CHAPTER 14

SAM's Impact on Income Distribution

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A primary goal of SAM was to combat the crushing poverty and stagnation characteristic of traditional agriculture.[1] According to a household income-expenditure survey done by the Ministry of Planning and Budget in 1977, 59.5% of agricultural households earned less than the minimum wage, and 36.8% earned less than *half* the minimum wage. Those earning above the minimum wage accounted for only 8.6% of the total (Lustig, 1980). In Mexico, the rural poor consist largely of agricultural workers and peasants who produce maize and beans (Shejtman, 1981).

Malnutrition is a gnawing and persistent aspect of rural poverty. According to recent estimates (see Chapter 12) about 35 million Mexicans do not consume widely recommended minimum levels of calories and proteins. Of these, 19 million are critically undernourished and the overwhelming majority, some 12 million, live in the countryside. As part of a program to stave off increasing rural hunger, SAM policy makers proposed a series of measures intended to raise rural incomes of the poorest peasant producers. As indicated in previous chapters, these measures included an increase in the support price for maize (and other grains) and increases in subsidies for improved seeds, fertilizers, and credit.[2]

In the year following the implementation of the SAM policies, maize and bean production showed a significant increase (see Chapter 11). How growth in real income was distributed among rural producers, however, is a much more elusive question. Reliable data on the distribution of income

1. The tendency toward stagnation in traditional agriculture is evident in the following data: the 1970–1977 average annual rate of growth in physical production of maize was only 1.38%, while beans actually contracted on average by 2.44%. For more details, see Luiselli (1980) and Martin del Campo (1980); for more on the objectives of SAM, see Chapter 3 of the present volume.

2. In 1960, the maize support price was 800 pesos per ton, but by 1979 it had fallen to 606 pesos per ton (1960 pesos). For a discussion of Mexican agricultural policy, see Hewitt de Alcantara (1978).

Table 14.1. Social classes and productive sectors in the Mexican CGE

	Social classes		Productive sectors
1.	Peasants	1.	Maize and beans
2.	Agricultural workers	2.	Other agriculture and livestock
3.	Agricultural capitalists	3.	Petroleum
4.	Urban workers	4.	Fertilizer
5.	Urban capitalists	5.	Food processing
6.	Merchant capitalists	6.	Industry and construction
7.	Urban marginals	7.	Services
		8.	Commerce

in developing countries is not easily obtained and, moreover, the effects of SAM policies are intermixed with other short-term fluctuations as well as government policy initiatives. In the absence of concrete survey data, the approach used by SAM policy makers was to mathematically simulate probable effects of alternative policies and programs.

This chapter provides some evidence on the distributional consequences of SAM-styled policies using a short-run economy-wide simulation model. A multisectoral computable general-equilibrium model (CGE) built for the purpose of analyzing SAM policies is discussed, and simulations of SAM programs are presented.[3] The model shows that SAM policies essentially redistribute income from the urban to the rural sectors without necessarily improving the overall distribution of income. In particular, the rural working class may actually suffer a deterioration in real income if SAM policies are not augmented by additional expansionary measures.

The Model

The CGE used in this study accounts for seven social classes[4] and eight productive sectors, as shown in Table 14.1.[5] The agricultural sectors are assumed to have given supplies. "Flex-prices" balance given supply with demand that is determined by income-expenditure relations of the social classes plus exogenous elements of final demand. In the remaining "fix-price," nonagricultural sectors, supply curves are horizontal at prices

3. See Taylor (1979, 1983), Dervis, de Melo, and Robinson (1982), and Scarf and Shoven (1983) for a general discussion of CGEs. For a more neoclassical CGE for the Mexican economy, see Serra-Puche (1983). For a detailed discussion of the present model, see Gibson et al. (1984, 1986). Taylor and Lysy (1979) discuss the effects of various "closure rules" in CGEs.

4. See Lustig (1980) for a discussion of the data base from which the class categories were drawn.

5. See the appendix, footnote 10, for data sources.

determined by costs and fixed markup. Output is determined in fix-price sectors by the level of effective demand. Excess capacity in these sectors allows output to rise with no corequisite increase in price (see the appendix to this chapter for the algebraic statement of these assumptions).

