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LIFE IN A MEXICAN VILLAGE: A SAM PERSPECTIVE*

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LIFE IN A MEXICAN VILLAGE: A SAM PERSPECTIVE

ABSTRACT

This paper employs the Social Accounting Matrix (SAM) to analyze the economic structure of a migrant-sending rural economy. A village SAM is constructed using 1982 household data from a major migrant-sending village in Central Mexico. The village matrix multiplier and its decompositions are derived from tne SAM and are utilized in policy experiments on the production, value added, income, and investment flows of the village. The results highlight the central role of both internal and international migration in the village economy, as well as importance of targeting directly anti-poverty policies toward the landless.

LIFE IN A MEXICAN VILLAGE: A SAM PERSPECTIVE*

INTRODUCTION

This paper presents a framework for using Social Accounting Matrix (SAM) techniques to analyze the economic structure of a migrant-sending rural economy.[1] A village SAM is constructed using 1982 household data from a major migrant-sending economy in Central Mexico. The findings illustrate clearly the central role of both internal and international (Mexico-to-U. S.) migration in the village economy and the potential vulnerability of the village economy to external shocks resulting from U. S. immigration reform and from economic malaise in rural and urban Mexico. The concluding section summmarizes some implications of these findings for the role of migration in economic development and the likely impacts of U. S. immigration policy and Mexican urban labor market policies on the rural economy.

THE VILLAGE SAM FRAMEWORK

The village economy is characterized by a relatively simple set of production accounts but relatively complex labor-allocation patterns. Household members' labor may be allocated either to household-farm work or to wage work; wage labor may either be allocated within the village or "exported" to sectors outside the village; labor exports may take the form of internal migration (generating remittances that share a common currency with the village) or, alternatively, they may occur through international migration (in which international exchange rate fluctuations have a direct and immediate impact on the value of migrant remittances, with possible repercussions throughout the village economy). International labor migration, typically entailing illegal entry into the United States, is a major destination for village labor and a major source of household income in rural Central Mexico.

The village SAM is designed to take account of these considerations. An outline of the SAM appears in Table 1. The input-output (I-O) matrix for the village economy (entry 1, 1) consists of five sectors: farming (principally maize), livestock, renewable resources (fisning[2] and wood gathering), construction, and retail activities. The last sector is less of a production sector than a catch-all category for manufactured and processed goods "imported" into the village from the rest of Mexico, although a limited amount of formal retailing of locally-produced goods also occurs. The village economy is likely to have a large import component (7, 1); in turn, as the transition from a subsistence to a market economy unfolds, an increasing share of village production will tend to be "exported" (1, 7). During the interim, labor exports are likely to play a key role in financing village imports.

The village production activities result in income payments to capital (2a, 1) and labor (2b, 1). Payments to capital, or capital value added, include explicit payments for capital services ranging from land rent payments to hired ox-and-plow and tractor services. They also include imputed returns to capital when no explicit payment takes place. Both types of payments are contained in the capital factor account. Separate entries are included for hired and nonhired (family) labor services, or labor value added, in order to provide a sharper focus on interhousehold farm-labor linkages in village production activities.

Together, accounts 1 and 2 represent the flow of commodities across product markets and of factors across factor markets within the village economy.

Returns to human capital, migration capital, and physical capital are channeled into eight village institutions defined by the principal asset they own: three institutions defined by size of landholdings (landless, small landholder,

and large landholder) and four types of human capital. We distinguish types of human capital by level of education (low education referred to as "uneducated" in the tables and high education referred to as "educated" in the tables) and by types of migration capital to which labor has access (internal migration capital, or U. S. migration capital). Migration capital, or household contacts, experience, and information networks at prospective migrant destinations, is location specific and constitutes a major asset in migration-intensive peasant economies (Adelman 1985).

The labor-institution accounts in the SAM (3d-g) provide a detailed breakdown of payments for labor services supplied by village households to employers both inside and outside the village. Total payments for labor services in village production (from the two labor value added accounts) are represented by entry (3d, 2). Remittances from internal labor migrants are represented by entries (3e, 7) and (3f, 7), and international migrant remittances are represented by entry (3g, 8), with the prevailing exchange rate utilized to translate the latter into local currency. The two separate internal migrant remittance subaccounts are provided in the SAM to capture the significant heterogeneity in terms of human capital that is evident within this labor category. Internal migrants tend to be polarized into two groups: those with secondary and postsecondary education, for whom the returns-to-schooling component in remittances is high, and those with little formal schooling. By contrast, illegal Mexico-to-U. S. migrants are characterized by low schooling levels, evidently because the returns-to-schooling are negligible in the low-skill labor markets in which most opportunities for undocumented migrants are concentrated (North and Houston 1976, Ranney and Kossoudji 1983, and Taylor 1987). Thus, only one international migration account is included in the SAM.

Accounts 1, 2, and 3 represent the transaction flow of factors and commodities across factor and product markets (including "rest-of-the-world" markets). Payments for capital and labor services, in turn, are channeled into the village households that supply these services. Different household members have varying amounts of human capital and land. They distribute the returns to these assets to our three household categories in the household accounts (4a-c, 3). The household accounts, in turn, channel household income into final village (i.e., "domestic") consumption demand for village products [entries (1a-e, 4)] and saving. Three household categories are provided. They are defined in terms of the size of household landholdings, which typically are the principal capital assets in peasant societies and thus are a logical criterion for arriving at a first approximation to economic class.

The village SAM contains two capital accounts. The first capital account (5) serves to collect household savings (5, 4) and purchase physical capital investment goods (1, 5). In keeping with the SAM's labor focus, a human capital account (6) is also provided. The purpose of this account is to capture household expenditures on human capital formation or schooling. This activity is intertemporally linked with internal migration: The more formal schooling villagers attain, the more likly they are to become internal migrants as opposed to working in the village or migrating illegally to the United States (Tayor 1986).[3]

THE ESTIMATED MEXICAN VILLAGE SAM

Data to construct the village SAM are from a 1983 household survey in the Pátzcuaro region of the state of Michoacán, Mexico, approximately 2,000 kilometers south of the Mexico-Arizona border. The sample consists of 222 adults

13 years of age or older representing the total adult population in 30 households. Detailed data were collected by Taylor (1984) on each individual's labor allocations and contributions to household income during 1982. Data were also gathered on income from household-farm production (farming, fishing, livestock, commerce, etc.) and rental income.[4] A "migrant" is defined as a person who left the village at any time during the year for the purpose of working. The shortest term of migration in our sample is approximately three weeks.

Selected characteristics of the village sample are summarized in Table 2. The village shows evidence of a long-standing tradition of Mexico-to-U. S. migration. Seventy percent of households in the village had family members who were Mexico-to-U. S. migrants in 1982, and these households had an average of 2.8 Mexico-to-U. S. migrants each. As a result, Mexico-to-U. S. migrant remittances constituted a large share of total income in the average village household (27 percent).

