus non-farm living standards. A substantial portion of farm profits actually accrues to absentee owners. Furthermore, the farm population has less access to publicly subsidized services such as educational and medical facilities. It is doubtful that farm living standards are at or near par with those of the urban sector in Argentina, Colombia and Uruguay, and also doubtful that they are as much as half or even one-third those of urban averages in most other countries, as is suggested by production data.

Direct Effects of Supply Stimulation

For the most part, successful introduction of modern farming practices is limited to the larger, more commercially oriented, farms. Frequently, such technology is inappropriate to small-scale production, or government officials are unable or unwilling to deal with peasant farmers. More importantly, only the better-off farmers are in a position to accept the risks inherent in new production methods, and only the most efficient producers can hope to compete in the limited markets available. It is unfortunate that government subsidies fall to individuals who probably could have afforded to pay market prices for the new technologies (assuming they were profitable investments). Far worse, publicly subsidized higher productivity on larger farms will tend to increase the market share of those farms at the expense of the vast majority of farmers who do not benefit from the subsidies.

Obviously, not all supply-side efforts have been in vain. Higher productivity has allowed local producers to supplant foreign imports in some cases and gain access to larger foreign markets in others. On the other hand, some of the more spectacular successes have been coincident with exogenous changes in demand. The successful development of modern irrigated farming in Northwestern Mexico was tied to the opening of the U. S. market for winter vegetables; likewise, the vast increase in soybean and beef production in Brazil was dependent upon the opening of new foreign markets and rapid

growth in national consumption levels.

During periods of rising urban incomes the high elasticity of demand for beef and some other products, that were formerly luxuries, may provide the basis for a shift to modern livestock farming practices. If the urban economy falters, however, these farmers must fall back to subsistence production, or if they have been enticed into accepting credit or adopting high maintenance cost systems, they may be forced into bankruptcy.

Critics of these policies have tended to focus attention on the implementation rather than the policy per se. It is suggested that the type of technology being introduced is inappropriate to small scale farming, and that cheap and simple technologies should be substituted. Others stress the need to reorganize small farms into cooperatives or state farms so that improved management and economies of scale can be achieved. Some observers believe the rates of population, or urban, growth are simply too high to allow the supply-demand gap to be filled, and insist that the solution can only be found in reducing the rates of population or urban growth.

These views are based upon the assumption that effective market demand for agricultural products does exceed the supply. In the absence of increased effective demand, higher production on a few subsidized farms will tend to cause prices to decline (to rise more slowly than the inflation rate). For marginal producers, including the majority of all farmers in Latin America, the result will be reduced market incomes.

Indirect Effects of Supply-side Strategies

It can be argued that the assumptions inherent in the supply-side strategy have led to, or at least justified, a wide range of policies that are ill suited to agricultural development. Among these are: pricing policies; mismanagement of the import and export economy; failure to pursue appropriate agrarian reform programs; and emphasis on population or urban growth, rather than social and economic policy, as the prime cause of poverty.

Pricing Policy

In Latin America the prices of a wide range of agricultural commodities are set, and presumably controlled by government policy. In general the aim

is to maintain prices below the free market value. From a supply-side viewpoint, it can be argued that if the supply is inelastic relative to price (that is, scarcity is caused by the inability or unwillingness of farmers to increase production), allowing prices to rise in response to scarcity would result in wind-fall profits to producers and distributors with no corresponding increase in production.¹²

The fallacy of this logic is quickly apparent. In the absence of some effective method of rationing consumption, a price set below market level will invariably produce shortages. In the case of nonperishable items the situation will move rapidly from rumor to severe shortage as producers and distributors hoard supplies in anticipation of higher prices. Otherwise, the process may evolve over a long period as marginal producers are forced out of production by reducing acreage or livestock herds. Frequently, ineffective but newsworthy efforts at rationing (such as prohibition of sale for one or two days per week) are made, or selective individuals are prosecuted for hoarding supplies. Fearing the political consequences of price increases, a stubborn government may hold out for a long period as urban populations are deprived of supplies and the agricultural economy stagnates. Eventually, prices must be increased. This will be followed by a rapid increase in supply. Nonperishable items may be back on store shelves within a few hours of the price increase. Supplies may be delayed in the case of other products as farmers begin the painful process of rebuilding herds and returning land to cultivation. Depending upon the level of the new price selected by the government (and it is most unlikely that it would happen to be the true market price), the supply of the commodity may remain for a time relatively scarce or in over-supply. An over-supply will prompt cut-rate prices by wholesalers and retailers, who know that consumption is also elastic relative to price. An under-supply will hasten a repeat of the whole process as inflation reduces the new price below the production costs of marginal producers.

