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**PRICE AND INCOME ELASTICITIES OF THE PRINCIPAL
FOOD COMMODITIES IN HONDURAS**
(Final Report)

**Study of the effects of agricultural development policies on food consumption in
Central America**

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**Tegucigalpa, D. C.
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ESTUDIO DE LOS EFECTOS DE POLITICAS DE DESARROLLO AGRICOLA EN EL CONSUMO
DE ALIMENTOS DE LA POBLACION CENTROAMERICANA

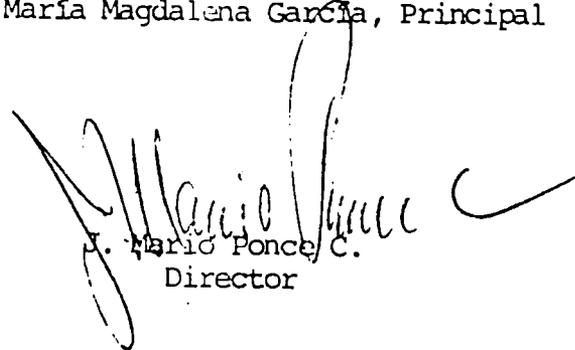
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This document is a part to a group of works prepared by the Project " Study of the Effects of Agricultural Development Policies on Food Consumption in Central America ", whose purpose is the development and application of a quantitative methodology through which the - impact on Honduras of agricultural policies on consumption and food patterns in the sectoral and institutional planning units of the Government of Honduras can be initially analyzed, and later to divulge the technical and methodological results in the other Central American countries.

The Project is being executed pursuant to a Technical Cooperation Contract signed by the Secretaría Permanente del Tratado General de Integración Centroamericana (SIECA); Secretaría del Consejo Superior de Planificación Económica (CONSUPLANE) and the Ministry of Natural Resources (MRN) on behalf of the Government of Honduras.- Furthemore, there is the financial contribution of AID's Regional Office for Central America and Panama (ROCAP).

This paper has been elaborated by the Project's Personnel under the technical responsibility of Lic. María Magdalena García, Principal investigator in Demand Analysis.


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Director

ESTUDIO DE LOS EFECTOS DE POLITICAS DE DESARROLLO AGRICOLA EN EL CONSUMO DE ALIMENTOS DE LA POBLACION CENTROAMERICANA

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T A B L E S

From 1 to 30: Price and income elasticities for main food products.

From 30 to 48: Demand elasticities matrix for main food products.

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I. INTRODUCTION

This report presents the results of estimations of income, price and cross-elasticities for basic grains; pork, beef, chicken and fish, eggs and milk which constitute the main staple commodities of honduran population.

This is the last report of an analysis of the Income, Expenditures and Food Consumption Survey conducted in 1977-79 in relation to supply functions and price and income elasticities, contracted by the Secretaria Permanente del Tratado General de Integración Económica Centroamericana (SIECA) by virtue of the Contract signed with the Government of Honduras for the execution of the " Study of the Effects of Agricultural Development Policies on Food Consumption in Central America".

Other results of the analysis of the Income, Expenditures and Food Consumption Survey are contained in the documents " Pattern of Expenditure and Food Consumption in Honduras Households "; Doct. No. 31A/82; " Elasticities of Consumption Expenditures in Honduras", Doct. No. 39A/83; and " Food Consumption and nutrients intake by Socio-economic Groups in Honduras Households ", Doct. No. 42A/83. The first of these reports has a description of the Income and Expenditures Survey on its objectives; contents of questionnaire, scope, - coverage, execution period, design, size of survey and data collection; this is why it is not necessary to repeat this information in the following reports. However, it is necessary to explain the meaning of such terms as auto-represented, groups; other urban centers and rural, to give a clearer conception of the results described in the present work.

Auto-represented groups: Comprises surveyed households in the most important city in each one of the seven regions included in the Survey.

Other urban centers: Refers to homes surveyed in other urban centers in each region; and

Rural: Are the homes surveyed in the rural area of each region.

It is obvious that the consumer's demand for basic foods is an important component of the structure within which the agricultural sector is to operate. Estimates of demand parameters are indispensable elements to define policies on price stabilization, commerce, storage, promotion measures or production control. On the other hand, the income level is determinant of the quantity and quality of the family intake, and must be therefore considered as a paramount factor in the alimentary plans and products supply for the population.