The role played by Mexico-to-U. S. migration in the village is also evident in the experience and in certain personal characteristics of the migrants themselves. The average Mexico-to-U. S. migrant had accumulated considerable U. S. migration experience by the start of 1982, having worked in the United States in each of an average of 5.6 years of his or her adult life. Males are not significantly more likely to migrate to the United States than females. Mexico-to-U. S. migrants are young, averaging 28 years of age, and they have little formal education, averaging just 4 years of completed schooling. Average 1982 remittances per Mexico-to-U. S. migrant in the village were US$355.

Internal migration also plays an important role in household labor allocations: 46.7 percent of all village households participate in internal

migration. The average internal migrant family had 2.8 internal migrants in 1982 and 11 percent of total household income was attributable to remittances from internal migrants.

The average 1982 internal migrant had migrated internally in each of 6 years of his or her adult life. Like Mexico-to-U. S. migrants, internal migrants are young (29 years of age) and they are no more likely to be male than female. They are significantly better schooled than their Mexico-to-U. S. counterparts, averaging at least some postprimary schooling. The average internal migrant contributed US$446 to the household of origin.

THE VILLAGE SAM

The complete village SAM appears in Table 3. More detailed breakdowns of selected entries are given in subsequent tables. Our interpretation of the SAM will proceed in four parts: the structure of village production and its final demand; village trade; the distribution of value added and migrant-labor incomes; and the composition of household income and household expenditure.

Village Production and Final Demand

Row 1 in Table 3 gives an aggregate view of village production activities. The sum of value added, 3.47 million pesos, equals the 1982 "Gross Village Product" (GVP).

Production linkages within the village economy are weak. Table 4 provides a disaggregated view of the activities column in the SAM. The village I-O table appears in the northwest quadrant of Table 4. The largest linkages are the trading activities of the village, through the retail sector. The next largest linkage is the livestock demand for feedgrains (21,400 pesos with a

corresponding input-output coefficient of 0.0177). A relatively small share of farm output (10.7 percent of total sales) is resold by the retail sector. Most farm produce is either consumed within the household or sold directly to other households in the village (1,108,560 pesos); 9.9 percent of farm output (119,680 pesos) is exported. These numbers reflect a large subsistence component in the demand for foodgrains.

The livestock sector is the major producer of capital goods in the village. Investment demand absorbs nearly one-third of this sector's total output. This sector is also the village's major generator of export income: two-thirds of total livestock output is exported (much of this consists of pigs sold to intermediaries who, in turn, sell to ham processors). Some livestock products (mainly milk, eggs, and poultry) are sold locally to small retail outlets (109,500 pesos) or else directly to consumers (273,550 pesos).

The renewable resources sector has only one small linkage in the I-O table (50,000 pesos) consisting primarily of locally-harvested firewood sold to a village retailer. Most of this sector's production, which includes firewood as well as fish from nearby Lake Pátzcuaro, is consumed within the household or sold directly to village consumers (341,590 pesos) or exported from the village (309,850 pesos). The construction sector has no linkages with other village production sectors, producing almost entirely for local consumption. The commercial sector provides inputs (mostly imported) to agriculture (123,120 pesos) and to construction (208,940 pesos), but its major role is to provide imported consumer goods to village households (2,670,130 pesos). The high import content of retail sales (73 percent of the total intermediate and final demand for products sold by this sector is satisfied through imports) represents a major leakage from the village economy.

Village Trade

One problem endemic to a village SAM is that in a village there are two rest-of-the-world accounts. In the present case we have the rest of Mexico, with transactions denominated in pesos, and the United States, with transactions converted into pesos by using an exchange rate. In an economy with migration, typical of most villages, there are also remittances flowing into household institutions. These are like grants-in-aid, have no corresponding contemporaneous outflows, and do not generate an increase in indebtedness or a decrease in reserves unless one uses an expanded notion of income and wealth that includes entitlements. The remittances are used by households to finance their purchases of goods and services, including farm investments and the education of village children, from the village as well as from the rest of Mexico.[5]

The village is a very open economy. Its interactions with the rest of the world include sales and purchases of agricultural and manufactured goods and outmigration for income earning and for schooling. Imports plus exports amount to 191 percent of gross sales. There is only one purely nontraded sector, construction, and even that sector is linked to the outside indirectly through purchases of inputs. The balance of trade on the goods side is extremely negative. The trade deficit constitutes 36 percent of total income. The village is a net importer of grain (17 percent of total domestic suppy is imported). It exports pigs and other livestock (net exports account for 38 percent of gross output of the livestock sector) and fish, and it imports all manufactured goods through the retail sector, which accounts for 77 percent of total imports.

The village trade deficit on the goods side is filled entirely by remittances from work outside the village. Migration to the rest of Mexico accounts for 45 percent of total remittance income; the rest of remittances come from illegal Mexico-to-U. S. migration. This income is vital to the village economy, since it must cover a trade deficit that equals 36 percent of income and 49 percent of consumption. Remittances finance the schooling of siblings almost entirely. Thus, our village is very closely linked to the outside world.

The village's relations with the rest of the world differs between Mexico and the United States. All imports of manufactures, all exports of livestock and fish, and all secondary and postsecondary schooling (the total of schooling expenditures) occur in the "rest-of-Mexico." The United States is only a provider of migrant remittances. The character of migration differs between the two destinations as well: The educated migrate to Mexico City, where they can capitalize on their human capital; many of the uneducated and unskilled, particularly those with U. S. migration networks and experience, migrate to the United States, where employment opportunities for illegal migrants do not allow them to capitalize on returns-to-schooling (Taylor 1987). Other uneducated villagers participate in low-skill internal migration.

These close linkages with labor markets outside the village represent a critical, yet often neglected, aspect of rural outmigration in less-developed countries (LDCs). Although migration out of rural areas is almost universally regarded as an inherent part of the development process (Lewis 1954, Fei and Ranis 1961, and Jorgenson 1961), most migration models are built upon an atomistic view of migration: They assume that individuals or entire household

units locate in the sector that is associated with the highest expected lifetime earnings and, implicitly, that migrants sever their ties with the rural economy when they migrate (Todaro 1969, Yap 1977). Thus, in these models, the economic impacts of outmigration on the rural economy are limited to impacts operating through the effect of migration on income from rural sources, particularly migration-induced shifts in rural labor supplies.

These assumptions run counter to evidence from a wide variety of countries in a diversity of geographic settings which indicates that migrants continue to play an important economic role in the rural economy long after they migrate, typically remitting a large part of their earnings back to the village. The village SAM indicates that, rather than simply expelling individuals from the rural economy, migration creates conduits that strengthen the links between economies at migrant origins and destinations--with potentially far-reaching implications for incomes and economic development in rural areas.