The formal model does not include factor markets. The money wage is given exogenously and there is no "capital" explicitly accounted for apart from intermediate goods. Neither is there an explicit investment function. Investment is taken as given in real terms and macroeconomic equilibrium is achieved through Keynesian quantity adjustment and Kaldorian "forced savings."[6]

To see how the model basically works, consider an exogenous increase in investment demand for output in the nonagricultural sectors. As nonagricultural output rises to meet the new demand, gross profits increase with the level of economic activity. With fixed savings propensities, higher profits generate higher savings, but not at a rate that will entirely finance the new level of investment. The shortfall is made up by an improvement in agricultural terms of trade that, with fixed agricultural supply, must rise as demand from the urban sector increases. The inflation in food prices, together with the assumption of fixed money wages and markups, implies that real income will shift from workers to capitalists in both rural and urban sectors. Since workers make little contribution to aggregate savings, the process of "forced saving" increases the pool available to finance the initial rise in investment. Although urban employment rises in the new equilibrium, per capita consumption of workers falls. Higher fix-price levels of output cause noncompetitive intermediate imports to rise, and with fixed exports, foreign savings must increase. Government savings also go up since indirect tax receipts rise with inflation and economic activity and direct taxes increase with income. In the new equilibrium, all three components of savings contribute to the higher level of investment.

Results of the Simulations

This section describes the results of numerical simulations of SAM policies with emphasis on the distribution of income among the social classes listed above. Three sets of simulations are discussed, labeled 1 through 3 in the following tables and text:

Scenario 1. the basic SAM policy package, subsidies of 30% for fertilizers and 75% for improved seed varieties used in the maize and bean sector and an increase in the maize-bean support price of 15%. Supply in the maize-bean sector is assumed to increase by 2%.

Scenario 2. scenario 1, but with a subsidy of 18% on the final price of food processing. The subsidy is assumed to be applicable only to the pop-

6. For a simplified version of the present model, see Cichilnisky and Taylor (1980).

Table 14.2. Distribution of real income (% of total)

Scenario	Peasants	Ag. wkrs.	Ag. caps.	Urb. wkrs.	Urb. caps.	Merch. caps.	Urb. margs.	Total
Base	4.05	3.08	4.91	37.41	30.74	14.2	5.64	100
1a	4.63	3.00	5.80	36.65	30.41	13.93	5.57	100
1b	4.41	3.09	5.06	37.12	30.53	14.14	5.65	100
2a	4.79	2.88	6.66	36.09	30.36	13.76	5.47	100
2b	4.55	2.97	5.88	36.58	30.50	13.97	5.54	100
3a	4.43	3.02	5.73	36.96	30.28	13.99	5.58	100
3b	4.21	3.12	5.00	37.43	30.40	14.19	5.65	100

ular classes: peasants, urban and rural workers, and urban marginals.

Scenario 3. scenario 1, but with a 15% increase in nominal wages for both urban and rural workers.

Each of these scenarios is run under two assumptions about supply response in sector 2, other agriculture. Scenarios 1a, 2a, and 3a assume rigid supply and consequently show the greatest redistributive effect through the process of forced savings. Since supply response in the second sector is so important in determining the distribution of real income, scenarios 1b, 2b, and 3b allow for a 2% increase in output in sector 2, the same rate of expansion as in the maize-bean sector.

Distribution of Income

Table 14.2 shows how various policy initiatives change distribution of real income relative to the base solution of the model.[7] The first row of the table gives the proportions of total income earned by each social class in the base state to which comparisons of three scenarios are then made. The results indicate that, as a whole, the redistributive effect of SAM-like interventions is quantitatively small. If the objective is a fundamental restructuring of the distribution of income, terms-of-trade policies, subsidies, and so on will probably be insufficient.

All scenarios essentially redistribute income from the urban to the rural sectors. Indeed, the sum of income proportions of the first three classes rises in every scenario relative to the base state. Note that the urban-rural redistributive effect is the greatest when SAM measures are combined with a consumer subsidy on processed foods and there is no supply response in sector 2 (scenario 2a). When accompanied by an increase in nominal wages, the rural-urban redistributive effect is less pronounced. In every case, the effect is less with supply response in sector 2.

7. If there is no change in any parameter, the model reproduces the base social accounting matrix for 1975. See the appendix.

