

Neoliberal Reforms and Rural Poverty

by
Thomas J. Kelly

The experience of Mexico with neoliberal reforms began shortly after its suspension of debt repayments in 1982. The Mexican economy suffered greatly from the effects of the adjustment policies and external shocks that occurred in the early and mid-1980s, but by the early 1990s moderate growth had returned and Mexico was viewed as a model of economic reform worthy of emulation by other nations. Even before the peso crisis of 1994, however, the high social costs associated with adjustment caused many critics to question Mexico's status as a model of reform. The decline in real wage rates and the reduction in expenditure on social services suggest that increased poverty may have been a consequence of the reforms. The performance of the agricultural sector was particularly poor, suggesting that poverty may have become even more widespread among agricultural households. This study seeks to determine if poverty did, in fact, increase among agricultural households during the period of the reforms. The empirical analysis raises questions about the distributional implications of neoliberal policies and the implications of neoliberal policy changes for sectors of the economy that previously relied heavily on public support.

To examine the evolution of agricultural poverty over the period of the reforms, this study takes advantage of the existence of micro-level data on household income and expenditure from the Encuesta Nacional de Ingreso-Gasto de los Hogares (National Household Income-Expenditure Survey—ENIGH).¹ The existence of the ENIGH data offers an important advantage that most empirical studies on changes in the rate of poverty have not enjoyed. Most such studies have been forced to base their conclusions on inferences drawn from changes in per capita income or employment and wage rates in the formal sector. Drawing inferences in this way may well understate the change in poverty by ignoring changes in income distribution, changes in the informal sector, and changes in the distribution of income

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across sectors. In Mexico, however, the existence of high-quality micro-level data on household income and expenditure that are comparable over time provides an unusual opportunity to measure the change in the rate of poverty during the period of neoliberal reforms directly.

The first section of this article briefly examines how neoliberal reforms might be expected to affect poverty in the agricultural sector. The second section reviews the agricultural strategies that were followed during the import-substitution-industrialization period of Mexico's development. The third section outlines the changes in the agricultural sector that took place as a result of the neoliberal reforms and some of the antipoverty programs that emerged. The fourth section provides estimates of how poverty rates in the agricultural sector changed over the period of neoliberal reforms. In the final section some conclusions about poverty in the agricultural sector are drawn.

NEOLIBERAL REFORMS

Sweeping policy changes were imposed in Mexico during the 1980s and early 1990s under the banner of neoliberal reforms. These policy changes were designed primarily to increase the efficiency of resource use in order to promote faster growth and to improve the balance of trade. They consisted primarily of institutional and policy reforms that sought to increase efficiency through greater reliance on the market and price signals. The reforms took place in the context of the extreme fiscal austerity that was imposed to slow inflation, and they included trade liberalization, privatization, a decrease in the size of the public sector, financial reform, a change in exchange rate policy, and a reduced role for the state in domestic markets.

Advocates of neoliberal reform have argued that the rural poor should benefit from it. They point out that there are likely to be large costs associated with the distortion of relative prices caused by protectionist policies. By reducing these distortions, liberalization should promote a more efficient allocation of resources. This greater efficiency should then stimulate more rapid growth throughout the economy. Though there is no reason to expect it to reduce inequality, higher growth should help to reduce poverty by generating employment and wage income throughout the economy.²

These advocates argue that the agricultural sector in particular should benefit from these reforms. They point out that in import-substituting economies, agriculture is frequently disadvantaged by policies that reallocate resources to the urban manufacturing and service sectors: overvalued exchange rates weaken the competitiveness of agricultural commodities in international markets, tariff and nontariff barriers increase input costs, and

the state frequently intervenes in the market to keep agricultural prices artificially low (Goldin and Winters, 1992). In most developing countries poverty rates are higher in rural areas, and it is agriculture that provides the basis for employment and income for the majority of the poor. Thus, policies that discriminate against agriculture will tend to exacerbate poverty and inequality.

In a typical neoliberal reform program, the currency is devalued, removing the bias against export agriculture and decreasing input costs. In addition, trade policy is liberalized, the state reduces its interventions in agricultural markets in order to remove some of the market distortions and shift the internal terms of trade in favor of agriculture, and investment rules are liberalized in the hope of stimulating private investment. It is assumed that improved competitiveness in the international market, lower input costs, improvement in the internal terms of trade of agriculture, and an infusion of private capital will stimulate faster growth in the agricultural sector, which will tend to reduce poverty in the sector.

The arguments for the reforms' reducing rural poverty, thus, tend to focus on the potential gains in efficiency and investment. However, they tend to downplay the loss of the transfer mechanisms built into agricultural policy. This is important for poverty and income distribution because the state interventions in agricultural markets frequently have specific income objectives, and their elimination is likely to have strong income effects.

AGRICULTURE IN MEXICO

In order to understand the scope of the state's role in the agricultural sector, it will be instructive to review briefly the agricultural strategies that were followed during the import-substitution-industrialization period before the implementation of neoliberal reforms.