The Distribution of Value Added and Remittances and the Composition of Household Income

Table 5 summarizes the distribution of value added and remittances and the composition of village household income. The mapping of per capita household income on land ownership is not monotonic (Table 5, column 1). Per capita household income is lowest (20,008 pesos) in the landless household group and highest (35,225 pesos) in small landholder households; large landholder households have a somewhat lower average per capita income than small landholder households (32,173 pesos).[6]

An analysis of the distribution of income flows across household categories helps explain the weak correlation between land assets and income. Not surprisingly, the bulk of total payments for capital services in the village,

70 percent, accrue to large landholder households (Table 3). Family-labor value added is also concentrated in this household group (46 percent), inasmuch as the primary use of family labor is on the household farm. Small landholder households also receive a large share of family-labor value added (42 percent).

Much of the variability in household income, that would result from an uneven distribution of capital and family-labor value added, is smoothed out by labor migration income. Landless households, which receive only 8 percent of capital income and 12 percent of family-labor income, reap 42 percent of total internal migrant remittances and 33 percent of Mexico-to-U. S. migrant remittances. Small landholder households receive 22 percent of total capital payments; 42 percent of family-labor value added; 27 percent of internal migrant remittances; and 30 percent of Mexico-to-U. S. migrant remittances.

Table 5 (columns 2-8) presents the composition of village household income. Together, capital value added and family-labor value added account for 72 percent of total large landholder income in the village. By contrast, these income sources represent 63 percent of small landholder incomes and just 27 percent of landless household incomes. The bulk of landless household income comes from labor migration: 31 percent is from internal migrant remittances and 30 percent is from Mexico-to-U. S. migrant remittances. Although more than three-fourths of all village wage income accrues to landless households (Table 3), village wages account for only 12 percent of total income in these households. The large share of high-education, internal migrant remittances accruing to landless households reflects the importance this household group has attached to human capital acquisition in the past.

The Composition of Household Expenditures

Table 6 presents a breakdown of household expenditures. Overall savings and human capital investment rates are high in the village. Savings rates range from 5.6 percent in landless households to 17.6 percent in large landholder households. For all but the landless household group, human capital investment was the single most important household investment activity in 1982, absorbing from 9.2 percent to 8.7 percent of total household income and 35.7 percent to 53.5 percent of total savings. This finding, together with the high returns-to-schooling in Mexico (Taylor 1987), support Schultz' (1981) argument that the poor invest in education to escape the poverty trap and are rational in doing so. Investment in education is bound to be a high priority in peasant households in which limited access to land, technology, and productivity-enhancing infrastructure limits the returns to other types of investments.

The village is relatively poor with 36.7 percent of nouseholds having an income below the poverty line of US$208 per capita.[7] There are major differences in consumption expenditure patterns across household groups. It has been argued (Hazell and Roell 1983) that households of larger farms have the most desirable expenditure patterns for stimulating secondary rounds of growth in the rural economy, that is, that the share of incremental expenditure allocated to local nontradables is greatest for this group. Table 6 makes it possible to test this "downstream growth" hypothesis in the context of a rural Mexican village. The average consumption share of manufactured commodities is higher for small landholders than for large landholders (66 percent and 53 percent, respectively). But large landholders have the highest income elasticity of

demand for imported, retail-sector goods (1.4 percent) as well as for goods from the construction sector (2.5 percent)--which has the second-highest import content of all village sectors. Small landholders have the smallest income elasticities of demand for both retail-sector goods (1.0 percent) and for construction goods (0.0 percent). Small landholders also have the highest income elasticity of human capital investment and the highest elasticity of investment in physical capital (machinery and animals). The figures in Table 6 suggest that targeting income gains to large landholders is not likely to be the most effective strategy for maximizing "downstream growth" in rural areas. We discuss this further in the multiplier experiments we perform below.

This finding, which may appear counterintuitive in light of Engel's law, is partly explained by the low correlation between land tenure and household income on the one hand, and between income and "outward orientation" on the other. Migration capital, or household contacts, experience, and information networks at prospective migrant destinations, underlie migration flows and represent a major asset in migration-intensive peasant economies (Adelman 1984). In the case of high-paying international migration, it is not inconceivable that migration capital may compete with landholdings as the highest-yield asset. Indeed, in the present Mexican villages it does (Taylor 1984). Thus, it is not surprising to find that landless households, which receive a large share of their income from migrant remittances, have a high elasticity of demand for manufactured goods.

In the case of foodgrains, there also appears to be a direct link between income source and the demand for village produce. Except in the case of large surpluses, maize harvests typically are stored in farmers' rafters until the

grain is consumed by the household. This form of food security is feasible only to households with access to land. Although the spoilage factor may be high, it is evidently regarded as a reasonable premium for "food insurance." Foodgrains harvested and consumed by the household appear in the village SAM both as a source of income (in the form of capital and labor value added) and as a consumption expenditure. Large landholder households, which have the smallest average propensity to consume manufactured goods, spend a greater share of their income on village agricultural goods than any other household group (32 percent). Landless households, the poorest group, spend a smaller share of their income on village agricultural goods (23 percent). Small landholder households, which have the highest average income of all three groups, spend a much smaller share of their incomes on foodgrains (11.1 percent) and a larger share on livestock-sector products (7.0 percent, compared to 5.7 percent for large landholders and 5.1 percent for landless) and manufactured and processed goods.

METHODOLOGY

In order to exploit the interrelationships implied by the village SAM between productive activities, distribution of factor incomes and remittances, and household expenditures, it is useful to construct the SAM multipliers and their decompositions. This will enable us to isolate the three types of effects on the village's economy stemming from an injection into the income or expenditure stream of a particular subsystem of accounts: (1) the direct impact of the initial injection on the original subsystem (the intragroup multiplier), (2) the indirect impact of this injection on the original subsystem

associated with the induced demands placed on it by the other sectors of the economy (the intergroup multiplier), and (3) the cross effects of the injection on the outside sectors due to leakages from the original subsystem of accounts (the extragroup multiplier). Thus, the decomposition of the multisector multiplier into its three constituent multipliers allows us to assess the significance of these interrelationships.[8]

Intuitively, a vector of exogenous flows multiplied by the matrix multiplier yields an equilibrium level of endogenous flows. The exogenous accounts are the last three accounts of the village SAM: the government, the rest of Mexico, and the rest of the world (see Table 3). Mathematically,

$$y = Mx \tag{1}$$

where y denotes the vector of row totals for the endogenous accounts, x denotes the vector of row totals for the exogenous flows, and M is the square matrix of multiplier coefficients. At the village level, we maintain the realistic assumption that economic agents take prices as given and the unrealistic assumption that all income elasticities are unity. Consequently, in the fixed-price multiplier framework, marginal expenditure propensities are assumed to equal average expenditure propensities.

The first step is to normalize the SAM by obtaining its coefficient matrix--i.e., divide each element of the SAM by its respective column total. This provides us with a matrix of expenditure coefficients. Then, the 19 x 19 coefficient submatrix of endogenous accounts is partitioned according to the structure depicted in Table 7.[9] What most concerns us is the structure of this square matrix. The village SAM is divided into three subsystems: productive activities, institutions governing income redistribution of income flows,

and household and household capital accounts. The three diagonal block matrices map resource flows internal to each of the subsystems. The A_{11} partition reflects the interindustry trade captured by the I-O matrix (see Table 4). The A_2 submatrix lays out explicitly the primary redistribution of factor incomes among institutions. Since the household also functions as a village enterprise, the A_{33} partition records the accumulation of both physical capital and human capital stocks for future production and earnings.

