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Villages and Towns in Mexico:  
A Village-wide Modeling Perspective

Antonio Yunez-Naude  
George Dyer Leal  
J. Edward Taylor

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# Regional Growth Linkages between Villages and Towns in Mexico: A Village-wide Modeling Perspective

Antonio Yunez-Naude (El Colegio de Mexico)  
George Dyer Leal (El Colegio de Mexico)  
J. Edward Taylor (University of California, Davis)  
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**Abstract.** This paper measures linkages between farm and non-farm activities in rural Mexico using a multiplier model based on social accounting matrices (SAMs) from survey data for five villages at differing income levels and in different agro-ecological and market zones. We extend this analysis to a “mini-region” that includes three villages and their larger administrative center. By applying a constrained SAM multiplier model, the paper examines how economic shocks in rural areas affect non-farm incomes in rural villages, in neighboring rural towns and in larger regional cities. Two exogenous shocks on non-farm activity are examined: pure income transfers; and increased agricultural productivity. Experiments assume a perfectly inelastic supply of agricultural goods, as in “semi input-output” and “economic base” models. Results show that most farm-nonfarm diversification is between villages and regional urban centers. The largest linkages are with markets outside, rather than within, villages: an experimental \$100 increase in exogenous income is linked with a \$2 increase in non-farm production but a \$51 increase in demand for imported goods. This is evidence of “agriculture-demand-led-industrialization” and explains growth of regional urban centers, which now accounts for most of Mexico’s urban growth. Our analysis highlights the complex economic interactions between villages and towns in what probably is a mutually beneficial relationship broadly consistent with comparative advantage. Results suggest that increasing the income of village households can stimulate growth of the rural non-farm commercial activity in towns and small cities. Comparisons across villages suggest that investments in rural infrastructure can facilitate these commercial linkages between villages and towns.

**Keywords:** Rural and Regional Economics, Development Economics

## INTRODUCTION

This paper measures linkages between farm and non-farm activities in villages and towns across Mexico. It examines rural inter-sectoral relationships using a multiplier model based on social accounting matrices (SAMs) for five villages at differing income levels and in different agro-ecological and market zones. We also extend this analysis beyond purely rural villages to empirically evaluate rural-to-rural-town linkages by applying the same methodology to a “mini-region,” or municipality, in rural Mexico. The mini-region includes three villages together with the nearby town that serves as their administrative center. By applying a constrained SAM multiplier model, this paper examines how economic shocks in rural areas affect non-farm incomes in rural villages, in neighboring rural towns and in larger regional cities.

## DATA AND METHOD

Economic data for our research come from surveys of randomly selected households in eight rural localities. The household surveys gathered data to calculate production, input use, net incomes from all of the households’ main economic activities, household expenditures, market and non-market transactions, villagers’ transactions in regional, national and international markets.

Using our survey data we built SAMs for each village. For the mini-region, we integrated the three villages and the town economies; SAMs by linking them spatially through trade in a model designed to highlight village-town linkages.

To build the SAM model we adopt the following standard assumptions: fixed input-output coefficients, linear production functions, fixed factor shares in production and value added, fixed savings rates and fixed marginal budget shares. With respect to the specifications

of exogenous and endogenous accounts, government and the rest of world are exogenous. Likewise, given supply rigidities in agriculture, we take agricultural output as fixed by rainfall, technology and land availability. Production in non-farm segments of the village and town economy is taken to be perfectly elastic and therefore endogenously determined by effective demand. Production in all sectors in turn determines factor payments, household income and consumption.

The ensuing analysis examines the impact of two exogenous shocks on rural nonfarm activity in the villages and in the mini-region. The first examines the impact of pure income transfers such as those provided in the PROCAMPO safety net program of Mexico's government. The second explores the consequences of increased agricultural productivity on rural nonfarm earnings in both villages and in the rural town of the mini-region.

All experiments in this paper assume that the supply of agricultural goods is perfectly inelastic in each of the villages and the village-town economy, as in "semi input-output" and "economic base" models, using the procedure suggested by Lewis and Thorbecke (1992).