Table 14.3 Real income (% change from base)

Scenario	Peasants	Ag. wkrs.	Ag. caps.	Urb. wkrs.	Urb. caps.	Merch. caps.	Urb. margs.
1a	17.04	−0.26	20.89	0.20	1.20	0.53	1.01
1b	11.87	3.13	5.92	1.86	1.99	2.38	2.74
2a	21.72	−3.52	39.54	−0.75	1.65	−0.13	−0.35
2b	16.12	−0.22	23.78	0.97	2.47	1.79	1.36
3a	12.43	0.88	19.90	1.37	1.08	1.26	1.39
3b	7.21	4.32	4.96	3.05	1.88	3.14	3.15

While all simulations show a shift in income from the urban to the rural sectors, there are important differences between the scenarios when classes are considered individually. From Table 14.2, it can be concluded that SAM subsidies and support prices tend to redistribute income to peasants and agricultural capitalists at the expense of the remaining segments of society. In particular, agricultural workers suffer a decline in their share in all but the last simulation. Table 14.3 shows the change in real income by social class. The table confirms that SAM policies reduce real incomes of the rural proletariat in *absolute* as well as relative terms. Without supply response in sector 2, rural workers suffer a 0.3% *decline* in real income (scenario 1a). Consumer subsidies do little to recoup their position: Tables 14.2 and 14.3 show that rural workers lose under scenario 2a and 2b, both relatively and absolutely.

From the point of view of the rural proletariat, the success of SAM policies depends largely on supply response in sector 2. Indeed, without an increase in sector 2 output, real income falls absolutely in the first two simulations and falls relatively in all.[8] Since one of the main objectives of SAM programs was to enhance the real incomes of the rural poor, the simulation results seem to reveal a fundamental design flaw. Moreover, the largest gains from SAM policies are captured by agricultural capitalists. In scenario 1a, their real incomes increase by 20.9% and their relative position by almost one percentage point. Supply response substantially damps the improvement, but the incomes of agricultural capitalists rise in every case.

In the transfer of income from the urban to the rural sector, workers contribute the most. Urban workers show the smallest percentage gains in real income and loss of relative position in all but the last scenario. Urban marginals as well as urban and merchant capital consistently lose relative ground (except in 3b and 1b for urban marginals). Table 14.3 shows that

8. Given the assumption of fixed labor coefficients (see the appendix for details), employment rises in scenarios 1b, 2b, and 3b by the same amount as output: 2%. To compute the change in real per capita income of rural workers, one must subtract 2%.

Table 14.4. Real consumption: Scenario 1a (% change from base)

	Peasants	Ag. wkrs.	Ag. caps.	Urb. wkrs.	Urb. caps.	Merch. caps.	Urb. margs.
Maize and beans	6.8	2.5	−0.0	2.7	−0.0	−0.0	2.4
Other agriculture	9.7	−2.6	5.4	−3.1	−2.6	−2.7	−1.7
Petroleum	19.7	0.5	18.2	0.8	1.6	1.1	2.1
Processed food	16.4	−1.2	11.7	−1.1	−0.8	−1.3	0.3
Industry	21.2	0.4	37.9	1.2	2.8	2.1	2.1
Services	21.4	0.6	22.7	1.0	2.0	1.4	2.1
Commerce	17.7	−0.2	21.7	0.3	1.3	0.7	1.2

all popular classes with the exception of peasants actually lose real income in the SAM cum subsidy scenario 2a. Without an increase in real output, the fiscal stimulus causes sufficient inflation to effect a reduction in real income.

By summing the percentages of the income received by workers, peasants, and urban marginals, it is clear that whether SAM policies improve the overall distribution of income depends upon how agricultural supply responds to the terms-of-trade intervention. Without supply response, income of the popular classes falls as a percentage of the total. With consumer subsidies, income falls whether there is supply response or not. The most progressive intervention is without question the third. But again, even with an increase in nominal wages, income of the popular classes falls as a proportion of the total without supply response. Table 14.2 shows that the only scenario that *simultaneously* improves the percentages of all popular classes is the third, and only if supply response accompanies the wage increase.

Consumption

Table 14.4 shows that the basic SAM package increases peasant consumption of all goods. Observe, however, that agricultural workers, urban workers, and urban marginals suffer a deterioration in their sector 2 real consumption. The table confirms that SAM policies tend to shift purchasing power from the urban to rural sectors, with a consequent decline in food intake of the urban popular classes. In contrast, agricultural capitalists benefit enormously from the favorable shift in the terms of trade. The results are more favorable when supply in sector 2 is allowed to adjust.[9]

9. Simulation results (not shown in the tables) indicate that with the exception of capitalists' consumption of maize and beans, consumption of all classes rises.