The nonzero off-diagonal partitions map income and expenditure flows among the three different subsystems. For example, while the A_{21} submatrix maps the value added income earned by factors participating in the different productive activities, the A_{32} partition maps the flow of both factor income and remittances to village housenolds. Lastly, the A_{13} is comprised of the household marginal consumption and investment propensities for goods produced by the production sectors.

The coefficient matrix, denoted as B, can be partitioned additively so as to isolate the diagonal intragroup blocks from the off-diagonal intergroup blocks:

$$B = \begin{bmatrix} A_{11} & 0 & 0 \\ 0 & A_{22} & 0 \\ 0 & 0 & A_{11} \end{bmatrix} + \begin{bmatrix} 0 & 0 & A_{13} \\ A_{11} & 0 & 0 \\ 0 & A_{32} & 0 \end{bmatrix} = B_1 + B_2.$$

Now, following Stone (1985), one derives the multipliers by solving the following equation for the vector of demand totals of the endogenous sectors, y:

$$y = By + x = (I - B_1)^{-1} B_2 y + (I - B_1)^{-1} x \qquad (2)$$

$$= [I + D + D_2] [I - D^3]^{-1} [I - B_1]^{-1} x$$

$$= M_3 M_2 M_1 x$$

$$= M * x$$

where $D = (I - B_1)^{-1} B_2$.

For the village SAM, the intragroup multiplier,

$$M_1 = \begin{bmatrix} (I - A_{11})^{-1} & 0 & 0 \\ 0 & (I - A_{22})^{-1} & 0 \\ 0 & 0 & (I - A_{33})^{-1} \end{bmatrix}.$$

Here, M_1 captures the effects of the initial injection that remain within the original subsystem. The element $(I - A_{22})^{-1}$ is unique to our construction of the multiplier, given our focus on the household as an income-generating enterprise and as an income-receiving consumption unit.

For the intergroup multiplier,

$$M_2 = \begin{bmatrix} C_1 & 0 & 0 \\ 0 & C_2 & 0 \\ 0 & 0 & C_3 \end{bmatrix}$$

where

$$C_1 = [I - (I - A_{11})^{-1} A_{13}(I - A_{33})^{-1} A_{32}(I - A_{22})^{-1} A_{21}]^{-1}$$

$$C_2 = [I - (I - A_{22})^{-1} A_{21}(I - A_{11})^{-1} A_{13}(I - A_{33})^{-1} A_{32}]^{-1}$$

$$C_3 = [I - (I - A_{33})^{-1} A_{32}(I - A_{22})^{-1} A_{21}(I - A_{11})^{-1} A_{13}]^{-1}.$$

Observe that, for each diagonal element, the injection first swirls around the local subsystem of accounts. Then, due to the links of this subsystem with its neighbor, derived demands for goods and services or induced redistribution of income flows occur in the rest of the village economy. In turn, the repercussions of these induced flows feed back into the original subsystem. Notice how, in each nonozero element of M_2, the off-diagonal partitions of the B matrix redirect the leakages from each subsystem to the next--until one cycle through the entire economy has been completed.

Finally, for the extragroup multiplier,

$$M_3 = \begin{bmatrix} I & (I-A_{11})^{-1}A_{13}(I-A_{33})^{-1}A_{32} & (I-A_{11})^{-1}A_{13} \\ (I-A_{22})^{-1}A_{21} & I & (I-A_{21})^{-1}A_{21}(I-A_{11})^{-1}A_{13} \\ (I-A_{33})^{-1}A_{32}(I-A_{22})^{-1}A_{21} & (I-A_{33})^{-1}A_{32} & I \end{bmatrix}.$$

The off-diagonal elements of M_3 map the final destination of the leakages that do not return to the original subsystem. That is, each subsystem absorbs the repercussions of the initial injection and, owing to the links to the other two subsystems of accounts, transmits those effects to their neighbors.

As Stone (1985) has indicated, the matrix mutiplier can be reformulated as an additive decomposition:

$$M = I + (M_1 - I) + (M_2 - I)M_1 + (M_3 - I)M_2M_1$$
$$= I + N_1 + N_2 + N_3. \qquad (3)$$

That is, the total multiplier is equal to the initial injection plus the net contribution made by each decomposed multiplier. This format will allow us to separate out the overall effects of the policy experiments to be undertaken in the next section. A case in point: As we noted earlier, the village is a net importer of corn and a net exporter of livestock and fish. Does the trade deficit in corn alone lead to an overall decline in demand for corn? Or, in light of the trade surplus in livestock and this sector's strong links to the agricultural sector, is there an overall increase in demand for corn? Do the intergroup and extragroup effects outweigh the negative impact of the trade deficit? The additive decomposition permits us to answer these questions.

RESULTS OF THE MATRIX DECOMPOSITION

The overall multiplier matrix, M, is presented in Table 8. Given the decomposition of M into the initial injection, two block diagonal matrices, N_1 and N_2, and into an off-diagonal block matrix, N_3, the decomposition of the overall multiplier into "own" effects, "induced" indirect effects, and "leakage effects" is obvious. All the entries in M whose locations correspond to the off-diagonal block matrices of zeros in N_1 and N_2 are due to leakage or "extra-group" effects located in N_3. Therefore the only submatrix of interest is the decompositions of the block diagonal elements of M. Table 9 indicates the percentages of the diagonal-block entries that are accounted for by intragroup effects, net of the initial injection. For example, except for the links between the construction and commerce sectors, observe how little the own effects

in the matrix $(I - A_{11})^{-1}$ in M_1 contribute to the overall multiplier for the I-O matrix, $C_1(I - A_{11})^{-1}$ (see discussion in previous section).

Table 10 decomposes the total flows of the original SAM into exogenous injections (exports, remittances, and government investment projects in the village--the nonzero entries of column 2), input-output effects N_1 (column 3), additional effects associated with recursive intergroup leakages N_2 (column 4), and additional effects associated with extragroup leakages N_3 (column 5). Even though the village is quite open, it is evident from this table that the induced SAM linkages are large percentages of total activity in the village. Of these, extragroup effects are the most important, accounting for about two-thirds of final demand in the village, half of value added and institutional incomes, and virtually all of household incomes.

Again, from a different vantage point, we see that the input-output effects are quite unimportant, since the I-O matrix is very sparse and the economy is a large net importer. The largest I-O effect occurs in the commerce sector, which amounts to about 10 percent of village final demand and, in turn, leaks out mostly into imports. In light of this, the major action arises through the income expenditure side of the economy. This makes it quite clear why the major impact of production failures in a village economy occurs through the impact of reduced value added on consumption, inducing second and third round effects which further decrease village incomes and final demands for village production.