## VILLAGE AND REGIONAL PROFILES

### Villages

El Chante is a high-income agricultural community, producing sugar cane, corn and livestock. Whereas corn is produced for subsistence or for market, sugar cane is sold to a mill. This is a classic cash-crop economy. The middle-income village of Concordia is in a primarily corn-producing area, mostly for the market. Residents of Concordia seek agricultural and non-agricultural employment in nearby regional urban centers and in the United States. Naupan and Reyesoghpan are the two poorest indigenous villages. All households produce corn, beans and

other staples for subsistence on small, dispersed plots of one hectare at most. They also produce cash crops and are involved in various local non-agricultural activities. An important component of villagers' income and sources of investment come from supplying labor to labor markets outside the villages.

### Mini Region

The mini-region includes three villages together with the neighboring town that serves them. The village of Napízaro produces corn and beans and livestock. Approximately 20 percent of total income in this village come as remittances from migrants working in the United States. The neighboring villages of Orichu and Puácuaro are very near Napízaro. Households in these villages likewise produce staple foodcrops and livestock.

Erongarícuaro is the nearby town and county seat. Agriculture is an important activity, and some light manufacturing activity also takes place. Remittances from international migrants provide a major source of household income. Retail shops in the town supply consumer goods to local residents and to villagers. The town, however, is not a major source of intermediate inputs for village production activities.

### Income Sources

The studied villages have a range of heterogeneous economic structures. Per capita income ranges from a high of 6,713 pesos (or US\$2,166) in El Chante to a low of 1,276 pesos per person (US\$412) in Reyesoghpan (Table 1). Diversification of income sources is striking. Households in all of the communities produce staples, cash crops, livestock, and other agricultural products such as fruit and vegetables. Despite households' extensive involvement

in agricultural production, earnings from families' own agricultural production is not the main source of income in most villages. Wages, instead, provide the most important source of income in the surveyed communities, representing more than 40 per cent of average total household income. At all the surveyed sites, a majority of households have members involved in local, regional, national or international labor markets. In all villages, at least half of all wage income comes from non-agricultural activities. Most remittance income in Concordia and all in the low-income indigenous villages come from family migrants working in the rest of Mexico. International migrant remittances are the main external source of income for households in the Michoacán mini-region.

Commerce is an important activity in all villages and in the town, accounting for more than 15 percent of total household income in most cases. Generally retailing proves as important as agricultural production and more important than non-agricultural production (exceptions are Concordia, Orichu and Reyesoghan). As in other towns, commerce is especially significant in the town of Erongarícuaro where it accounts for around 40 percent of value-added.

By contrast, less than 10 percent of household income comes from local manufacturing or non-commercial services. In the high income village, non-agricultural production mainly consists of auto and tractor repairs and a brick factory. In the non-migrant middle income village, it consists of repair shops. In Erongarícuaro, the non-agricultural sector is dominated by a small factory producing furniture. Three of the four villages with the lowest household incomes (Orichu, Puacuaro and Naupan) have the most households engaged in local manufacturing and service activities (40 per cent, 90 per cent and 50 per cent, respectively). These activities are mostly low-return and labor-intensive, such as the production of tortillas and handicrafts.

## External links

The openness of rural Mexican communities to the outside world is striking. All “export” agricultural or livestock products to domestic markets outside the village, receive income in the form of worker remittances from the rest of Mexico or from the USA, and “import” both consumption goods and inputs from nearby towns. High-income villages sell a majority of their agricultural production outside them, in regional markets (Table 2). While most staple output from the high and middle income communities is sold in the regional market, most from the low income indigenous villages is for subsistence.

Production in the villages depends heavily on inputs from the rest of Mexico (Table 3). These economies’ dependence on goods purchased from outside markets is reflected in a high ratio of imports to gross village products. In all cases, the value of imports is close to, or exceeds, total value-added. Leakages also may take the form of capital outflow from villages, for example, to banks in nearby cities. The Erongarícuaro town SAM, likewise, reveals a high degree of openness to outside markets, particularly for consumption goods entering the town either through the service sector (town stores) or through household purchases outside the mini-region. In the mini-region (formed by Erongarícuaro, Napizaro, Orichu and Puacuar), capital-account outflows are large relative to total town and villages’ savings. However, the capital outflow from the mini-region is small compared with the income leakages created by trade.