The period from 1940 to 1955 was one of rapid growth for the agricultural sector. In the postwar years, Mexico embarked on an agricultural strategy that included elaborate planning, the control of the pattern of production by tying credit and other input subsidies to specific production packages, the provision of guaranteed prices intended to increase the incomes of producers of basic grains, and large-scale public investment in rural infrastructure. The state invested heavily in the agricultural sector in the hope that by stimulating rapid agricultural growth food prices and therefore urban labor costs could be kept low. The increase in investment and subsidies and the continuation of land reform were successful in stimulating the sector. Agricultural production grew by 5.5 percent a year over the period, and self-sufficiency in basic food crops was achieved (Rello, 1993: 373).

After this initial period of rapid growth, advances in the agricultural sector slowed. Output growth averaged just 3 percent a year from 1955 to 1972 and declined dramatically in the late 1960s and early 1970s (Villa-Issa, 1990: 746). The growing inflationary pressure during this period caused a change in strategy that was largely responsible for the slower growth. The government's reluctance to dampen the incentives for rapid industrial growth meant that efforts to slow inflation through price restraints were concentrated on agricultural goods. Prices for basic agricultural goods were allowed to decline by nearly 20 percent in real terms.

In response to the fall in agricultural prices and the negative protection of the sector due to the overvalued exchange rate, private investment, which had grown rapidly in the previous period, stagnated.³ Public investment, in contrast, continued to grow rapidly. The balance of agricultural investment, therefore, shifted heavily toward the public sector. At the same time, the nature of public investment also shifted. In the previous period new investment in infrastructure had promoted rapid gains in the area under cultivation and in crop yields, but the high cost of maintenance of these projects limited the scope for new projects: it is estimated that nearly one-third of gross agricultural investment during this period was needed just to maintain or replace previously constructed irrigation systems (Villa-Issa, 1990: 746).

The slowdown in agricultural growth and the rapidly expanding population meant that by the early 1970s Mexico was no longer self-sufficient in food. The need to begin large-scale importation of basic grains occurred at a time of sharply increasing international prices. The expense of the agricultural imports, coupled with the mounting social pressure for poverty alleviation in the rural areas, led the government to shift its agricultural strategy once again. Beginning in 1973 it was decided that the public sector needed to promote agricultural growth more actively. The government's response to the economywide stagnation at this time was expansionary fiscal policy, and the rate of public spending increased even more rapidly in agriculture than in the rest of the economy. From 1973 to 1982 net public investment in the agricultural sector exceeded 20 percent of the sector's output, while from 1963 to 1972 it had been less than 10 percent (Rello, 1993: 376). The growth of subsidies was also enormous. The number of crops covered under a program of guaranteed prices for key crops that were typically well above international prices was extended. The sector also became increasingly dependent on large input subsidies; for instance, the value of the subsidy on credit alone represented 10 percent of the sector's output over the 1973 to 1982 period. By 1981 well over a quarter of all agricultural income was derived from public-sector transfers (Rello, 1993: 376).

The role of agriculture in Mexico's development strategy, thus, evolved over the import-substitution-industrialization period. Initially, agricultural growth was seen as the key to maintaining low labor costs in the manufacturing sector. As inflation became a problem in the more advanced stages of import-substitution industrialization from the late 1950s through the early 1970s, agricultural policy shifted, and output prices were forced down to act as an anchor on the domestic price level. Beginning in the mid-1970s, it was hoped that with an infusion of public resources the sector could help to relieve the balance-of-payments problems by increasing agricultural output and thereby decreasing the import bill. From 1973 to 1982 agricultural output did grow at a respectable 3.3 percent a year. This growth was not sufficient, however, to keep pace with the increase in domestic demand and did little to relieve the balance-of-payments pressure (Rello, 1993).⁴

This increase in expenditure on agriculture was also designed to boost incomes in the agricultural sector. This new emphasis on increasing agricultural incomes was an important shift, as the sector came to be viewed not just as a tool in the construction of an industrial economy but also as a vehicle for fighting rural poverty.

During this same period, large-scale poverty alleviation programs emerged. The *Coordinación General de Plan Nacional de Zonas Deprimidas y Grupos Marginadas* (General Coordination of the National Plan for Marginalized Areas—COPLAMAR), which began in 1976, and the *Sistema Alimentario Mexicano* (Mexican Food System—SAM), which began in 1980, both included a mandate to alleviate rural poverty.

COPLAMAR included projects to improve access to basic social services, rural infrastructure, and employment. Although COPLAMAR was officially in operation during the entire term of José López Portillo, it achieved very little in its first three years, as it was not allocated significant funding until 1980. In the second half of the López Portillo administration, COPLAMAR did make significant advances in the improvement of basic services; for example, it managed to have over 2,000 new rural clinics constructed, more than doubling the number of rural health care facilities (Campos and Vélez, 1994: 189). Despite its initial success in increasing basic services in rural areas, however, the program was brought to an abrupt end with the change of administration in 1982.