Table 14.5. Real consumption: Scenario 2a (% change from base)

	Peasants	Ag. wkrs.	Ag. caps.	Urb. wkrs.	Urb. caps.	Merch. caps.	Urb. margs.
Maize and beans	6.6	1.0	−0.0	1.4	−0.0	−0.0	1.5
Other agriculture	11.1	−6.0	8.9	−6.2	−5.4	−5.7	−3.9
Petroleum	29.0	−0.4	35.5	1.7	3.0	1.7	3.7
Processed food	27.1	−0.6	20.5	1.5	−2.9	−4.2	3.3
Industry	30.9	−0.7	73.7	2.4	5.0	2.8	3.7
Services	31.3	−0.5	44.3	2.0	3.6	2.1	3.7
Commerce	26.6	−0.8	41.8	1.6	2.1	0.3	3.0

Table 14.5 indicates that an attempt to repair the impact of SAM policies on the urban poor through direct consumer subsidies is not entirely successful. Real consumption of processed foods falls for agricultural workers by 0.6%. On the other hand, what urban workers lose in real processed food consumption under SAM policies (1.1%), is more than regained with the subsidy (1.5%). Note that urban marginals' consumption of processed foods increases as a result of both SAM policies and direct consumer subsidies.

The consumption effects of a nominal wage increase, aimed at counteracting the regressive tendencies of SAM, are considered in Table 14.6. Again, the big gains are had by peasants and agricultural capitalists at the expense of the urban sectors. Observe that even when the nominal wages are increased, real food consumption of the urban working class falls (with the exception of maize and beans). Agricultural workers are better off with an increase in nominal wages than with a food subsidy, although in both cases food intake falls (again with the exception of maize and beans). Note also that urban marginals benefit less from the wage increase than the food subsidy. Table 14.7 shows that with supply response in other agriculture, an increase in nominal wages brings positive consumption increments for all social classes. Maize and beans is shown to be an inferior good.

Table 14.6. Real consumption: Scenario 3a (% change from base)

	Peasants	Ag. wkrs.	Ag. caps.	Urb. wkrs.	Urb. caps.	Merch. caps.	Urb. margs.
Maize and beans	6.0	3.0	−0.0	3.1	−0.0	−0.0	2.6
Other agriculture	6.1	−2.0	4.6	−2.7	−2.9	−2.7	−1.7
Petroleum	15.2	2.1	18.3	2.4	2.4	2.5	3.0
Processed food	11.6	−0.0	11.0	−0.2	−0.9	−0.7	0.6
Industry	15.9	1.7	37.0	3.4	3.4	4.2	2.8
Services	15.3	1.4	20.9	1.7	1.3	1.5	2.1
Commerce	12.8	0.9	20.5	1.4	1.1	1.3	1.4

Table 14.7. Real consumption: Scenario 3b (% change from base)

	Peasants	Ag. wkrs.	Ag. caps.	Urb. wkrs.	Urb. caps.	Merch. caps.	Urb. margs.
Maize and beans	3.4	2.6	−0.0	2.3	−0.0	−0.0	2.0
Other agriculture	4.9	2.6	1.7	1.3	0.4	0.8	1.9
Petroleum	8.2	4.7	4.8	3.0	2.3	3.2	3.8
Processed food	7.4	4.7	3.4	2.6	1.5	2.6	3.2
Industry	8.5	4.4	9.2	4.7	3.6	6.0	3.7
Services	7.8	4.2	4.3	2.5	1.2	2.4	2.9
Commerce	7.3	4.2	4.8	2.9	1.7	3.0	3.0

As a whole the simulations show that SAM policies accompanied by an increase in nominal wages are less effective in redistributing income to peasants but more progressive in the overall distribution of income. On the other hand, the consumer subsidy program accelerates the redistribution of income from city to country but is not powerful enough to maintain real purchasing power of the poorer classes. SAM policies accompanied by an increase in nominal wages are far more balanced in effect on the real distribution of income and, as is seen below, bear other favorable macroeconomic consequences.

Macroeconomic Consequences of SAM Policies

Table 14.8 shows disaggregated employment growth data for the fix-price sectors of the model. From this table it can be concluded that all policy scenarios are expansionary in terms of aggregate real output, since employment is determined by fixed labor coefficients and rises for each simulation. SAM measures accompanied by an increase in nominal wages is the most expansionary policy package, followed by the subsidy scenario.