## CONSUMPTION LINKAGES IN RURAL VILLAGES AND IN THE MINI-REGION

### Shocks

Two experiments were carried out for each of the villages and the village-town rural mini-region. They were designed to illustrate household income linkages and the implications of agricultural supply constraints for rural income multipliers. The first experiment explores the impact of a \$100 pesos (around 8 USD) change in exogenous household income. It evaluates the impact of spending linkages within the village economies as well as their links to towns, in the region and throughout Mexico. This experiment distributes the \$100 across household groups in proportion to their initial shares in total area cultivated in basic grains. It corresponds to the PROCAMPO program, in which farmers receive direct income payments for each hectare cultivated in staples.

### Income Impacts

The impact of the spending linkages resulting from this income transfer appears in Tables 4 and 5. The numbers in the tables represent absolute dollar changes associated with the \$100 increase in income. Because of presumed supply constraints in agriculture<sup>1</sup>, demand-induced increases in total village production and value-added resulting from the PROCAMPO income transfers are lowest in the villages that rely most on agricultural production: the rise in total value added is just \$0.40 in Reyesoghpan, \$5.10 in El Chante and \$8.60 in Concordia. In other villages the demand-induced increase in production and value-added are higher, ranging from \$12.70 in Naupan (Table 4) to \$34 in the three villages of the mini-region (Table 5).

On the production side, output changes in all agricultural sectors are zero, by assumption. Therefore, any increase in village value added must come from commerce, rural manufacturing or services. In general, consumption linkages to nonfarm production within the

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<sup>1</sup> The resulting increases of value-added are much smaller than in an alternative experiment, not reported here, where we assume that agricultural supply is not constrained.



villages are modest, averaging only \$2 in the villages and \$12 in the three villages of the mini-region.

Gains in village commerce, however, prove much larger, \$51 on average among the five villages and \$48 among the three villages of the mini-region. As a result, even though the income shock produces only small changes in local production, commercial linkages between the villages and outside markets are striking.

Differences in village commercial gains arise primarily as a result of variations in infrastructure quality and proximity to regional towns. Consider the low-income village of Reyesoghpan, located very near the Municipal capital city of Cuetzalan, with good transportation facilities. In contrast, the city nearest Naupan is difficult to reach, due both to distance and to poor roads. In the more easily accessible village of Reyesoghpan, the impact of the income shock on the local commerce is small (\$4), whereas it is quite high for regional commerce (\$44). The opposite holds true for Naupan, where local commerce gains \$65 but regional trade only \$10. Reyesoghpan relies more on the easily accessible markets in the regional towns, whereas Naupan depends primarily on local or national markets. Transaction costs in rural areas tend to be household specific (de Janvry, Fafchamps and Sadoulet, 1991) and thus create rents for households with the resources to overcome them. In the remote village of Naupan, commerce is dominated by one rich household that has the necessary resources (a truck) to transport goods from regional markets to its shop in Naupan.

In the high income village economy of El Chante, where saving and investment propensities are very high, much of the external linkage is a result of investment demand for outside goods. Total savings (physical plus human capital investments) increase by \$57 in this village, by \$17 in the middle income economy of Concordia, and by \$14 in the migrant village of Napízaro. The impacts of the exogenous shock are lower for human capital savings (education spending) than physical capital savings in all villages.

### Mini-region

Following an exogenous \$100 injection of income, real gross village value added increases by \$34 (Table 5, Column A). By contrast, the gross town value added rises by only \$4 as a result of the \$100 exogenous increase in town household incomes (Column D). The much smaller value-added multiplier for the town can be explained by the town's high degree of openness to markets outside the village-town region, which transfer the multiplier to the rest of Mexico.

The cross effects of the village income increase on the town economy appear in Column B in Table 5. These can be compared to the cross effects of the town income increase on the village economy, summarized in Column C. In most cases, cross effects are small relative to the own effects (Columns A and D). Because the town's commercial sector plays an important role in satisfying village consumption demands, this sector is the town's main beneficiary from increases in village incomes (\$27). In both the town and village economies, the sector that benefits most from the exogenous income change is local commerce, which mostly represents a leakage from the local economy though a stimulus to outside markets.