The goal of the SAM was to ensure low-cost food for the poor and to achieve self-sufficiency in basic grains. The program used the inflows from the increasing oil production to finance input and output subsidies for agriculture and for expansion of the agricultural frontier. It did manage to increase the output of basic grains, with maize production reaching record levels in 1981. It is not clear, however, to what extent this increase in production

and the subsidy programs actually helped the poorest farmers. Much of this increase in output was the result of relatively wealthy producers' substituting maize for other crops in order to take advantage of the new subsidy scheme. In addition, many of the subsidized foodstuffs were little used by the rural poor, and the benefits of the subsidies were enjoyed primarily by urban households (Campos and Vélez, 1994: 191). The SAM might eventually have produced greater benefits for the rural poor as the program evolved, but the debt crisis struck just two years into the program.⁵ The high level of public expenditure required by the subsidization schemes proved unsustainable, and the program was entirely dismantled as the focus on restoring macroeconomic balance took precedence over poverty alleviation programs.

The precise effects on rural poverty of these various agricultural policies and poverty alleviation programs are difficult to determine. In general, the data for the period before 1984 do not permit precise estimates of changes in the level of poverty over time. Some general trends can be hypothesized, however, by cobbling together various sources of data. A review of various data sources from 1963 to 1984 by Hernández Laos (1992) suggests that in the mid-1960s, as the agricultural sector suffered from a policy of price suppression designed to fight inflation, rural poverty rates increased.⁶ This apparent increase occurred despite the fact that the incidence of poverty in the nation as a whole was declining. The next period for which data are available, from 1968 to 1977, encompasses a shift in agricultural policy designed to increase agricultural output and incomes. The policy seems to have succeeded in increasing agricultural income, as rural poverty appears to have declined substantially over this period. The final period for which Hernández Laos was able to obtain data was from 1977 to 1984, a period that included the debt crisis and the beginnings of the policy changes associated with the neoliberal reforms. These data suggest that while national poverty rates were roughly constant, rural poverty rates had begun to climb again in response to the neoliberal policy changes and shocks that occurred in the early 1980s.

POLICY CHANGES IN AGRICULTURE

The agricultural sector, thus, entered the liberalization period with very strong support from the public sector. The legacy of the agricultural strategies followed during the period of import-substitution industrialization was a sector with a tradition of centralized planning, a strong reliance on input and output subsidies, and a dependence on state-financed rural development banks for the majority of its credit.⁷ The sector also relied heavily on public funds for investment because private investment was discouraged by the declining

growth of productivity, the negative rates of effective protection caused by the overvalued exchange rate, and restrictions on private capital in the ejido sector.

This legacy made the agricultural sector extremely vulnerable to the fiscal austerity and policy changes that occurred during liberalization. These changes were similar to those in other sectors: the need for fiscal austerity implied a reduction in the flow of state funds to the sector, the shift in development strategy implied a reduction in the role of the state, and liberalization implied an opening of the sector.

Over the course of the period, agriculture became less regulated and more open to competition. The assumption that public support of the sector was necessary gave way to the neoliberal assumption that the sector could perform better without the distortionary effects of state intervention. The public sector's role in the provision of credit, the commercialization of crops, the determination of prices, and agricultural planning declined sharply.⁸ In addition, the large subsidies for agricultural inputs, especially electricity, fuel, and fertilizers, were reduced or eliminated, and guaranteed prices for basic agricultural products were allowed to decline or were abolished.

The fiscal austerity that affected the entire economy during this period was especially harsh for the agricultural sector. The share of agricultural investment in total government investment fell from 17 percent to 6 percent between 1980 and 1989; in absolute terms, this was an 85 percent real reduction in agricultural investment (Alarcón, 1994: 75). The massive investment in rural development projects in previous decades implied high public expenditures for maintenance, repair, and replacement of the productive infrastructure, and the severe decline in investment not only restricted the possibility for new investments but also led to a deterioration of the existing infrastructure. By 1988 over 11,000 irrigation projects had fallen idle or partially idle because of a lack of funds for maintenance and repairs (SARH, cited in Rello, 1993: 379).

The provision of credit to the sector also underwent important changes. Not only did the volume of agricultural credit decline by two-thirds but the interest rate subsidy on the credit still available, which had been quite large before liberalization, was virtually eliminated (Hewitt de Alcántara, 1992).⁹ In addition, the way in which the credit was channeled to producers was changed. Funds were shifted from public development agencies to private commercial banks.¹⁰ This shift was a critical blow to peasant farmers, whose relatively low profit margins and high risk exposure make them unattractive credit risks for commercial banks.

Some advocates of neoliberal reforms recognized that these radical reforms might have a negative impact on the rural poor before the agricultural

sector could be reorganized and the presumed benefits from increased investment and efficiency realized. However, they argued that targeted antipoverty programs could mitigate the negative impact of the policy changes. In Mexico, however, during the period of extreme fiscal austerity, from 1983 to 1988, large-scale antipoverty programs were not undertaken; instead, social spending was actually falling by over 6 percent a year (Lustig, 1996: 82). This trend was reversed only when Carlos Salinas took office in 1988. Salinas was faced with widespread popular disapproval of the reforms and moved quickly to increase spending on social development. The centerpiece of the Salinas administration's new social policy was the Programa Nacional de Solidaridad (National Solidarity Program—PRONASOL), an umbrella organization under which the various poverty alleviation efforts were organized. PRONASOL was designed to help mitigate some of the negative effects of the policy changes on the poor through education, health, nutrition, housing, employment, and infrastructure projects.