RESULTS OF POLICY EXPERIMENTS

Table 11 summarizes the results of several policy experiments on the production, value added, income, and investment flows of the village. The first

two experiments relate to agricultural issues. Summarized in column 2, the first experiment assumes a 10 percent increase in the agricultural terms of trade, accomplishing this by raising the relative prices of the net exports of the first three sectors--grain, livestock, and primary. Even though the village is a net importer of grain and the impact effect of the increase in grain prices is to reduce the value of net exports of grains by 118,970 pesos, the income and consumption effects in N_2 increase the value of output of grains by 269,260 pesos--hence, the net effect on grains is positive. As net exporters, the livestock and fish sectors, of course, benefit more substantially from the improvement in terms of trade--by 40 and 60 percent respectively. Value added in the village increases by 24 percent. But the incomes of the landless rise by only 14 percent while those of landowners rise by about 23 percent. Thus, while the increase in the agricultural terms of trade leads to a Pareto improvement, the benefits are distributed in a regressive manner. The regressivity is not inherent in the production/value added nexus. It is primarily due to the structure of income sources in the village: remittances, which are unaffected by the increase in the terms of trade, represent a larger share of the incomes for the landless. As a class, the large landowners (the middle income group) are the largest beneficiaries of the increase in the terms of trade.

The second agricultural experiment, a 10 percent increase in agricultural productivity, was more complicated to implement since it required altering the SAM and rebalancing it. To implement the experiment, we assumed that the increase in agricultural productivity manifests itself through a 10 percent increase in the value added in grain and livestock production. We then traced this increase through the income and expenditure accounts. In deriving the

new SAM we assumed that: (1) remittances were unaffected; (2) the increase in grain production was all consumed, since comparison of our base SAM consumption shares with the survey consumption shares indicated that the households were consuming 3 percentage points less grains than in the survey data; (3) the increase in livestock output was exported, since the analogous comparison indicated that farmers were consuming 0.2 percentage points more than in the survey; and (4) other consumption expenditures were unaffected. As summarized in column 3 of Table 12, the results indicate that total grain and livestock production increased by 5.0 and 2.3 percentage points respectively, employment income rose by 2.6 percent for family labor and 1.9 percent for hired labor, and returns to capital rose by 4.6 percent. The overall effect of the increase in productivity was a Pareto improvement, since all households benefited. But the improvement was distributed regressively, since the poorest (the landless) benefited least. As we noted earlier, this was due, in part, to the fact that remittances, which remain fixed and untouched by the experiment, account for the largest share of the income of the landless. The major beneficiaries as a class are the large landholders.

The next set of experiments deals with transfers to the village. Column 3 simulates a Simpson-Mazoli experiment--cutting migration remittances from U. S. migrants in half. This experiment can be read as either a peso revaluation experiment or as a reduction in migration flows to the United States. The overall multiplier on village income of the remittance reduction is quite large--1.77. Village household income drops by 18.3 percent; the income of the landless drops by the largest percentage (20 percent), increasing poverty in the village substantially. Village production is cut by 19 percent, but about one-third of this effect leaks to the rest of Mexico in the form of reductions

in imports. As a result, village value added drops by only 12.7 percent. Nevertheless, the overall result of the reduction in remittances from the United States is a substantial depression and a significant increase in poverty in the village.

The experiment in column 4 simulates the results of cutting remittances from internal migrants in half, representing, for example, an increase in unemployment in Mexico City. Qualitatively, the results are similar to those of cutting remittances from the United States. The major difference is in the distributional implications. The relative impact on the landless is even more severe than that of the cut in U. S. remittances. Their income is reduced by about 50 percent more than that of the other two groups, since a larger share of their income comes from remittances from educated internal migrants.

The next three experiments deal with government income transfers to village households. In these experiments, a government transfer of 100,000 pesos was directed to each of our three household groups. The comparison allows us to analyze the relative income trickle (down, up, and across) of incomes policies directed at various categories of households. This is of interest, since it relates to the relative efficiency of targeted incomes policies for stimulating growth both within and outside the village economy. The multipliers for the transfers are given in Table 12 and the income distribution consequences for these transfers are presented in Table 13. Transfers to the landless have both the best equity and the best growth-inducing potential. Because the landless have the lowest savings rate and the most labor-intensive production and consumption pattern, transfers to the landless generate the largest production multiplier, virtually the same value added multiplier as that of the middle income group (the highest), and the highest income multiplier. They also

increase the income of the poorest (themselves) by the highest percentage and the income of the richest (the small landowners) by the smallest percentage. The next most favorable growth-inducing multipliers are for the large landowners (the middle income group): Transfers to them have the next highest production multiplier, the best value added multiplier, and the smallest import multiplier.

Transfers to large landowners give rise to two trade-offs. First, there is the trade-off between generating income in the village and the rest of Mexico. Transfers to the large landowners are least effective in the latter capacity, thus supporting the contention of Adelman (1984) that agricultural inducements to industrial expansion are best stimulated by policies aimed at the landless and at the small landholders [rather than, as Hazell and Roell (1983) contend, by policies aimed at stimulating the productivity of large landowners.[10]] Second, there is the trade-off between growth and equity. Transfers to the large landowners lead to a marginally higher overall income multiplier in the village (1.81 as compared to 1.80 for the landless) at the cost of a distinctly worse distribution of income in the village than would result from transfers to the landless. As compared with the base distribution, income transfers to large landholders lead to a trickle up from the poorest and a trickle down from the richest toward the middle income group. The worst results for growth stimulation in the village and for equity are obtained from transfers to the richest group--the middle-size farmers. Such transfers have the lowest production and value added multipliers in the village and the second-highest import leakage. They also lead to the least-equitable distributional results.[11]

SUMMARY AND CONCLUSIONS

The SAM methodology clearly highlights the most salient characteristics of the economic life of a village. It yields several surprises as compared with the traditional picture of village life. First, the image of a village as a more or less isolated and self-contained economic entity is clearly wrong. "External" trade and migration are large components of the village economy, altering significantly consumption and investment possibilities, consumption patterns, the sociology and demography of households, and the cultural life of the village. At least the villages we examined engage substantially in "international trade" with the rest of Mexico; and remittances from migrants, both from the rest of Mexico and from the United States, are vital to the village economy. Second, even though input-output linkages are minimal and the village economy is very open, SAM linkages within the village are substantial. They arise primarily through the permeation of second and third round leakages through the village. Thus, systemwide effects matter--even in a village. Third, the tendency to assume that ranking households by landholding size is equivalent to ranking them by extent of poverty may require revision, at least for villages in which migration is important. Households with middle-size landholdings, that require less labor for agricultural purposes, allocate a larger share of household labor to migration than do large landholders. As a result, migration receipts may lift their per capita incomes above those of large landholders. Fourth, migration is a very significant anti-poverty policy. The landless, whose average per capita income including migration remittances just covers their subsistence needs, would literally starve if all migration possibilities were cut off. Their average per capita incomes would

fall to about 39 percent of their subsistence needs--a miserable 7,730 pesos. Fifth, the picture of village households as uneducated is incorrect. In our village, about 40 percent of village remittance income comes from educated internal migrants, indicating the cumulative importance of past investments in education. Moreover, about half of household savings are allocated to educating the children of the village.