The negative effects of government efforts to control food prices are not limited to the agricultural sector. Any benefit to the urban population, in the form of lower food costs, is temporary and offset by deprivation or exorbitant prices of black markets during periods of shortage. Having given the public the impression that prices are controlled, governments face a political crisis

when prices must be increased. Anti-government demonstrations resulting in the destruction of property and deaths are common. To the degree that prices are stabilized in the short term, competitive discipline in the marketplace is dampened and the incentive to improve quality or provide consumer services is reduced. Pricing policies have a devastating effect on the agricultural economy, and the effects fall heavily on marginal producers who are likely to be among the less well-off in the farm sector. Among beneficiaries are only a few speculators, some government officials whose livelihood depends upon administering the programs, and opposition politicians who have a continuous source of public discontent.

Import and Export Economy

After World War II Latin American governments recognized that infant industries, spawned by the shortages of industrial products on the world market during the Depression and War periods, could not survive in open competition with technologically advanced countries. Appropriately, measures were taken to protect local industries with restrictive import tariffs. The goal of expanding local industry and providing employment for local urban workers has been achieved to an impressive degree. As a negative side effect, however, many infant industries have been unable (or perhaps unwilling) to “grow up” and consumer prices have remained high. For the farm sector, which does not benefit from import substitution policies, this has generally meant higher prices for lower quality manufactured goods.

It is an unfortunate fact that for a wide range of products, Latin American farmers are no better able to compete with technologically advanced countries than are Latin American factories. In contrast to urban industries which received protection from foreign competition, governments have taken the opposite position with regard to the farm sector. Argued from the supply-side view, if production is inelastic, requiring government action to prompt higher productivity, then it follows that short term shortages should be made up with food imports, and that a reduction in food exports will increase supplies available within the country. According to this logic, it might be advisable, therefore, to allow or even encourage, food imports (especially if provided free or below cost as foreign assistance), and to discourage or prohibit

exports of food. Many Latin American countries have pursued this course with predictable results.

Probably most damaging has been the acceptance of U.S. food surpluses as foreign assistance for free or low cost distribution. One effect is to allow governments to maintain price ceilings at unreasonably low levels for longer periods of time. Latin American farmers cannot compete with products paid for by U.S. taxpayers. When this sort of "assistance" is available, even subsistence production may be reduced. Indeed, cloth bags and other containers used to import food have been widely adopted for clothing and household use, replacing products previously produced by cottage industries.

There are cases of natural or man made calamity in which food assistance is needed. More commonly, however, it is money rather than food that is in short supply following a natural calamity. That is, other regions within the country could easily and profitably provide the required food if the affected population had the money to pay for it. Assistance in the form of money (or credit extended by the government) would ease most regional food shortages caused by natural disasters and would have the beneficial effect of providing increase in the demand for agricultural products elsewhere in the country.

Agrarian Reform

The supply-side interpretation of low agricultural productivity meshes nicely with the views of those who oppose land redistribution. It is ironic that land redistribution is opposed by both extremes of the political spectrum. Both sides can argue that if farmers are unable or unwilling to increase production then land redistribution will not lead to higher production. From the point of view of the political Right, this assumption provides an excuse to favor "integral agrarian reform," which in effect amounts to a continuation of current policies aimed at encouraging higher productivity. The political Left argues from the same position against redistribution to individuals, and private land ownership generally, and in favor of cooperatives or state farms.

The view that agricultural development can be achieved through cooperatives and collectives is no less unrealistic than the current supply-side theory. Beyond voluntary associations of mutual assistance (almost never including

management decisions), cooperatives and collectives are opposed almost universally by Latin American farmers. Even in those regions of highland Peru where native Indian people have sometimes been described as communistic, or communal, in their approach to land tenure, cooperatives and management by state supported "agricultural experts" is strongly opposed.¹³ Collective or state ownership and management is one of the few alternative tenure systems that would give Latin American farmers even less incentive for production than the system now in place.