## AGRICULTURAL GROWTH LINKS

### Shock

Our second experiment explores the effects of loosening the agricultural supply constraint by \$100 pesos (around 8 USD), spread across sectors in proportion to their initial shares of total agricultural and livestock production. This experiment might correspond to a loosening of supply constraints through technological change, credit market development, or public

investments in marketing, extension, or transportation infrastructures. Alternatively, by changing the sign of the supply shift from positive to negative, it might represent the (negative) multiplier effect of productivity-diminishing environmental degradation or of a severe drought.

### Villages

This experiment produces a considerable increase in value-added, reflecting the pivotal role of agricultural supply constraints in shaping rural income linkages. Value-added increases by \$66 to \$94, depending on the structure of agriculture in the various villages (Tables 6 and 7).

The increased agricultural production generates a large increase in labor value-added in the four most labor-intensive villages. Value added accruing to family plus hired labor accounts, on average, for 75% of income gains in the villages of El Chante, Concordia, and the two indigenous communities. In contrast, in the middle income migrant village of Napizaro, where most of the output gain is in the capital-intensive livestock activity, labor earns less than 25% of value added while physical capital and land value-added represent over 75% of the increase.

The increase in agricultural output generates modest positive effects on nonfarm production in the five villages. As in our first experiment, the income growth fuels far stronger effects on demands for village commercial services than for local production in most cases. Commercial demand increases by \$54 to \$69 in Naupan and the two middle-income villages. As before, the increase in local commerce is smallest in the villages that are well connected with regional product markets, El Chante (\$16) and Reyesoghpan (\$3), where commercial links with the rest of Mexico loom larger (Table 6).

### Mini-region

The impact of agricultural income growth on non-farm activity depends both on changes in consumption demand and changes in the demand for intermediate inputs. In both the villages and the town, the balance of these two effects sharply increases external linkages when supply expands. Increases in village agricultural output of \$100 generate only \$13 in rural nonfarm output (including renewable resources and other non-agricultural activities) but over \$20 in demand for goods from the rest of Mexico and a further \$17 for goods from the USA (Table 7, Column A). The resulting rural nonfarm income gains total \$23, roughly \$10 in rural manufacturing and services, \$10 in village commerce and the remainder in renewal resource-based activity. Increases in town agricultural output have a similarly large effect on town value-added. They generate significantly larger demand linkages with the rest of the world except the villages, which are not important suppliers of goods and services to town households.

### CONCLUSIONS

Our analysis of regional economic linkages in rural regions of Mexico suggest that nonfarm demand linkages are important, regardless of the level of income or development. In rural Mexico, by far the largest of these linkages are with markets outside, rather than within, villages. In our experiments, a \$100 increase in exogenous household income stimulates increases in village nonfarm production averaging \$2. In contrast, villagers' demand for goods and services from outside markets jump by \$76, and their demand for imported goods sold by village retailers rises by \$51. Similarly, in the town of Erongaricuaró the exogenous income change leads to a \$1 increase in the town's non-agricultural production, a \$13 increase in local commerce and a \$62 rise in demand for goods bought elsewhere in Mexico.

The strong impact of income and production shocks on village and town demand for goods produced elsewhere in Mexico offer compelling evidence in support of what Adelman (1984) calls “agriculture-demand-led-industrialization (ADLI).” In rural Mexico, a large share of rural household demand for purchased inputs and consumption and investment goods is supplied by regional urban centers, which have proliferated in the last decade and which now account for most of the country’s urban growth. As our findings illustrate, most of the farm-nonfarm diversification in “rural” Mexico is between villages and the growing regional towns and cities. Economic census data show that the real value of fixed assets in the commercial sector of the cities located near the villages and town we studied has grown at high rates. Thus, trade linkages transfer most of the benefits of income growth in villages to these regional commercial centers.

This does not mean that there is necessarily a parasitic relationship between villages and towns, or more generally, between villages and the outside world. Town markets are critical to support village crop and non-crop production activities that create value-added for village households, and both regional and extra-regional labor markets are a major source of wage and remittance income for villages. Our analysis highlights the complex economic interactions between villages and towns in what probably is a mutually beneficial relationship broadly consistent with comparative advantage.

In the end, these results suggest that increasing the income of village households can play an important role in stimulating growth of the rural nonfarm commercial activity in towns and small cities. Comparisons across villages suggest that investments in rural infrastructure can facilitate these commercial linkages between villages and towns.