The lack of relevant data and the diversity of these projects make it difficult to assess the efficacy of PRONASOL in alleviating poverty. Project-level data on household income and expenditures that could be used to assess the direct impact of the projects are extremely expensive to collect and are typically unavailable. In addition, published information rarely provides pre-project data on access to basic services.

Despite the difficulty in assessing the effects of individual projects, PRONASOL's overall success in alleviating rural poverty has been questioned on the grounds that the program is designed to be as much a political tool to rally support for the Partido Revolucionario Institucional (Institutional Revolutionary party—PRI) and its neoliberal reforms as a tool for reducing poverty. Anecdotal evidence suggests that the poorest of the poor in rural areas (who tend to have relatively little political power) are not the primary beneficiaries of PRONASOL projects. A systematic empirical study by Molinar Horcasitas, and Weldon (1994) confirms that the allocative decisions are driven by political and electoral priorities as well as poverty alleviation objectives.

In addition to the bias in favor of politically important groups in the allocation of funds, there is some evidence of a bias toward spending on urban areas. From PRONASOL's beginning through the early 1990s, over two-fifths of the program's expenditures went to urbanization projects (Lustig, 1996: 90). These projects were primarily water supply and sewage projects that, while they did not exclude rural areas, did tend to favor urban ones. This urban bias was also evident in the targeted food subsidy programs. The targeted milk and tortilla subsidy programs have been effective at transferring purchasing power to the poor but have reached primarily the urban poor,

while the rural poor have had to rely more on subsidized state food stores. Levy (1991: 78) points out that an urban family that participates in the milk and tortilla programs could benefit by as much as US\$145 annually, while the discounts available at the subsidized rural food stores carried an average benefit of just US\$10 a year per family. The design and implementation of these poverty alleviation programs would suggest, then, that they were not highly successful at alleviating mass rural poverty. Indeed, Dresser (1994) makes a convincing argument that PRONASOL's primary function was to provide the political conditions necessary to sustain the implementation of the neoliberal model (and not to address the more fundamental causes of poverty). It achieved this by reinstating the PRI's role as a provider of welfare and by helping to concentrate presidential power. As Fox (1993) notes, a disproportionate share of PRONASOL's funds was skillfully directed to politically contentious areas.

THE EFFECTS ON POVERTY

To obtain a direct measure of the effect of these changes on the rate of poverty among agricultural households, the head count poverty index was estimated for four years during the period of the neoliberal reforms. The head count index is simply a measure of the proportion of households that fall below the poverty line.¹¹ The index was estimated for both an extreme and a moderate poverty line. The extreme poverty line is defined as the value of the goods necessary to meet basic nutritional requirements, and the moderate poverty line is defined as the value of the goods that provide a household's basic needs. The poverty lines used to calculate extreme and moderate poverty are based on a study of basic needs by COPLAMAR.¹² The extreme and moderate poverty lines are the equivalent of roughly US\$25 per month and US\$98 per month at 1989 market exchange rates.¹³

SHORT-TERM EFFECTS

The rate of extreme poverty for agricultural households increased significantly from 1984 to 1989 (see Table 1). In 1984 the extreme head count ratio was equal to 0.398; this implies that 39.8 percent of agricultural households fell below the extreme poverty line, while by 1989 this figure had increased to 45.2 percent. The rate of moderate poverty—the percentage of households that do not meet their basic needs—is extremely high for agriculture (see Table 2). There was a slight but not statistically significant increase in moderate poverty for agricultural households from 1984 to 1989. The lack of a

TABLE 1
Head Count Ratio for Extreme Poverty by Sector

	1984	1989	1992	1994
Agriculture	.398	.452	.432	.429
Tradables	.087	.129	.100	.126
Nontradables	.089	.105	.094	.095

Source: Own calculations based on ENIGH.

TABLE 2
Head Count Ratio for Moderate Poverty by Sector

	1984	1989	1992	1994
Agriculture	.931	.938	.939	.938
Tradables	.699	.732	.701	.742
Nontradables	.741	.716	.668	.680

Source: Own calculations based on ENIGH.

significant change is not surprising given the extreme inequality of income in Mexico and the fact that over 90 percent of the agricultural households do not meet their basic needs: apparently the small number of agricultural households above the moderate poverty line are well above it and not vulnerable to falling into poverty.

At the beginning of the liberalization period, many analysts warned that the reduction in spending and policy changes associated with the neoliberal reforms would result in a severe decline in agricultural production. However, the initial results were not the disaster that had been predicted. Instead, over the first years of liberalization, from 1983 to 1987, agricultural growth was slow, averaging approximately 1 percent a year, but was actually faster than that of the economy as a whole. The less anemic performance of the agricultural sector was due to the boost given to exports by the initial devaluation of the peso and favorable weather.