Extremely rapid population growth in Latin America has given rise to a new surge of Malthusian pessimism, particularly among foreign observers. The Malthusian view, that demand (or population growth) tends to increase more rapidly than the food supply, has lent support to the supply side interpretation of agricultural development problems in Latin America. Focusing attention on demography has tended to obscure the social and economic causes of poverty.

The distribution of modern birth control technology is justified on medical grounds alone; as in the case of most other forms of traditional medicine, traditional forms of contraception and abortion are more dangerous and less effective than their modern counterparts. However, there is little evidence that the replacement of traditional birth control with modern practices will greatly alter birth rates. The rapid decline in birth rates in most Latin American countries since the mid-1960's is more closely correlated with increased educational and occupational opportunities for women than with the diffusion of modern birth control techniques. In any case, population control cannot solve social and economic problems in Latin America, and Malthusian pessimism must not become an excuse for avoiding the issues.

An Alternative to Supply-side Policy

Misguided agricultural policy in Latin America has tended to exacerbate the tendency for farm incomes to deteriorate relative to incomes in the non-farm sector. Futile attempts to control prices and create collective farm ownership and management have given Latin Americans many of the negative features of "all eating out of the same big bowl"-- not the least of which is the fact that the bowl is frequently empty. Agricultural policy aimed at increasing

productivity, and the indirect effects inherent in that policy, have served more to reduce effective demand and the incentive to produce. Unfortunately, the potentially positive effects of the controlled economy have not been included. The benefits of the policy have accrued mostly to the better-off farmers and the urban population, and the costs have fallen heavily upon the marginal producers and the rural poor.

To a large degree it is not what governments do, but what they stop doing, that will promote agricultural development. Near the top of this list must be a suspension of attempts to control the market prices of agricultural commodities. It is a simple fact that agricultural production in Latin America is elastic relative to price, and that in the absence of an effective method of rationing supplies (such as those used in countries with planned economies) any attempt to reduce prices below free market levels will induce shortage that can only be remedied by price increases.

Deregulation should probably proceed in steps over a period of years to allay fears of the urban population and to allow time for a competitive marketing spirit to strengthen. After many years of regulation many urban people, including some wholesalers and retailers, have acquired the impression that, in the absence of price ceilings, there would be no way to prevent arbitrary increases with windfall profits to distributors or producers.¹⁴ The encouragement of farmers' markets in and around cities would help to play the role of the regional periodic market in rural areas of forcing competitive pricing in cities.

Agricultural development would be promoted, and in some regions may depend upon, the establishment of restrictive tariffs on most food and fiber imports. Certainly, Latin American governments should shield from international competition all those commodities in which they can reasonably expect to become competitive in the future. In this respect, the infant industry of agriculture is in no way different than other industries. Beyond that, the indirect subsidy to farmers resulting from protective tariffs and subsequent higher food prices should at least be equal to the social good of increased farm employment.

The export of agricultural commodities should be encouraged and in some cases subsidized. Prohibiting or taxing food exports from Latin America

cannot increase the amount of food available for Latin Americans. It can only increase the number of people who cannot afford to purchase food and other commodities. The assumption that money taxed away from food exporters will be more wisely invested by the government than if left in the hands of producers is dubious at best; in any case tax policy should favor rather than discourage the export economy. Clearly, export taxes will reduce production (or rates of increase in production), and reduce living standards in affected farm areas. Agricultural and national development would be promoted by selective export subsidies. Such exports provide needed foreign exchange and farm employment, and they frequently act as a leading sector in commercialization of agriculture generally.

The goal of agrarian reform must be to provide access to productive land resources to people who are willing and able to use the land effectively. This can be accomplished with minimum cost and dislocation by a "self-assessed, market-reinforced" land tax.¹⁵ Under this system each land owner would assess for himself the value of his land and pay a percentage tax accordingly. At the same time, the land would be offered for sale at the assessed price. An assessment below potential value would promote the transfer of the land to higher bidder. A higher assessment would prompt increased production sufficient to cover the higher tax liability. Such a system would eliminate the need for government officials to assess the value of the land (and collect bribes for providing low assessments). In any case, there could be no more accurate and equitable an assessment than that provided by an individual willing to purchase the land at the assessed price. The tax rate can be raised or lowered to achieve the desired pace of land transfers. The higher the tax rate the more burdensome and unprofitable it would be for speculators and inefficient producers to hold the land, and the more likely a consequent lower assessment would prompt purchase by another individual.