Table 14.9 provides data on the distribution of aggregate savings. As ex-

Table 14.8. Employment growth rates (% change from base)

Scenario	Petroleum	Fertilizer	Processed foods	Industry	Services	Commerce
1a	1.7	0.4	0.7	1.6	2.1	1.9
1b	1.7	1.7	2.5	1.5	1.9	2.1
2a	2.0	0.4	0.8	1.9	2.1	2.0
2b	1.9	1.7	2.7	1.8	1.9	2.3
3a	3.1	0.5	2.1	2.8	3.8	3.4
3b	3.0	1.8	4.1	2.7	3.5	3.7

Table 14.9. Savings composition (% of total)

Scenario	Private	Foreign	Government	Total
Base	82.4	11.5	6.1	100
1a	85.0	11.7	3.2	100
1b	84.3	11.8	3.9	100
2a	86.9	10.6	2.5	100
2b	86.2	10.7	3.1	100
3a	87.0	11.9	1.1	100
3b	86.2	12.0	1.8	100

pected, the SAM subsidies cause government savings to fall in all scenarios. Since investment remains constant in real terms, the loss in government savings must be made up through some combination of private and foreign savings. The table shows that compared to the base-state solution, all simulations bring about an increase in the share of private savings. This implies that, on balance, SAM policies shift real income from classes with low savings propensities (workers, peasants, and urban marginals) to classes with higher propensities (capitalists and merchants). The Kaldorian process of forced savings is accompanied by a Keynesian adustment in output in all three scenarios. Since intermediate imports rise with output and exports are fixed, this puts pressure on foreign savings to rise. While the percentage change in private savings is the same in the second and third scenarios, the more expansionary character of the third causes foreign savings to play a more prominent role.

The data on the composition of savings provides additional support for raising nominal wages when SAM-like policies are introduced. In addition to the favorable distributive effects seen in the third scenario, there is little additional pressure on the foreign account. The data of Table 14.9 suggest that the reduction in government savings might be accelerated in the third scenario, but in fact the data on absolute changes show that government savings falls by 82% in the second scenario, compared to 54% in the third. Compared to the first scenario, the additional "cost" in terms of foreign savings in the third scenario is not great. In absolute terms, foreign savings rise in the last scenario by 2.8%, compared to 2.4% in the first.

The most obvious objection to the third scenario is the possibility of igniting a wage-price inflationary spiral. The equations of the appendix show that the model has no "general price level," but a GDP deflator may be constructed from the individual sectoral price levels. SAM policies alone cause the GDP deflator to increase by less than 1%, while SAM cum subsidies raise the deflator by almost 3%. It is not surpising that the largest

increase, almost 15%, occurs when nominal wages are boosted by the same amount.

Conclusions

The simulations discussed in this chapter show that policies recommended by SAM generate higher incomes for the peasant sector, both relatively and absolutely. In order for an improvement in the standard of living of rural and urban workers to accompany these measures, SAM-like policies should be complemented with nominal wage increases. Otherwise, the measures simply shift income from urban to rural sectors and may fail to improve the overall distribution of income. Of the simulations considered here, only SAM policies coupled with an increase in nominal wages and supply response in other agriculture and livestock improve the percentage of total income accruing to all popular classes. SAM policies by themselves increase the percentage of total income captured by rural, urban, and merchant capitalists.

SAM policies augmented by a system of consumer subsidies are even less attractive in terms of output and income distribution. The results of the simulations show that a coalition of peasants and agricultural capitalists would favor this alternative, however, especially when supply response in other agriculture is limited. Because of their political popularity, these measures would not necessarily be resisted by an opposing coalition of urban classes and rural workers even though their real incomes would suffer as a result.

Finally, it is to be emphasized that the static nature of the model disallows claims about how the economy would adjust over time and therefore provides only a limited picture of SAM-like policies. The simulations considered here are simple comparative static exercises that do not adequately account for dynamic adjustment of a host of important variables. In particular, the rate of investment is held fixed, and there is no monetary-financial feedback onto the real sector of the model and no role for expectations whatsoever. Due to these shortcomings, the model amounts to only a first step in understanding the macroeconomic implications of SAM programs.