Agriculture's relatively strong performance did not last, however. While the rest of the economy was beginning a recovery in 1988 and 1989, the agricultural sector suffered a severe contraction in output. The policies of exchange rate devaluation and favorable prices for basic crops that had initially mitigated the negative impact of liberalization were both reversed. The reversal of these policies, coupled with the effects of a severe drought, caused agricultural output to fall by 6 percent in 1988 and 1989.¹⁴

TABLE 3
Gross Domestic Product by Sector (billions of 1980 pesos)

	1980	1982	1984	1989	1992	1994	Cumulative Change 1984-1989	Cumulative Change 1984-1994
Agriculture	368	383	401	386	409	432	-3.8	7.6
Tradables ^a	1,133	1,203	1,173	1,318	1,474	1,515	12.4	29.0
Nontradables ^b	2,969	3,246	3,222	3,343	3,734	3,911	3.8	21.0
Total	4,470	4,832	4,796	5,047	5,616	5,857	5.2	22.1

Source: Sistema de Cuentas Nacionales de México, various years.

a. Includes mining and manufacturing sectors.

b. Includes construction, electricity, commerce, transportation, finance, and communal and social service sectors. Agriculture is reported separately because the average incomes are so much lower than in manufacturing and mining and because traditionally heavy government intervention and a large subsistence sector cause it to behave differently from other tradable goods industries.

The slow growth during the early stage of liberalization and the sharp downturn in 1988 and 1989 meant that agricultural output fell by almost 4 percent over the period spanned by the first two income-expenditure surveys (see Table 3). Over this time period, average earnings in agriculture fell even more sharply than output, declining by 18 percent (see Table 4).

Given that rural incomes are derived principally from agricultural production and the sale of labor power, it is not surprising that with agricultural output and earnings both falling, poverty should have increased so rapidly over this period. And since the economy as a whole was growing, albeit slowly, and average earnings outside agriculture were falling much more slowly, it is not surprising that agriculture's poverty rate should have increased more rapidly than the poverty rates for the rest of the economy.

In an economy that is subjected to so many simultaneous and tightly sequenced policy changes as well as exogenous shocks, it is, of course, impossible to distinguish perfectly the effect of any individual policy on the well-being of agricultural producers. However, one policy change during this period merits special attention: one of the apparent reasons for the increase in poverty in the agricultural sector in 1989 was the sudden fall in the guaranteed prices for basic grains. From 1981 to 1989 the guaranteed prices of maize and beans fell by 33 percent and 20 percent. Of the basic crops covered by the guaranteed price program, maize is by far the most important. Indeed, it would be difficult to exaggerate the importance of maize for poor Mexican farmers. Maize is Mexico's most important crop in terms of area planted, employment creation, and value of production. In 1992 maize occupied nearly

TABLE 4
Average Earnings by Sector (thousands of 1980 pesos)

	1980	1982	1984	1989	1992	1994	Cumulative Change 1984-1989	Cumulative Change 1984-1994
Agriculture	17	16	14	11	10	9	-18.0	-32.4
Tradables ^a	134	133	106	110	128	129	2.8	20.9
Nontradables ^b	97	95	78	68	77	81	-12.5	3.3
Total	79	79	64	58	66	68	-9.1	6.2

Source: Sistema de Cuentas Nacionales de México, various years.

a. Includes mining and manufacturing sectors.

b. Includes construction, electricity, commerce, transportation, finance, and communal and social service sectors. Agriculture is reported separately because the average incomes are so much lower than in manufacturing and mining and because traditionally heavy government intervention and a large subsistence sector cause it to behave differently from other tradable goods industries.

half of the arable land, including almost two-thirds of the rain-fed land and a quarter of the irrigated land (Appendini, 1994). Three-fourths of all farms plant at least some maize. Maize production employs approximately one-third of the rural labor force and two-thirds of the workers involved in the production of Mexico's ten basic crops (Salcedo, Garcia, and Sagarnaga, 1993). In 1992 maize accounted for a fifth of the total value of agricultural production (Appendini, 1994).

Most of the maize in Mexico is produced by a very large number of small farmers on rain-fed land; approximately 70 percent of the maize is grown on rain-fed land, and 90 percent of it is produced by small farmers with less than five hectares of land (Appendini and Liverman, 1994: 151). Most plots, particularly in the ejido sector, are of poor quality. The poor quality of the land in the ejido sector is reflected in low yields: the national average for Mexico is less than two tons per hectare, while in the United States the average is seven tons per hectare, and on average maize production in Mexico is not highly profitable.

It is important to note, however, that these national-level estimates obscure the enormous diversity among maize producers. While most small-scale farmers in the ejido sector produced at low or negative levels of profitability (when household labor and other inputs are valued at market rates), larger-scale farmers who enjoyed access to irrigation and other modern inputs were able to earn large rents by producing maize for sale at the high government support price.