It might be desirable to provide a tax deduction sufficient to exempt farmers with tiny subsistence plots from forced sale of their land. Likewise, methods of providing landless peasants with access to subsistence plots may be wise political policy quite aside from humanitarian concerns. The state could reserve to itself the right of first purchase of under-assessed land, and redistribute it to landless and poor farmers. The success of the reform,

however, would depend upon allowing most of the land to be transferred to the highest bidder who, in order to assume the higher tax burden, will tend to be the most productive.

Agrarian reform and agricultural development generally must not be confused with rural welfare goals and narrow ideological arguments. Those in greatest need are not necessarily, or even probably, those who will provide the most efficient management of land resources. The interests of the poor and the nation are best served by policies that allow productive resources to flow to persons who have the capital, skill, and incentive to make them productive.

Conclusion

Throughout this paper it has been argued that government efforts to stimulate supply and increase farm income through the introduction of modern farming methods have tended to be counterproductive. It is not suggested that the diffusion of more productive agricultural technology and methods is unimportant or negative per se. Rather, the pursuit of a supply-side solution to agricultural development fails to take into account the fundamental causes for low productivity and farm poverty, and directs the limited public resources available for agricultural development away from those areas where government action could be beneficial.

Government action in agricultural development should be reoriented toward providing the infrastructure and services that individual farmers cannot reasonably provide for themselves. Attention should first be given to the provision of secure tenure to land for farmers who are willing and able to make the land productive. Land taxes should be based on the potential, rather than actual, production and income level of farms. Farmers who achieve higher incomes with relatively low quality resources would be favored by such a tax policy, and those who hold land idle for speculative or prestige purposes would be penalized. Farmers must also be provided with access to markets through efficient and unmonopolized transport and distribution systems.

To the extent that traditional farming practices can provide the food and fiber needed, the expense and risks of imported technology should be avoided. In most Latin American countries the agricultural sector must con-

tinue to provide employment and subsistence for a substantial share of the population for the next several decades. A modern farming system, even if it could be introduced through government programs, could not provide sufficient employment opportunities for the farm population.

Of necessity, farm incomes will remain below those of urban areas at least until the percentage of the population in the farm sector has reached a low level. However, a farm policy which makes land available to potential users and provides incentives for production will allow a large rural population to live with the dignity of their traditional farming system and the opportunity to participate in the market economy.

The need for labor-saving machinery will come when farm labor is in short supply, and the need for land-saving technology will occur when the market demand for agricultural commodities exceeds the supply. When that happens, there will be little need for government officials to reeducate and coerce farmers into taking the appropriate measures. A labor shortage will lead to an increase in farm wages and encourage the adoption of labor-saving machines; excess market demand will increase farm profits and provide the funds needed to purchase land and labor-saving technology. These are the kinds of problems most Latin American farmers would like to have; surely they will be the first to recognize and understand them.