The policy experiments also reveal the vulnerability of the landless to shocks and the relatively smaller trickle down to them of several productivity and incomes policies. They suffer most from cutbacks and benefit least from expansionary policies that are not specifically targetted at them. At the same time, the policy experiments indicate that policies targetted at the landless would have the highest production and income multipliers in the village, induce the most growth in the rest of Mexico, and lead to the most poverty reduction and the most egalitarian distributional consequences. By looking at the SAM, we also see hints as to the most profitable policy instruments for reaching the landless: employment-generating programs that increase the demand for hired labor, the provision of facilities for higher levels of education in the village, and raising returns to migration.

In sum, there is much to be learned about how economic development looks from a grass roots, village perspective by constructing and analyzing village-level SAMs.

Footnotes

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[1]While we recognize that remittances are not the only impact of migration on migrant-sending economies [examples of other effects include the impact of migration on the distribution of village household incomes (Stark, Taylor, and Yitzhaki 1986 and 1987) and on production and investment decisions (Stark and Levhari 1982)], they are the most important direct impact of migration on village household incomes.

[2]The village for which the SAM is constructed is located on the shore of Lake Pátzcuaro. Fishing is the principal livelihood for some households, and it is a supplemental income source for others.

[3]The relationship between schooling and legal Mexico-to-U. S. migration may differ from the relationship between schooling and illegal Mexico-to-U. S. migration. Only very rarely, however, did a villager in our sample enjoy the option of migrating legally to the United States.

[4]Remittances by household members who migrated, either to destinations in the United States or Mexico, are net of reverse (household-to-migrant) flows and of direct migration costs. Unpaid family labor is valued at the prevailing agricultural wage in the village (this wage was substantially below the minimum agricultural wage in Mexico). Farm output is evaluated at the average farmgate sales price in the case of subsistence farming.

Data on household members who were outside the village at the time of the survey were provided by the remaining household members. This approach was used because the survey focused on the household and its returns from alternative labor allocations. Data were not needed on the earnings of household members who migrated or on other details concerning the absent migrants' work away from home.

[5]There is no high school in the village. Investment in human capital by schooling therefore appears as an import into the village from the rest of Mexico.

[6]In a study of expenditure patterns in Malaysia and Nigeria, Hazell and Roell (1983) also found a weak correlation between per capita household income (estimated from total expenditure) and farm size.

[7]We calculate the poverty line by estimating subsistence consumption at the mean per capita income of the village. To estimate the subsistence minimum, we use the Linear Expenditure System (LES) consumption functions and Frisch parameters that were estimated from the household survey data on consumption collected by Taylor (1984). Following the methods of Lluch, Powell, and Williams (1977), we calculate subsistence expenditures for each of our five consumption categories. We then add them up to derive total subsistence consumption, and we average the subsistence consumptions of the appropriate household categories in the proportions required to attain the average per capita household income in the village. This procedure yields a subsistence expenditure of 208,080 pesos per capita per year. At the exchange rate of 100 pesos per US dollar that prevailed at the end of 1982, this subsistence income is equal to US$208 per capita per year.

[8]This analysis parallels that found in Pyatt and Round (1979) and Stone (1985).

[9]We are indebted to Sherman Robinson for suggesting the particular partition of the SAM in Table 7.

[10]For insightful criticism of Hazell and Roell (1983), see Harriss (1987).

[11]The relative comparison between transfers to large and small landowners needs, however, to be tempered by looking at the marginal as well as at the average propensities to consume. We will do this at a later time.

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TABLE 1

Outline of Village Social Accounting Matrix Framework

	Expenditures								
	1	2	3	4	5	6	7	8	9
Receipts	Activities	Factors	Institutions	Households	Capital	Human capital	Rest of Mexico	Rest of the world	Total
1. ACTIVITIES									
a. Farming b. Livestock c. Renewable resources d. Construction e. Retail	Village input-output table		G	C	I	Human capital investment	X		Total sales
2. FACTORS									
a. Capital	Value added in village production								Total capital and labor value added
b. Labor Family Hired									
3. INSTITUTIONS									
a. Landless b. Small landholder c. Large landholder		Payment for capital services in village production							Total capital income to village households
d. Village labor		Payments to labor services in village production							Total receipts for village labor services
e. Uneducated internal migration f. Educated internal migration							Internal migrant remittances		
g. Mexico-to-U. S. migration								Mexico-to-U. S. migrant remittances	Total migrant remittances
h. Government	Taxes								Total government receipts

(Continued on next page.)

TABLE 1--continued.

	Expenditures								
	1	2	3	4	5	6	7	8	9
Receipts	Activities	Factors	Institutions	Households	Capital	Human capital	Rest of Mexico	Rest of the world	Total
4. HOUSEHOLDS a. Landless b. Small landholders c. Large landholders			Payments to households for village, capital, and labor services and for migration labor services						Total household income
5. CAPITAL				Household savings					Total household savings
6. HUMAN CAPITAL				Household human capital savings					Total household human capital savings
7. REST OF MEXICO	Imports								Total imports from the rest of Mexico
8. REST OF THE WORLD									Total imports from the rest of the world
9. TOTAL	Total payments	Total payments to capital and labor	Internal and Mexican-to-U. S. migrant remittances	Total household expenditures	Total physical capital investment	Total human capital investment	Exports to rest of Mexico	Exports to rest of the world	Total receipts/ expenditures

TABLE 2

Selected 1982 Household and Migrant Characteristics

Characteristics	Village
Adult family size (persons)	7.4
Families with at least one Mexico-to-U. S. migrant (percent)	70.0
Average number of Mexico-to-U. S. migrants per Mexico-to-U. S. migrant family	2.8
Mexico-to-U. S. migrant remittances in total household income (percent)	27.0
Families with at least one internal migrant (percent)	46.7
Number of internal migrants per internal migrant family	2.8
Internal migrant remittances in total household income (percent)	11.0
1982 Mexico-to-U. S. migrant averages	
Average U. S. experience (years)	5.6
Share of year spent in United States (percent)	95.8
Sex (male = 100; female = 0)	55.4
Age	27.9
Years of completed schooling	4.0
Remittances (U. S. dollars)	354.7
1982 internal migrant averages	
Internal migration experience	6.0
Share of year outside village	88.0
Sex (male = 100; female = 0)	42.1
Age	29.0
Years of completed schooling	6.3
Remittances (U. S. dollars)	445.7

Source: Stark, O., Taylor, J. E., and Yitzhaki, S., "Remittances and Inequality," Economic Journal, Vol. 96 (1986), pp. 722-740.