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TABLE 1 Average per Capita and per Household Net Income (Constant 1994 pesos) and Net Income by Source

	All localities	High Income	Medium Income						Low Income	
		El Chante	Concordia	Mini-Region Michoacan	Erongaricuaru	Napizaro	Orichu	Puacuaru	Reyesoghpan	Naupan
Total per Capita Net Income	2,189	6,713	2,920	2,286	3,080	3,216	1,688	1,423	1,329	1,276
Total per Household Net Income	11,066	27,674	15,738	13,916	18,821	15,425	11,332	9,689	8,112	6,183
Household Income Composition										
Staples	5.0%	2.6%	7.2%	5.1%	2.9%	7.8%	7.8%	2.0%	3.7%	-1.9%
Cash Crops	3.6%	43.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	39.2%	12.7%
Livestock/Natural Resources	7.5%	7.5%	0.5%	8.4%	3.2%	24.4%	3.2%	-1.6%	19.0%	5.3%
Other	8.8%	4.8%	6.8%	10.8%	10.4%	1.3%	16.6%	20.7%	0.2%	3.0%
Retail	15.0%	15.4%	3.4%	18.6%	22.0%	17.7%	6.6%	26.6%	1.8%	30.6%
Local Wage Work		16.5%	24.4%	na	na	na	na	na	10.6%	26.9%
Regional Wage Work		2.6%	46.7%	na	na	na	na	na	6.2%	16.4%
Total Wage Work	41.4%			35.2%	48.0%	16.6%	53.5%	20.3%		
U.S. Migrant remittances	11.8%	4.0%	3.0%	16.6%	8.5%	28.2%	6.1%	25.3%	0.0%	0.0%
Internal Migrant remittances	5.4%	0.2%	7.3%	4.2%	4.0%	2.6%	5.1%	6.3%	9.9%	6.9%
Other Factor income	0.8%	0.4%	0.1%	1.1%	1.0%	1.4%	1.2%	0.4%	0.7%	0.0%
Net Household Transfers	0.1%	2.4%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	1.6%	0.0%
Government Transfers	0.6%	0.5%	0.5%	0.0%	0.0%	0.0%	0.0%	0.0%	7.0%	0.0%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
na: Not available										
Source: Authors' Surveys										

TABLE 2 Destinations of Village Output (Percent of Output)

	Staples	Cash crops	Livestock	Other Ag	Non Ag	Commerce
<b>Subsistence Consumption</b>						
High Income						
El Chante	8.1	0	56.02	64.66	0	0
Middle Income						
Concordia *	7.22		96.93	0	0	0
Napizaro	40.41	0	35.29	74.04	51.99	0
Low Income						
Naupan	74.79	1.19	26.29	0	43.7	0
Reyeshogpan	67.6	4.84	58.55	0	69.05	0
<b>Local Sales</b>						
High Income						
El Chante	18.1	1.23	0	35.34	0	96.02
Middle Income						
Concordia *	0	0	0	0	26.08	97.93
Napizaro	50.8	0	0	0	0.33	100
Low Income						
Naupan	25.21	24.11	4.13	0	0	50.05
Reyeshogpan	32.4	29.54	22.88	0	0	23.24
<b>Outside Sales</b>						
High Income						
El Chante						
Region	73.8	98.7	29.3	0	100	3.98
Rest of Mexico	0	0	14.69	0	0	0
Middle Income						
Concordia (rest of Mexico) *		92.8	3.07	0	73.92	2.07
Napizaro (rest of Mexico)	8.79	0	64.71	25.96	47.68	0
Low Income						
Naupan (region)	0	74.7	69.58	0	56.3	49.95
Reyeshogpan (region)	0	65.62	18.57	0	30.95	76.76

\* Corn: Staple (7.2%) and cash crop (92.8% sold )

Source: Authors' Surveys



TABLE 3 “Imported” Inputs as Percentage of Total Output by Sector, and Gross Village Product