Notes

1. Calculated from: Instituto Nacional de Estadística y Censos, II Censo Agropecuario, 1974: Resumen Nacional (Resultados Definitivos), Tables 11, 23, 26, 27, and 35, Quito: INEC, 1979.
2. Median farm size in the highland region of Ecuador as a whole is less than 2 hectares. In many areas the local median size is less than one hectare. Calculated from: ibid., p. 181.
3. Calculated from: ibid., Tables 19 & 20.
4. Median farm size in the coastal lowland region is about 4.5 hectares, and in the eastern lowlands the median is above 20 hectares. Calculated from: ibid., pp. 191 & 201.
5. The evolution of modern agricultural practices in Japan is probably more relevant to the densely settled highland regions of South and Middle America than the U.S. system that is frequently taken as the model. In the late 19th Century, an effort to transplant Western farm technology in Japan was quickly abandoned (except in the sparsely settled Hokkaido region). Instead, efforts were made to diffuse seed varieties and more productive cultural practices already in use by Japanese farmers. (Y. Hayami, A Century of Agricultural Growth in Japan, Tokyo: University of Tokyo Press, 1975, pp. 50-59) One key to the success of this effort was the employment of veteran farmers as itinerant instructors in order to combine practical experience with scientific knowledge. The subsequent rapid increase in agricultural output "was based on a backlog of indigenous technological potential previously dammed by feudal constraints" (p. 60).
6. For a full examination of this model, see: L. S. Williams, "The Urbanization Process: Toward a Paradigm of Population Redistribution," Urban Geography, Vol. 4, No. 2 (1983), pp. 125-29.
7. Expenditures by the non-farm population on agricultural products would include distribution and transfer costs, most of which would not accrue to the farm population. It is assumed that the 30% figure is exclusive of those costs.
8. Figures on the elasticity of demand for food and other agricultural products in Latin America are not available. A study conducted in Nairobi, Kenya, however, found an overall elasticity for food of 0.48; thus, a 10% increase in income would produce only a 4.8% increase in demand for food.

The elasticity varied between products, being highest for tobacco and beverages (1.11) and meals taken outside the home (0.82). By contrast the elasticities on other items were: clothing (1.64); consumer durables (1.95); recreation (1.26); and housing (1.08). B. Massell and J. Heyer, "Household Expenditure in Nairobi: A Statistical Analysis of Consumer Behavior," Economic Development and Cultural Change, Vol. 19, No. 2, pp. 212-34.

9. Op. cit., L. S. Williams.

10. Potential interaction is normally measured as some function of the product of the interacting populations. The potential for interaction between two sectors is greatest when the population is equally divided between them. That is, the product of 50 and 50 (for a total population of 100) is greater than that of any other combination of numbers that sum to 100. This construct has been used to estimate or simulate migration, communication, and other interactive processes.

11. It might seem that a decline in the farm population from 44.9 to 35.4 (9.5 points), would more than offset a decline in the farm share of GDP from 16.3 to 11.9 (4.4 points). However, the former represents only a 21% decline while the latter is a decline of 27%.

12. It is recognized that the supply-side viewpoint presented is more an excuse than a reason for price ceilings on agricultural products. More importantly, governments feel obliged to favor the more politically active urban populations. Governments are thus trapped by their policies; price ceilings have great political appeal in cities and any attempt to remove them is met by massive resistance.

13. In a detailed survey of the attitudes on land reform of peasant farmers in the Puno region of highland Peru, investigators found that the great majority of the potential participants in cooperatives were opposed to the program. The reasons given were: cooperatives represent a break with the traditional farming system; there is fear of corruption among the leaders of cooperatives; and people lack confidence in government programs generally and government sponsored cooperatives specifically. C. Bertholet, et al., Puno Rural, Lima: Universidad Católica del Perú, 1969, p. 178. Nonetheless, the massive 1969 agrarian reform in Peru did attempt to set up cooperatives throughout the country, and the result was overwhelmingly negative. It is most unfortun-

ate that the failure of the Peruvian agrarian reform, which did not redistribute land to individual farmers, is used as further proof that farmers are unable and/or unwilling to increase production.

14. The relative absence of competition in the legal markets stands in sharp contrast with the situation in the informal sector. City streets in Latin America are crowded with vendors and tradesmen of all sorts who provide goods and services at competitive prices. Although largely illegal, and subject to payoffs and bribes to police and officials, these services are probably essential to the economic well-being of Latin America. Not only do they provide employment to a large share of the urban population, they inject a degree of competition into the over regulated formal sector.

15. See, Strasma, J. "Market-Enforced Self-Assessment for Real Estate Taxes," Bulletin for International Fiscal Documentation, Vol. 19 (reprinted as Land Tenure Center Reprint No. 13, University of Wisconsin, Madison). With reference to Latin America, see: L. S. Williams, "Population Growth and Economic Development in Latin America: An Alternative to the Malthusian Interpretation," New Themes in Instruction for Latin American Geography, ed. by O. Horst and J. Stoltman, Special Publication of the Conference of Latin Americanist Geographers, Vol. 2, pp. 95-97.