TABLE 3

Village Social Accounting Matrix

	Activities	Commodities	Labor: Family	Labor: Hired	Capital	Landless	Landholders: Small	Landholders: Large	Migrants: Internal: Uneducated	Migrants: Internal: Educated	Migrants: Mexico-to-U. S.	Landless	Landholders: Small	Landholders: Large	Capital account	Human capital account	Government	Rest of Mexico	Rest of world	Total
Activities		3,047.77																1,243.83		4,291.60
Commodities	759.45											1,156.23	1,399.70	2,146.67	442.46		30.36			5,934.87
Value added																				
Family labor	1,782.51																			1,782.51
Hired labor	187.59																			187.59
Capital	1,501.55																			1,501.55
Institutions																				
Landless			209.62		118.70															328.32
Small landholder			748.73		326.55															1,075.28
Large landholder			824.16		1,056.30															1,880.46
Migrants																				
Uneducated, internal																		131.99		131.99
Educated, internal																		778.82		778.82
Mexico-to-U. S.																			1,139.86	1,139.86
Households																				
Landless				143.68		328.32				380.74	372.46									1,225.20
Small landholder				33.42			1,075.28		123.98	119.60	338.72									1,691.00
Large landholder				10.49				1,880.46	8.01	278.48	428.68									2,606.12
Capital account												44.89	134.78	232.65			30.14			442.46
Human capital account												24.08	156.52	226.80						407.40
Government	60.50																			60.50
Rest of Mexico		2,887.10														407.40				3,294.50
Rest of the world																		1,139.86		1,139.86
TOTAL	4,291.60	5,934.87	1,782.51	187.59	1,501.55	328.32	1,075.28	1,880.46	131.99	778.82	1,139.86	1,225.20	1,691.00	2,606.12	442.46	407.40	60.50	3,294.50	1,139.86	

Note: Blanks indicate zero.

TABLE 4

Input-Output and Final Demands

	Agriculture	Livestock	Primary	Construction	Commerce
	1,000 pesos				
Input-output sectors					
Agriculture	59.29	21.40			128.90
Livestock					109.50
Primary					39.00
Construction				68.60	
Commerce	123.12		0.50	208.94	
Final demand					
Landless	265.63	66.18	81.81	115.57	627.04
Small landholder	155.61	97.84	119.78	109.72	916.75
Large landholder	687.32	109.53	140.00	83.48	1,126.34
Capital account		372.80		8.00	61.66
Government	60.50				
Rest of Mexico	119.68	814.30	309.85		
TOTAL	1,471.15	1,482.05	651.94	594.31	3,009.19

Note: Blanks indicate zero.

TABLE 5

Average Per Capita and Composition of Household Incomes

Household group	Average per capita household income	Composition of household incomes						
			Labor		Mexican migrants			
		Capital	Family	Hired	Uneducated	Educated	Mexico to U. S.	Total
	pesos	percent						
Landless	20,008	9.7	16.7	12.1	0.0	31.1	30.4	100.0
Small landholder	35,225	19.3	44.2	1.9	7.3	7.1	20.2	100.0
Large landholder	32,173	40.6	31.6	0.4	0.3	10.7	16.4	100.0

TABLE 6

Household Income Use (percent)

	Landless	Small landholder	Large landholder
Savings rates	5.6	17.2	17.6
Rate of human capital investment	2.0	9.2	8.7
Average expenditure share of			
Agriculture	23.0	11.1	32.0
Livestock	5.7	7.0	5.1
Primary	7.0	8.6	6.5
Construction	9.9	7.8	3.9
Commerce	54.4	65.5	52.5
TOTAL	100.0	100.0	100.0

TABLE 7

Partitioning of Coefficient Matrix

Sectors	Submatrix partitions		
Agriculture Livestock Primary Construction Commerce	A_{11}: Input-output	0	A_{13}: Consumption and investment
Value added Family labor Hired labor Capital Institutions Landless Small landholder Large landholder Migrants Uneducated, internal Educated, internal Mexico-to-U. S.	A_{21}: Value added	A_{22}: Production income	0
Households Landless Small landholder Large landholder Capital account Human capital account	0	A_{32}: Total income	A_{33}: Accumulation Patterns

TABLE 8

Social Accounting Matrix Multiplier ($M = M_1 * M_2 * M_3$)

Sectors	Agriculture	Livestock	Primary	Construction	Commerce	Labor: Family	Labor: Hired	Capital	Landless	Landholders: Small	Landholders: Large	Migrants: Internal: Uneducated	Migrants: Internal: Educated	Migrants: Mexico-to-U. S.	Landless	Landholders: Small	Landholders: Large	Capital account	Human capital account
Agriculture	1.357	0.343	0.406	0.153	0.153	0.402	0.419	0.445	0.444	0.291	0.493	0.303	0.438	0.417	0.444	0.291	0.493	0.313	
Livestock	0.177	1.186	0.236	0.094	0.097	0.240	0.220	0.242	0.214	0.241	0.245	0.241	0.229	0.234	0.214	0.241	0.245	1.015	
Primary	0.088	0.093	1.122	0.045	0.043	0.121	0.127	0.119	0.129	0.126	0.115	0.125	0.123	0.123	0.129	0.126	0.115	0.085	
Construction	0.080	0.084	0.120	1.233	0.028	0.113	0.153	0.104	0.164	0.123	0.091	0.121	0.132	0.124	0.164	0.123	0.091	0.097	
Commerce	0.785	0.741	0.973	0.899	1.248	0.965	1.015	0.950	1.028	0.984	0.931	0.981	0.987	0.979	1.028	0.984	0.931	0.815	
Value added																			
Family labor	0.549	0.662	1.179	0.310	0.215	1.377	0.388	0.384	0.395	0.356	0.392	0.359	0.388	0.382	0.395	0.356	0.392	0.593	
Hired labor	0.071	0.032	0.215	0.043	0.014	0.040	1.043	0.041	0.044	0.037	0.042	0.037	0.042	0.041	0.044	0.037	0.042	0.030	
Capital	0.670	0.682	0.374	0.188	0.224	0.349	0.353	1.365	0.362	0.310	0.383	0.314	0.361	0.354	0.362	0.310	0.383	0.609	
Institutions																			
Landless	0.118	0.132	0.168	0.051	0.043	0.190	0.074	0.153	1.075	0.066	0.076	0.067	0.074	0.073	0.075	0.066	0.076	0.118	
Small landholder	0.376	0.426	0.577	0.171	0.139	0.655	0.240	0.458	0.244	1.217	0.248	0.219	0.241	0.238	0.244	0.217	0.248	0.382	
Large landholder	0.725	0.786	0.809	0.275	0.257	0.883	0.428	1.138	0.437	0.383	1.450	0.387	0.433	0.426	0.437	0.383	0.450	0.703	
Migrants																			
Uneducated, internal												1.000							
Educated, internal													1.000						
Mexico-to-U. S.														1.000					
Households																			
Landless income account:	0.172	0.156	0.333	0.084	0.054	0.220	0.872	0.184	1.109	0.094	0.108	0.095	0.595	0.431	1.109	0.094	0.108	0.141	

(Continued on next page.)

TABLE 8--continued.