The analysis undertaken on food consumption by socioeconomic groups or by regions in Honduras, provide interesting conclusions on the importance of basic grains in popular nutrition. Results confirm what is already known of corn, beans and rice being the nutritional basis of the country, but simultaneously they show the existing differences and the degree of dependence on these cereals and leguminose by regions, urban and rural areas; income strata and occupation of the chief of the family. Another interesting information obtained from these analysis is the degree of inter-relation existing in basic grains demand, which can be measured with the estimations of cross elasticities.

II. ANALYSIS OF THE RESULTS

This section refers to the principal empirical results of this study which were developed in two stages. In the first one, the

Income and price elasticities by region and income strata were estimated for the following products: basic grains (corn, beans and rice), beef, pork, chicken, fish and milk; as it has been pointed out before, these are the basic food commodities in Honduras.

In the second stage, the cross price elasticities of foodstuff were derived, thus building a full demand matrix for each income strata.

Section IV contain an explanation of the theory of demand.

The income is monthly and per family and is expressed in Lempiras ^{1/}. The income strata are as follows:

0 to 100	100 to 300	300 to 500
500 to 1000		1000 and more

Distribution by region comprises, in the cases of rural and urban zones, the six more important regions into which the country is divided: West, North, Central, East, South and Olancho.

The denomination auto-represented includes eight cities with the highest demographic concentration, like Choluteca, San Pedro Sula, Juticalpa, Comayagua, La Ceiba, Danlí and Tegucigalpa.

The relevant aspects of the results are commented next:

1. Price and income elasticities.

a) Basic grains

The price elasticity for the three products gives a negative

^{1/} 1 Lempira = \$ 0.50

answer as is to be expected, because it shows a decrease in consumption as the price increases. Nevertheless, there are significant differences in the degree of inelasticity according to product, income strata and region.

- i) Income-price elasticities.
(Tables 1 to 15).

Tables 1 to 15 show that corn, which is the main consumption product, has a low price-elasticity in the rural zone in the four income strata (varies from -0.07 to -0.348). This could show, in the first place, a lesser degree of dependence on the part of consumers on market supplies, which is consistent with the self-supplying practices of the producers, specially in the campesino population which constitutes the majority of rural inhabitants and who cultivate the smallest parcels of land. Another logic explanation could be that the importance of corn is such in the food intake of the family, that even if the price goes up, the general tendency is to buy the same quantity to satisfy consumption necessities, which means to be deprived of other familiar needs. This is specially noticeable in the two lowest income strata.

In other urban centers and auto-represented groups, price-direct elasticity has a more significant answer (with variations between -0.172 and 0.692 for other urban centers and between -0.288 and -0.603 for the auto-represented group) and is higher in low income groups (those homes getting less than Lps. 100.00 monthly have an elasticity of -0.692 and -0.603 in the other urban centers and auto-represented groups,

respectively) who are the most affected by the increase in the price of this article. As the income level increases the elasticity decreases. In the higher income strata there is less consumption of corn, therefore, they are less affected by the increase in price of that commodity, and tend to vary less the use of the product when the price goes up.

ii) Direct price elasticities by region.

Direct price elasticities by region appearing in Tables 16 to 30 presents the possibility to make a comparative analysis among the six regions of the country for the three basic grains. For instance, in the case of corn the results in rural areas are always lower than those of the other urban centers and auto-represented groups. An examination amongst regions shows that in the Atlantic Littoral and in the Central Region, the increase in price causes a greater impact as far as acquisition of the grain is concerned, than in other regions, always within the parameters of a low elasticity.

In the other urban centers, the price inelasticity of corn is less pronounced than in the rural area. The Northern and Central Regions (-0.644 and -0.52, respectively) are in the present case the ones that show a more significant answer to the changes in price.

Almost all the cities included under the denomination auto-represented, show a low price-elasticity except at La Ceiba where the results obtained showed an opposite tendency (-1.415), which is attributable to data deficiencies according to the revision made of

the questionnaires ; this being the cause of the considerable deviation from results obtained in the rest of the regions.

iii) Income elasticities.