Type of Good and Origin	High	Middle Income		Low Income	
	El Chante	Concordia	Napizaro	Naupan	Reyes
<b>Imported Inputs</b>	<b>17.79</b>	<b>66.37</b>	<b>42.96</b>	<b>61.86</b>	<b>8.18</b>
Rest Of Region	15.63	na	na	59.99	8.18
Staple	23.42	na	na	0	20.06
Cash Crops	15.47	na	na	0	2.51
Livestock	6.27	na	na	37.83	2.11
Other Agricultural	33.67	na	na	0	0
Non Agricultural	0	na	na	0	57.67
Commerce	24.37	na	na	0.19	23.35
Rest Of Mexico	2.15	65.26	42.96	1.87	0
Staple	0	17.44	11.93	0	0
Cash Crops	0	0	0	0.56	0
Livestock	0	5.08	13.18	0	0
Other Agricultural	0	0	0	0	0
Non Agricultural	0	0	0	20.65	0
Commerce	12.86	81.28	91.06	80.46	0
<b>Local Inputs</b>	<b>9.17</b>	<b>15.58</b>	<b>7.73</b>	<b>11</b>	<b>16.05</b>
Staple	15.85	22.93	13.28	23.39	1.71
Cash Crops	0	0	0	20.19	0
Livestock	37.69	27.32	12.49	15.07	8.35
Other Agricultural	0	0	0	0	0
Non Agricultural	32.38	71.09	55.07	25.91	0
Commerce	3.89	9.74	0	5.32	69.22
<b>Ratio of Village Imports to Gross Village Product</b>	<b>1.25</b>	<b>3.71</b>	<b>0.9</b>	<b>2.74</b>	<b>0.81</b>

Source: Village SAMs

TABLE 4 Village SAM Multipliers Resulting from a \$100 Increase in Incomes<sup>a</sup> (Constrained Model)<sup>b</sup>

	High Income	Middle Income		Low Income	
	El Chante	Concordia	Napízaro	Naupan	Reyesoghpan
<b>Production</b>					
Staples	0	0	0	0	0
Cash Crops	0	-	-	0	0
Livestock	0	0	0	0	0
Nonag	0	2	2.8	6.4	0.2
Commerce	8.5	107.6	68.6	65	3.9
<b>Factors</b>					
Family Labor	4.8	2.4	7.5	11.2	0.4
Hired Labor	0.1	4.9	1.3	0.6	0
Capital	0.2	1.3	8.1	0.9	0
Land	0	0	1.1	0	0
<b>Total Value-Added</b>	<b>5.1</b>	<b>8.6</b>	<b>18</b>	<b>12.7</b>	<b>0.4</b>
<b>Household Incomes</b>					
Subsistence farms			20.8	43.6	30.2
Medium farms			45.6	45.7	36.2
Large farms			50.8	25.8	38.0
Staple	87.0				
Cash Crop	1.5				
Mixed	15.6				
Nonag	1.1	5.9			
Agricultural		103.0			
<b>Savings</b>					
Financial/Physical Capital	56.8	16.5	14.2	7.4	9
Human Capital	3.3	4.8	2.4	2.7	0.2
<b>External Linkages</b>					
Rest of Region	74.7 <sup>¾</sup>		<sup>¾</sup>	10	44.2
Rest of Mexico	8.1	87	65	75.9	15.7
Rest of World	0	1.6	0 <sup>¾</sup>		<sup>¾</sup>

a) Distributed across household in proportion to initial share in total acreage in basic-grain production

b) Agricultural production sectors' supplies perfectly inelastic

TABLE 5 Village - Town SAM Multipliers Resulting from a \$100 Increase in Incomes<sup>a</sup>  
(Constrained Model)<sup>b</sup>

	Increase in Village Household Incomes		Increase in Town Household Incomes	
	A Villages	B Town	C Villages	D Town
<b>Production</b>				
Basic Grains	0	0.4	0	0
Other Grains	0	0.8	0	0
Livestock	0	1.2	0	0
Renewable Res.	7.9	0.1	0	1
Non Agricultural	11.6	0.1	0	1.4
Commerce	47.8	27	0	12.6
<b>Factors</b>				
Family Labor	23.2	3.5	0.1	2.6
Hired Labor	7.8	1.4	0	1.1
Physical Capital	3.1	0.1	0	0.1
Animal Capital	0	0	0	0
Land	0	0.2	0	0
<b>Total Value-Added</b>	<b>34.1</b>	<b>5.2</b>	<b>0.1</b>	<b>3.8</b>
<b>Household Incomes</b>				
Commercial	92.2	2.6	0	89.5
Subsistence	38	0.8	0	13.2
Net Buyers	13	2.3	0	6.6
<b>Savings</b>				
Financial/Physical Capital	10.7	0.6	0	7.6
Human Capital	4.6	0.5	0	6.8
<b>External Linkages</b>				
Rest of Mexico	0	0.1	0	0
Rest of Mexico Commodities	4.9	3.9	0	62.1
Rest of World	21.6	22.2	0	22.2