Sectors	Agriculture	Livestock	Primary	Construction	Commerce	Labor		Capital	Landless	Landholders		Migrants			Landless	Landholders		Capital account	Human capital account
						Family	Hired			Small	Large	Internal Uneducated	Internal Educated	Mexico-to-U. S.		Small	Large		
Small landholder	0.389	0.432	0.615	0.179	0.142	0.662	0.425	0.466	0.252	1.224	0.255	1.165	0.402	0.542	0.252	1.224	0.255	0.387	
Large landholder	0.729	0.787	0.821	0.278	0.258	0.885	0.486	1.140	0.439	0.385	1.453	0.449	0.793	0.804	0.439	0.385	1.453	0.704	
Capital account	0.102	0.110	0.135	0.042	0.036	0.140	0.109	0.146	0.100	0.135	0.154	0.136	0.125	0.131	0.100	0.135	0.154	1.099	
Physical capital																			
Human capital account	0.103	0.112	0.135	0.042	0.037	0.143	0.099	0.146	0.083	0.149	0.152	0.149	0.118	0.129	0.083	0.149	0.152	0.100	1.000

Note: Blanks indicate zero.

TABLE 9

Percent of Block Diagonal Multiplier (N1 + N2) Explained by N1

Sectors	Agriculture	Livestock	Primary	Construction	Commerce	Labor: Family	Labor: Hired	Capital	Landless	Landholders: Small	Landholders: Large	Migrants: Internal: Uneducated	Migrants: Internal: Educated	Migrants: Mexico to U. S.	Landless	Landholders: Small	Landholders: Large	Capital account	Human capital account
Agriculture	.132	.042		.175	.292														
Livestock	.018			.229	.370														
Primary	.013			.172	.295														
Construction				.850															
Commerce	.114	.002	.001	.672	.015														
Value added																			
Family labor																			
Hired labor																			
Capital																			
Institutions																			
Landless						.620		.516											
Small landholder						.642		.475											
Large landholder						.524		.618											
Migrants																			
Uneducated, internal																			
Educated, internal																			
Mexico to U. S.																			
Households																			
Landless income account																			.525

(Continued on next page.)

TABLE 9--continued.

Sectors	Agriculture	Livestock	Primary	Construction	Commerce	Labor: Family	Labor: Hired	Capital	Landholders: Landless	Landholders: Small	Landholders: Large	Migrants: Internal: Uneducated	Migrants: Internal: Educated	Migrants: Mexico to U. S.	Landholders: Landless	Landholders: Small	Landholders: Large	Capital account	Human capital account
Small landholder																			.656
Large landholder																			.526
Capital account															.367	.589	.580		.492
Physical capital																			
Human capital account															.236	.623	.572		1.000

Note: Blanks indicate zero.

TABLE 10

Additive Decomposition

Sector	Total effect	Injection	N_1 [a]	N_2 [b]	N_3 [c]
	1,000 pesos				
Agriculture	1,437.83	119.68	18.07	434.24	865.84
Livestock	1,570.15	814.30	1.08	247.62	507.14
Primary	690.44	309.85	0.39	124.95	255.26
Construction	415.73	30.36	6.00	115.99	263.38
Commerce	3,064.35	[d]	30.29	996.12	2,037.94
Value added					
Family labor	1,782.51			785.06	997.45
Hired labor	187.59			84.30	103.29
Capital	1,501.55			726.16	775.39
Institutions					
Landless	328.32			149.73	178.59
Small landholder	1,075.28			487.68	587.60
Large landholder	1,880.46			873.81	1,006.65
Migrants					
Uneducated, internal	131.99	131.99			
Educated, internal	778.82	778.82			
Mexico-to-U. S.	1,139.86	1,139.86			
Households					
Landless	1,225.20			4.24	1,220.96
Small landholder	1,691.00			11.66	1,679.34
Large landholder	2,606.12			21.23	2,584.89
Capital account	442.46	30.14		2.98	409.34
Human capital account	407.40			3.01	404.39

[a] Net intragroup multiplier.

[b] Net intergroup multiplier.

[c] Net extragroup multiplier.

[d] Blanks indicate zero.

TABLE 11

Policy Experiments (Percentage Change From Base)

Sector	Base flow[a]	10 percent increase in agricultural: Terms of trade	10 percent increase in agricultural: Productivity	50 percent decrease: U. S. to Mexico remittances	50 percent decrease: Internal remittances	100,000 peso transfer to: Landless	100,000 peso transfer to: Small landholder	100,000 peso transfer to: Large landholder
Agriculture	1,437.83	10.57	4.98	-16.53	-13.26	3.09	2.03	3.43
Livestock	1,570.15	42.35	2.27	-8.48	-6.70	1.36	1.54	1.56
Primary	690.44	60.74	-0.92	-10.14	-8.16	1.86	1.83	1.67
Construction	415.73	17.83	-1.09	-17.07	-14.26	3.94	2.97	2.19
Commerce	3,064.35	20.13	-1.64	-18.20	-14.65	3.36	3.21	3.04
Value added								
Family labor	1,782.51	37.85	2.57	-12.22	-9.80	2.21	2.00	2.20
Hired labor	187.59	43.27	1.86	-12.44	-10.03	2.34	1.95	2.23
Capital	1,501.55	26.36	4.57	-13.44	-10.75	2.41	2.06	2.55
Institutions								
Landless	328.32	33.69	3.60	-12.66	-10.14	2.28	2.02	2.32
Small landholder	1,075.28	34.36	3.72	-12.59	-10.09	2.27	2.02	2.30
Large landholder	1,880.46	31.40	3.33	-12.90	-10.33	2.32	2.03	2.39
Migrants								
Uneducated, internal	131.99	[b]			-50.00			
Educated, internal	778.82				-50.00			
Mexico-to-U. S.	1,139.86			-50.00				
Households								
Landless	1,225.20	14.10	1.18	-20.05	-19.43	9.05	0.77	0.88
Small landholder	1,691.00	22.70	2.40	-18.27	-13.82	1.49	7.24	1.51
Large landholder	2,606.12	22.83	2.41	-17.59	-12.99	1.69	1.48	5.57
Capital account	442.46	20.35	11.25	-16.85	-13.01	2.26	3.06	3.48
Human capital account	407.40	22.26	14.85	-17.99	-13.69	2.05	3.65	3.74

[a] In 1,000 pesos.

[b] Blanks indicate zero.

TABLE 12

Multipliers of Income Transfers

Transfer to:	Production	Value	Imports	Income of: Landless	Small landholders	Large landholders
Landless	1.98	0.80	0.90	1.11	0.25	0.44
Small landholders	1.76	0.70	0.84	0.09	1.22	0.38
Large landholders	1.87	0.81	0.80	0.11	0.25	1.45

TABLE 13

Size Distribution of Income in the Village

Income class	Base	Transfer to:		
		Landless	Small landholders	Large landholders
	percent			
Poorest 22.18%	22.18	23.43	21.70	21.67
Middle 43.3%	47.20	46.47	46.45	48.24
Richest 24.1%	30.62	30.10	31.85	30.09
TOTAL	100.00	100.00	100.00	100.00