Given the extreme importance of maize in the agricultural economy, it is easy to see why such a sharp fall in the price would cause poverty to increase. Again, rural incomes are derived primarily from agricultural production and wage labor. Most poor maize farmers suffered relatively poor access to irrigation, extension, credit, and transportation and storage facilities, and so their ability to alter their crop mix and shift out of maize into more profitable crops was limited. Consequently, the decline in the output price of maize reduced the value of farmers' production and tended to drive down real wages in the rural labor markets.¹⁵

LONG-TERM EFFECTS

The results for the longer-term period from 1984 to 1994 are very similar. Extreme poverty was higher in 1994 than in 1984 for agricultural households, though there was some improvement from the poverty levels reached in 1989 (see Table 1). Moderate poverty for agriculture was again virtually unchanged (see Table 2). It is important to note, however, that these changes occurred during a period of rapid population expansion. From 1984 to 1994 the population increased from 77,043,000 to 88,431,000. The rapid population growth combined with the higher rates of extreme poverty and stable rates of moderate poverty combined to increase the absolute number of the poor.

Moreover, these large increases in the number of poor individuals occurred during a subset of the entire reform period. The implementation of some neoliberal policies began shortly after the debt crisis in 1982, before the first year for which comparable household-level income-expenditure data are available. The decline in per capita income from 1982 to 1984 makes it likely that the number of poor had already begun to increase before the first year of our study. This implies that the results of this study probably underestimate the increase in poverty associated with the neoliberal policies and external shocks that occurred over this period.

For the entire period from 1984 to 1994, the agricultural sector performed much worse than the rest of the economy despite a slight shift in favor of agriculture in Mexico's internal terms of trade. Over the entire period of study, agricultural growth was much slower and more erratic than that of the rest of the economy; average earnings fell by twice as much in the agricultural sector; and employment, which grew by 10 percent in the economy as a whole, was stagnant in the agricultural sector (see Tables 3-5).

The poor results at the aggregate level were compounded by unfavorable shifts in the incentive structure within the sector. The relative prices of the basic food crops grown by small farmers fell sharply in comparison with other agricultural products (Rello, 1993:387). The decline in the relative price of

TABLE 5
Total Employment by Sector (thousands of workers)

	1980	1982	1984	1989	1992	1994	Cumulative Change 1984-1989	Cumulative Change 1984-1994
Agriculture	5,670	5,637	5,941	6,047	5,866	5,903	-1.8	-0.6
Tradables ^a	2,650	2,742	2,622	2,765	2,714	2,559	5.5	-2.4
Nontradables ^b	11,962	13,014	12,920	13,519	14,636	14,993	4.6	16.0
Total	20,283	21,483	21,483	22,331	23,216	23,455	3.9	9.2

Source: Sistema de Cuentas Nacionales de Mexico, various years.

a. Includes mining and manufacturing sectors.

b. Includes construction, electricity, commerce, transportation, finance, and communal and social service sectors. Agriculture is reported separately because the average incomes are so much lower than in manufacturing and mining and because traditionally heavy government intervention and a large subsistence sector cause it to behave differently from other tradable goods industries.

these basic food crops had a strong effect on poor farmers, whose ability to substitute other crops in response to the shift in incentives is limited by their lack of access to key inputs, most notably irrigated land, credit, and information.¹⁶

CONCLUSION

Over the period of study, the implementation of neoliberal policies did not succeed in bringing about a decline in poverty among households employed in the agriculture sector. Instead, there were large increases in the number of extremely and moderately poor and the proportion of households in poverty over both the short and the long term, and the prospects for future gains in poverty alleviation in the agricultural sector are not promising.

In the agricultural sector, the relatively large reduction in the level of state support appears to have been largely responsible for the increase in poverty. Before liberalization, the agriculture sector was made heavily dependent on subsidies and public investment and management of the agricultural economy. The sharp decline in public support of the sector led to a decline in output growth and employment opportunities. The negative impact on the poor of the sector's poor performance was exacerbated by the reduction of producer price subsidies, which caused a decline in the relative prices of the basic food crops on which the poor rely.

The shift in state policies away from large-scale interventions to reduce rural poverty toward greater reliance on the anticipated benefits of market

reforms has so far failed to reduce rural poverty. PRONASOL's success in weakening political opposition to the neoliberal reforms, the support for the reforms from the export and financial sectors of the economy, and the binding commitments implied by NAFTA and other trade agreements, however, suggest that the changes to agricultural policy are unlikely to be reversed. The role of the agricultural sector as a conduit for the transfer of resources to the rural poor appears unlikely to return.

The ability of poor farmers to adjust to falling prices in basic food crops will therefore be critical for the future of poverty in rural Mexico. Of particular importance will be the elimination of the maize price subsidies, which have been called Mexico's "de facto rural employment and anti-poverty program" (Levy and van Wijnbergen, 1992).