a) Distributed across agricultural production sectors in proportion to total initial output levels

b) Agricultural production sectors' supplies perfectly inelastic

TABLE 6 Village SAM Multipliers Resulting from a \$100 Increase in Agricultural Supply<sup>a</sup> (Constrained Model)<sup>b</sup>

	High Income	Middle Income		Low Income	
	El Chante	Concordia	Napízaro	Naupan	Reyesoghan
<b>Production</b>					
Staples	6.3	84.3	20.2	17.5	12.2
Cash Crops	69.6	—	—	74	42.7
Livestock	24.2	15.7	79.8	8.5	45
Non Agricultural	0	1.3	6.3	3.4	0.2
Commerce	15.5	69.3	54.2	58.6	3.2
<b>Factors</b>					
Family Labor	43.5	31.7	16.6	51	61.5
Hired Labor	12.1	9.5	1.9	18.8	10.9
Capital	8	15.2	23.9	2.7	0.5
Land	19.6	9.9	44.3	9.8	12.8
<b>Total Value-Added</b>	<b>83.2</b>	<b>66.3</b>	<b>86.7</b>	<b>82.4</b>	<b>85.7</b>
<b>Household Incomes</b>					
Subsistence farms			4.3	12.8	23.5
Medium farms			40	23.5	30.2
Large farms			39.4	25.2	34
Staple	15.6				
Cash Crop	26.1				
Mixed	16.5				
Nonag	12.5	22.4			
Agricultural		44			
<b>Savings</b>					
Financial Physical Capital	30	9.8	9.9	4.8	7.6
Human Capital	2.4	2.7	1.9	1.2	0.2
<b>External Linkages</b>					
Rest of the Region	74.7	—	—	13.5	43.1
Rest of Mexico	9	71.9	64.3	64.9	13.2
Rest of World	0	1	0	—	—

a) Distributed across agricultural production sectors in proportion to total initial output levels

b) Agricultural production sectors' supplies perfectly inelastic

TABLE 7 Village - Town SAM Multipliers Resulting from a \$100 Increase in Agricultural Supply<sup>a</sup> (Constrained Model)<sup>b</sup>

	Increase in Village Agricultural Supply		Increase in Town Agricultural Supply	
	A	B	C	D
	Villages	Town	Villages	Town
<b>Production</b>				
Basic Grains	25.4	0.3	0.1	17.8
Other Grains	14.8	0.5	0.2	26.1
Livestock	60	0.8	0.4	56.1
Renewable Res.	5.7	0.1	0.1	1.3
Non Agricultural	7.8	0.1	0.7	1.6
Commerce	32.5	17.3	0.4	15
<b>Factors</b>				
Family Labor	56.8	2.2	0.9	61.6
Hired Labor	9.9	0.9	0.2	3.3
Physical Capital	6.7	0.1	0.1	2.1
Animal Capital	1	0	0	1.6
Land	19.8	0.2	0.1	12.2
<b>Total Value-</b>	<b>94.2</b>	<b>3.4</b>	<b>1.3</b>	<b>80.8</b>
<b>Household Incomes</b>				
Commercial	48.8	1.6	0.6	46.3
Subsistence	30.9	0.5	0.4	15
Net Buyers	21.4	1.5	0.3	25.6
<b>Savings</b>				
Financial/Physical Capital	8	0.4	0.1	8.4
Human Capital	2.9	0.3	0	8
<b>External Linkages</b>				
Rest of Mexico	5.3	0	0	3.1
Rest of Mexico Commodities	14.5	2.5	0.3	52.1
Rest of World	17.1	14.2	0.2	20.9
a) Distributed across agricultural production sectors in proportion to total initial output levels				
b) Agricultural production sectors' supplies perfectly inelastic				