A common characteristic in income-elasticity of basic grains is its inelasticity (thus confirming that they are basic consumption goods) and that all answers are positive. Because they are basic consumption goods classified as " inferior goods", one could expect a negative answer in the higher income strata due to the shifting that supposedly occurs towards the consumption of "superior" goods, as income level increases. This does not reflect in the survey's results because only a very reduced number of homes gave information on more than L. 1.000.00 income per month strata, thus the highest strata on which price elasticity was calculated was on the 500 to 1.000.00 Lempiras monthly income, which is a low income in relation to the cost of living. - This is why homes within that category depend also, to a great extent, on basic grains as a main food staple with no greater possibilities to transfer to the consumption of more expensive articles.

The answers are also positive when the price-elasticity is calculated by region. However, there are differences by regions and by products, the same happens when it is done by regions and by income strata.

In the results by regions, the auto-represented group and the other urban areas groups, show, in general, a lower degree of inelasticity for the three products than that obtained in the rural area. In the case of

corn, income-elasticity varies between 0.067 and 0.342 for the auto-represented group; between 0.155 and .249 in the other urban areas group and between 0.175 and 0.454 in the rural area. Another interesting observation, applicable to the three sectors, is that income inelasticity is lower for corn and beans that are complementary products. It is also low for rice, but rather less than for the other two products. This can be interpreted in the sense that as income increases there is a greater propensity to consume rice. This is more marked in the rural area

If a comparison is made of the results obtained by region and those obtained by income strata it will be observed that in both cases income-elasticity is less than one, but it is greater when estimated by income strata than by region.

b) Meats, eggs and milk

For meats, eggs and milk only direct price and income elasticities were estimated. The quantities reported in most of the questionnaires of purchases of these products are low, and no great inter-relation among them can be found, so that no cross-elasticities can be derived from them.

As in basic grains, price and income elasticities were estimated according to income strata and region. In those countries with higher incomes, these articles are an integral part of the common diet of the population and are classified as "inferior" goods. In Honduras, a poor country with very low income per family, meat, milk and derivatives become "luxury" articles normally acquired by a very reduced group of population, the majority of homes only buying them occasionally. For some of those products there are no purchases

registered in the low income strata or in certain regions.

There are many forms of using the price and income elasticity depending on the type of analysis to be made, therefore, its degree of usefulness depends on who uses them.

General observations on these results are made below.

i) Auto-represented group.

When the results obtained in the meat group by income strata are examined (Tables 4,5, 19 and 20) it is observed that the response to a change in price (degree of elasticity) is less marked for chicken and fish than for beef and pork. On the other hand, it is observed that higher income causes a substantial increase in the purchases of the four types of meat considered in this study. In the case of beef, the response is more elastic in the two lowest income strata which is indicative that this product is considered a "luxury" item for those groups. Generally, the answer is inelastic in the other strata but at levels near to unit, which means a high sensibility to changes in income.

When the degree of elasticity is examined by city, it is possible to make comparisons that can be of interest as to the answer that can be expected in the consumption of products in a specific location when there is an increase in prices. For example, in San Pedro Sula and La Ceiba, which have the highest per capita consumption of beef and pork , an increase in prices has a negative effect on the consumption of such products (elasticity of -1.327 and -1.631, respectively). In the other cities the answer is inelastic, but with considerable variation within the parameters of inelasticity. The degree of inelasticity is greater in cities like Juticalpa, Santa Rosa de Copán and Choluteca than in Comayagua, Dan

It and Tegucigalpa. The same kind of observations can be made for other types of meat, for eggs and for milk.

The income-elasticity analysis allows to draw interesting conclusions on how much can consumption change if incomes are increased.

For example, the cities of Santa Rosa de Copán, Comaya --gua, Choluteca and Danlí are those with the lowest average income per family, setting aside, as is to be expected, the biggest share of their income to purchase food. At the same time, they have a large consumption per capita, of corn and beans, and show the lowest consumption of meats. The relationship of income-elasticity for meats in those four cities, generally show a lesser degree of inelasticity, in some cases the results are more than the unity, all of which indicated that results are consistent with income tendencies and preferences in the purchase of food. This is consistent with the economic theory in the sense that to a higher income level corresponds a greater diversification of consumption expenditure.