Even after the devaluation of the peso in 1994 and 1995, the price received by Mexican maize producers was still higher than the international price. Yet under the terms of NAFTA, Mexico must eliminate the producer price subsidy to maize over a 15-year period. The effect of the reduction in producer prices on rural poverty will be partially offset by direct cash payments to small farmers for a time. The cash payments, however, will be phased out at the end of the transition period. As mentioned above, it will be difficult for many small farmers to make the transition to more profitable crops, at least in the short run, in the context of reduced public investment in agriculture.

In the current fiscal climate, the possibility of large-scale increases in public investment to reinvigorate and modernize the agricultural economy seems remote. It was hoped by the advocates of neoliberal reform that, as a partial solution to this problem, the changes made to the legal and institutional structures brought about by the Salinas administration in the run-up to NAFTA would stimulate greater private investment in the sector. It was also hoped that job creation in the export sector would provide employment opportunities for farmers unable to adapt to the loss of state support in the agricultural sector. However, the increases in private investment in agriculture and low-skill employment opportunities in the export sector to date have been modest at best, and the prospects for a rapid decline in rural poverty remain dim.

NOTES

1. The survey, carried out in the third quarters of 1984, 1989, 1992, and 1994, is unique in that a consistent methodology has been maintained throughout the various years in order to ensure comparability across time. The basic unit of analysis in the survey is the household, defined as a group of persons who share a common budget for food regardless of kinship relations. The households surveyed were drawn from a multistage-sample design with stratification. The samples ranged in size from 4,735 households in 1984 to 12,785 in 1994.

2. Whether these reforms actually achieve the expected results is a subject of extensive debate in the literature. In a review article Edwards (1993) points out that many of the cross-country empirical studies that purport to demonstrate a relationship between liberalization and growth have focused on the degree of antiexport bias and not government intervention. This implies that those countries in which import restrictions were accompanied by heavy export subsidies have been treated as liberalized despite extensive government involvement in the economy (Pastor and Conroy, 1995). While the developments in endogenous growth theory make a more convincing case for the relationship between long-term growth and trade policy, attempts to analyze these models empirically have suffered from the same difficulties in measuring trade orientation as the earlier cross-country studies (Edwards, 1993).

3. These changes reduced the viability of peasant agriculture and the profitability of commercial agriculture, and private investment declined in both subsectors.

4. Rello (1993) argues that the infusion of public resources failed to result in faster growth because the overvaluation of the peso was not corrected; input subsidies were administered erratically, making it extremely difficult for farmers to plan; and the benefits of the public spending were captured by a relatively small subsector.

5. Fox (1993) points out that in addition to its impact on food production and poverty, the SAM played an important role in stimulating the consolidation of representative regional peasant organizations that later grew into important forces for rural democratization.

6. The lack of comparable micro-level data before 1984 implies that the changes in poverty rates reported by Hernández Laos should be viewed as rough trends and not precise estimates.

7. The state's role in the ejido sector was particularly strong. As de Janvry et al. (1996: 71) point out, "credit was available through one public source and given to the ejido as a whole with restrictions on the choice of crops prohibiting, for instance, intercropped corn and on the choice of technology through the amount of credit granted and delivery of credit in kind. Insurance was compulsory with official credit; access to irrigation water required a permit with restrictions on the patterns of land use; and production was done under contract with CONASUPO and specialized parastatal agencies."

8. Some indication of the extent to which the role of the state in the agricultural sector was reduced can be seen from the decline in the number of dependencies of the agricultural ministry, which fell from 94 in 1981 to just 20 in 1990 (Ibarra Niño, 1993: 102). Barkin and Taylor (1993) have suggested that the reduced size of the agricultural bureaucracy may have some positive effect on agriculture by limiting the state's ability to dictate production projects to peasants. Gates (1996) has pointed out that many of these projects were of rather dubious profitability and were not free from political manipulation. Gates has also argued that the elimination of corruption in the agricultural bureaucracy was one of the motivations for the shift away from a large role for the state in the agricultural sector. It is not surprising that a bureaucracy as vast as the one created to administer the state's agricultural policies suffered from some degree of corruption. There is evidence, however, that the level of corruption in the agricultural bureaucracy was rather extreme; for instance, Gates notes that the practice of falsely declaring crop failure in order to collect insurance benefits provided by the state was so widespread that the term *industria de siniestros* or "disaster industry" came into parlance to describe the practice.

9. Between 1986 and 1989 the level of subsidy on interest rates for agricultural credit dropped from 0.54 percent to only 0.09 percent of gross national product (Hewitt de Alcántara, 1992).

10. During the transition period before its elimination in 1991, Banrural, the main rural credit agency, was restructured to operate more like a commercial bank, financing only agricultural ventures with a high probability of earning a rate of return adequate to repay the loan. Previously, Banrural had acted more as a development agency, providing credit for use with specific techno-

logical packages that were often of dubious profitability (Gates, 1996). The perception of Banrural as more of a governmental development agency than a traditional lending institution hampered the bank's effectiveness. The default rate on Banrural loans was extremely high, as credits issued by the bank were often treated more as transfers than as loans that required repayment.