Appendix: Model Specification[10]

Variables		Exogenous parameters			
p	price	π	mark-up	t	indirect tax rate
x	output	w	wage	T	direct tax rate
y	income	I	investment	m	noncompetitive intermediate imports
c	consumption	l	labor coefficient	w_g	government wages
ρ	retail price	E	exports (net competitive)	q	commercial margin
		G	government expenditure	p_m	intermediate import price
		μ	consumption propensity	s	savings propensity
		θ	subsistence consumption	σ	consumer subsidy
		m_c	noncompetitive imports	z	proportion of value added of peasants and urban marginals
		a	input-output coefficient		
		τ	input subsidy		

The material balances for the productive sectors are given by

$$x_i = \sum_{j=1}^{8} a_{ij}x_j + \sum_{j=1}^{7} c_{ij} + I_i + G_i + E_i,$$
$$i = 1, 2, \ldots, 8.$$

Consumption of the ith good by the jth social class is given by a linear expenditure system (Lluch, Powell, and Williams, 1977; Taylor 1979). Consumption is a linear function of total expenditure in excess of subsistence expenditure:

$$c_{ij} = \theta_{ij} + \frac{\mu_{ij}}{\rho_i}\left[(1 - s_j)(1 - T_j)y_j - m_{cj} - \sum_{i=1}^{7} \rho_i\theta_{ij}\right],$$
$$i = 1, 2, \ldots, 7,$$
$$j = 1, 2, \ldots, 7.$$

10. The model data is summarized in an eight-sector, seven-class social accounting matrix for 1975, available from authors. The social accounting matrix is based on an aggregation of a seventy-two sector input-output study in SPP (1981a). The disaggregation of agriculture into maize and beans and other agriculture is taken from the well-known linear programming model for Mexico, CHAC, named after the rain god. Maria Bassoco of the Division of Macroeconomic Analysis of SAM prepared the estimates. Horacio Santamaria of the Coordinación del Sistema Nacional de Información assisted in the dissaggregation. The consumption functions were estimated using a linear expenditure system with data from a 1977 budget study conducted by SPP (1981b). The authors had access to the original computer tapes of this study, from which the class structure was determined. Direct tax rates were taken from Reyes Heroles (1980), as were the proportions of value-added accruing to urban marginals. A more detailed description of sources and methods can be found in Lustig (1980).

The exception is sector 8, commerce, which is determined by real consumption levels in the first seven sectors,

$$c_{8j} = \sum_{i=1}^{7} q_i c_{ij}, \qquad j = 1, 2, \ldots, 7,$$

and fixed "physical" commercial margins q_i. Retail prices are then given by

$$\rho_i = p_i + p_8 q_i - \sigma_i, \qquad i = 1, 2, \ldots, 7.$$

Peasant incomes are determined by a fixed fraction z of value-added in the two agricultural sectors,

$$y_1 = \sum_{i=1}^{2} \left[p_i - \sum_{j=1}^{8} p_j a_{ji}(1 - \tau_j) - p_m m_i \right] z_i x_i,$$

while agricultural workers' income depends on direct labor coefficients and the level of wages:

$$y_2 = w(l_1 \times_1 + l_2 \times_2).$$

The remaining value-added in the agricultural sectors accrues to agricultural capitalists:

$$y_3 = \sum_{i=1}^{2} \left\{ \left[p_i - \sum_{j=1}^{8} p_j a_{ji}(1 - \tau_j) - p_m m_i \right] (1 - z_i) - w l_i \right\} x_i.$$

Urban workers' income is determined in the same way as rural workers:

$$y_4 = w \sum_{i=3}^{8} l_i \times_i + w_g.$$

Urban capitalists earn profits in sectors 5 through 7 (fertilizer and petroleum profits accrue to the state as revenues):

$$y_5 = \sum_{i=5}^{7} \left[(p_i - \sum_{j=1}^{8} p_j a_{ji} - p_m m_i)(1 - z_i) - w l_i \right] x_i,$$

where a share of valued-added is captured by urban marginals. Similarly, merchant capitalist income is

$$y_6 = \left[(p_8 - \sum_{j=1}^{8} p_j a_{ji} - p_m m_8)(1 - z_8) - w l_8 \right] x_8,$$

and urban marginal income is a fixed proportion of value-added in sectors 5 through 8:

$$y_7 = \sum_{i=5}^{8} \left(p_i - \sum_{j=1}^{8} p_j a_{ji} - p_m m_i \right) z_i x_i.$$

The nonagricultural fix prices are then given by costs marked up at a given rate:

$$p_i = (1 + \pi_i)(1 + t_i)\left(\sum_{j=1}^{8} p_j a_{ji} + wl_i + p_m m_i\right), \qquad i = 3, 4, \ldots, 8.$$

The model thus amounts to a system of eighty-four equations in eighty-four unknowns, six output levels, two flex prices, six fix prices, seven retail prices, fifty-six consumption levels, and seven incomes. Flexible prices equilibrate given supply and general equilibrium demand in the first two agricultural sectors. In the nonagricultural sectors, outputs adjust to the levels of demand.

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