The same kind of considerations can be made with respect to eggs and milk. In both cases a rather significant negative relationship is found in the price-elasticity. For milk, the results are considerably elastic in five of the eight cities included in the study.

ii) Other urban centers

Tables 9, 10, 24 and 25 refer to elasticities in the households of cities and less important towns where the general level of income is lower than those of the auto-represented group. Like in the other two groups examined in the survey, the meat and eggs consumption is low. As

initial observation it must be noticed that there is an absence of information related to fish. The elasticity for this product could only be calculated for cities located in the northern and southern regions which have coasts to the Atlantic and Pacific Oceans, and therefore, with communities which have a supply of this product and are accustomed to consume fish. Inland, excepting Tegucigalpa, the consumption of seafood is practically nonexistent.

As far as pork is concerned, it is to be noted that in four of the six regions included in this study, elasticity is superior to unity, that is to say, that as price increases, the decrease in purchases of the product is proportionally higher. This does not happen with chicken and beef where the response is, in every case, inelastic. A similar result can be noted with eggs and milk precisely in the same four regions.

Income-elasticity in other urban centers for the six products results inelastic; as a rule, in all regions the answers were found to be within a range from .3 to .75. There are no results with elasticities higher than unity.

iii) Rural

In the rural zones, the answer in the questionnaire on purchases of chicken meat and fish were so limited that it was impossible to calculate any sort of elasticity for such products. The work was based on beef and pork, and even then, the information was very scarce due to the low consumption of such products. For pork, price-elasticity is elastic on the Atlantic coast and inelastic in all the rest of the region; however, the answer is elastic for beef in three of the regions. (Tables 14,

15, 29 and 30).

As to income-elasticity, all answers are inelastic within a range from .43 to .89.

Price-elasticity data was registered for milk in five regions, in three of them (West, North and Olancho) the answer to a change in prices is highly elastic. The remaining two give inelastic figures near to unity, all of which lead to the conclusion that, besides a low milk consumption, this is very sensitive to price variations.

It does not occur the same with income-elasticity. Only the Western Region has an elastic response; the other four are inelastic and in relatively low ranges (.32 to .69). According to such results, a lowering in the price of milk would bring about a greater consumption of milk than an increase in income.

The same conclusions can be drawn from the results obtained with eggs. The ranges in income inelasticity are all low ; but price elasticities show results greater than unity in two regions and relatively higher levels of inelasticity in the rest.

2. Cross Elasticities

Cross elasticity measures the changes in quantity of a commodity that would be acquired by a change in the unit price, not of that commodity, but of another related to it. This type of estimation is useful because it allows to draw interesting conclusions on what could be expected with other basic grains, analyzed by income strata or by region when there is a change in the price of one of them.

... In Tables 1 to 3, 6 to 8 and 11 to 13, appear the results of cross elasticities by income strata that were calculated for basic grains. Estimates of the same nature were made by regions as they appear in Tables 16 to 18, 21 to 23 and 26 to 28.

Table 12 shows the complementarity that exists between corn and beans in the lowest income strata, for a increase in the price of corn reduces the purchases of both. The same happens when the price of beans increases in the same strata . In both cases, the response to the price of rice is positive, which can be interpreted in the sense that when the price of rice goes up, there is an increase in the purchase of corn and beans. However, the increase in the price of rice implies a greater increase in the buying of beans (elasticity 2.658) than that of corn (elasticity 0.59). It can also be observed that in the other-income strata of the auto-represented group there is not always a complementarity in the behaviour of corn and beans, or in the response of rice in relation to the other two products. So, it is not possible to set general rules for all income strata in any of the three groups and each one of the responses must be subjected to a special analysis.

The elasticities obtained, be either price, cross or income when estimations are made according to region, are not as reliable as those obtained by income strata. This is to be expected because consumers within the one region are not as homogeneous as the consumers grouped by income strata. The theory of demand, assumes homogeneity of the consumers groups in cultural aspects, incomes, education, etc.

III DEMAND MATRIX ACCORDING TO INCOME STRATA

Tables 31 to 39 show price and income elasticities for the main food products, obtained taking as starting point direct price - and income elasticities and expenditure proportion of each product using the restrictions imposed by the theory of behavior of consumers and the Frish equations.