11. The head count index is part of a family of additively decomposable poverty measures proposed by Foster, Greer, and Thorbecke (1984). These indices can be written generally as

$$P_{\alpha} = \left(\frac{1}{n} \right) \sum_{i=1}^q \left(\frac{Z - Y_i}{Z} \right)^{\alpha},$$

where n is the total population, Z is the poverty line, q is the population whose income (or expenditure) falls below the poverty line, Y_i is the income (or expenditure) of the i th individual, and α is a parameter that can take the values 0, 1, 2. When α takes the value of zero, P_{α} defines the head count index. The head count index measures the extent of poverty but does not distinguish between those individuals whose income falls just short of the poverty line and those whose income is far below it. Estimates for alternative measures of poverty that take account of the size of the income shortfall of the poor can be found in Kelly (1999) and Alarcón (1994).

12. The COPLAMAR study constructed a basket of goods that met the basic needs (as determined by COPLAMAR) of an average household in the seventh income decile. The basket of goods, termed the Canasta Normativa de Satisfactores Esenciales (CNSE), included food, housing, clothing, education, health care, culture, transportation, and some incidentals. The study of basic needs also identified a subset of the CNSE, called the Canasta Normativa Alimentaria (CNA), that included only the foodstuffs necessary to fulfill basic nutrition requirements. The CNA component of the basic consumption basket includes 34 items designed to provide 2,082 calories and 35.1 grams of protein per adult per day. In order to estimate the rate of extreme poverty, the extreme poverty line is defined as the value of the CNA plus an additional 25 percent to account for the "irreducible nonfood items" necessary for a household; Streeten (1989) and Lipton (1988) have presented evidence indicating that these irreducible expenditures are equivalent to approximately 20 percent the value of the minimum expenditure bundle, which implies a scaling factor of 1.25. This implies a value for the extreme poverty line of 66,727 pesos of monthly expenditure per capita in September 1989 prices; this was equal to approximately US\$25 a month at market exchange rates, slightly lower than the dollar-a-day poverty line typically used by the World Bank. In order to estimate the rate of moderate poverty, the monetary value of the CNSE is defined as the moderate poverty line. The value of the moderate poverty line is 263,003 pesos of monthly expenditure per capita in September 1989 prices; this was equal to approximately US\$98 a month at market exchange rates.

13. Expenditure was chosen as the proxy for well-being for two reasons. The first is that there is likely to be consumption smoothing among the poor during the period of adjustment. Poverty estimates based on household income would not reflect the consumption-smoothing behavior. The second is that household income tends to be underreported in income-expenditure surveys. A comprehensive study by Altimir (1982) has shown that income-expenditure surveys in Mexico tend to underestimate income and that the underreporting tends to be greater in higher-income groups. The ENIGH appears to follow this general pattern: Levy (1991) points out that when households are divided into 20 groups of equal size and ordered by income, total expenditure exceeds total income for all but four of the groups for the 1984 survey.

14. Lustig (1992) reports evidence that the decrease in production in these years may also have been due in part to a shortage of labor in the central agricultural states. The existence of a rural labor shortage seems surprising at a time of high urban unemployment, but the apparent

cause was the large-scale migration of labor to the United States. There is widespread evidence of heavy migration to the United States during this period, but according to the national accounts total agricultural employment actually increased. This discrepancy may be partially explained by the fact that migration to the United States is more a regional than a national phenomenon, with the vast majority of out-migration occurring in the central agricultural states cited by Lustig as those suffering from rural labor shortages.

15. Before concluding that, in the short run, the decrease in guaranteed prices and other neoliberal policy changes combined to *cause* a sharp increase in agricultural poverty, it is important to consider the role of exogenous variables in determining the level of agricultural output. The most obvious of these is climatic variations. One of the reasons for the decline in output in 1988 and 1989 was adverse weather conditions. While it is difficult to gauge to what extent climatic factors and not agricultural policy were responsible for the decline in production and increase in poverty in these years, the prolonged drought was clearly an important factor.

Despite the need for caution in interpreting the survey results, the marked decline in public support for agriculture, followed by the sector's poor performance in terms of output, earnings, and employment, suggests that liberalization did indeed result in an increase in poverty in the short run. Moreover, the fact that the decline in public support was more severe in agriculture than in other sectors and that agriculture's performance was subsequently worse than that of the rest of the economy suggest that it was the particular mix of reform policies followed that caused poverty rates to increase more rapidly in the agricultural sector over this time.

16. Because there are important regional differences in Mexican agriculture, the shift in relative prices within the agricultural sector raises the possibility that there may have been regional differences in the evolution of poverty rates over the liberalization period. In general, a distinction may be made between the northern and central regions, where access to irrigation, large markets, and transportation, storage, and processing facilities is relatively good, and the southern region, which does not enjoy these advantages. The infrastructure advantages of the northern and central regions make these areas better-suited to the cultivation of a variety of crops, while the southern region relies much more heavily on the production of basic grains and will find it relatively difficult to switch to new crops as the profitability of basic grains declines. Unfortunately, the survey design of the ENIGH does not allow the estimation of poverty rates by region in order to determine whether these differences in the capacity to switch crops have affected the evolution of poverty.

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