The results show, in considerable measure, what is to be expected in reality, as income increases, the expenditure proportion of total food decreases, 0.60 for the lowest income strata in the rural area and 0.40 in the urban area, going up to 0.3 and 0.2 for the highest income strata in the rural and urban area, respectively. The income elasticity of total food varies between 0.558 and 0.705 in the rural area and between 0.709 and 0.683 in the main cities, though it is to be noted that the two major categories total food and total non-food appear as complementary goods, except for the rural area group with monthly income of less than Lps. 100.00, for which, both categories of expenditures appear as independent commodities.

The fact that, in the case of Honduras, total food and total non-food goods appear as complementary is explained by the low income level in the country and on account of the methodology used. Being the country a poor one, theoretically, it is expected that its money flexibility will be larger than unity, in the expenditure analysis of Honduras made by using the extended linear expenditures system (ELES) a value of -1.55 was estimated. It must be noted that by using this methodology, the estimated value for money flexibility will always be more than one ($\theta = \frac{V}{V-P_{ii}}$).

On the other hand, a high response on food consumption due to changes in income is also expected, that is to say, greater income-elasticities on food are expected than those of developed countries. In the case of Honduras, estimations were obtained that varied between 0.55 and 0.70, as it will be shown below given said conditions and the use of the Frish methodology, it is improbable to obtain an estimation in which total food and total non-food goods result as substitute or complementary commodities.

For the two major groups total food and total non-food to become substitute or independent commodities, it is necessary that the absolute value of the direct price elasticity of total food be greater or equal to their income-elasticity (Engel's aggregation $E_{aa} + E_{ao} = E_{ay}$) for in such a way cross price elasticity of total food will be greater or equal to 0.

In the same way, in order that direct price elasticity in absolute value be greater or equal to income elasticity, it is required that factor

$$K = W_a - \frac{1 - W_a E_{ay}}{\emptyset} \text{ be greater or equal to 1}$$

because

$$E_{aa} = - E_{ay} \left(W_a - \frac{1 - W_a E_{ay}}{\emptyset} \right) = - E_{ay} K$$

from this expression it is concluded that the higher the absolute value of money flexibility (as it is expected for poor countries) K becomes smaller, and the greater the expenditure proportion (W_1) total or the smaller the income-elasticity the less is K , therefore, in a poor country, and using the Frish methodology, it is probable that those two large groups result complementary.

In order to analyze the way in which the expenditure proportion of total, the income-elasticity and money flexibility affects so that the goods can be classified as substitute, independent or complementary, an analysis of the sensibility of K factor to the change in these variables was undertaken, the results appear in Tables 40 to 48.

1. The K factor is more sensitive to changes in money flexibility and expenditure proportion than to changes in income-elasticity.
2. If money flexibility is less than 1, in all cases, K is greater than one and commodities will be substitute.
3. For an income-elasticity of 0.60 and money flexibility of -1.55, an expenditure proportion on food of 0.60 is required for the commodities to become substitute (a value of 1.01 for K is obtained) i.e., it is required that 60% of total expenditure be dedicated to food. On the contrary, given a expenditure proportion of 0.4 and the flexibility of -1.55, it is required an income elasticity of 0.17 (which is a low income-elasticity for a poor country) in order that the commodities become independent ($K=1$).
4. Generally, it has been observed that with a flexibility of money equal to -1.10 in the majority of cases, the commodities are independent or substitute.

IV. METHODOLOGY

The present work was undertaken in two stages; first, the demand functions for different food products were estimated; second, to construct a full demand matrix the individually estimated parameters of demand were used, that is, a complete set of price and income - elasticities were derived for nine (9) food products. The technical basis for the construction of such matrix is the imposition of the implicit restrictions in the theory of consumers behavior. These restrictions compel the food demand matrix to be internally consistent, besides, they compel the whole of the products within the food group to be consistent with the aggregation total "food " and total " nonfood ".

1. Data

The necessary data to estimate the parameters of the demand functions of each food product is the amount consumed per capita, the price and the available income per capita. In this study the information from the " Encuesta de Ingresos, Gastos y Consumo de Alimentos en los Hogares de Honduras 1977-79 " was used. The selection of products was based on the proportion of homes that reported consumption of a specific product; nine products were chosen representing from 27% to 48% of total expenditure. The selected products for this paper are: corn, beans, rice, beef, pork, chicken, fish, eggs and milk.

For the estimation of the demand functions of each product the following equation was adjusted by means of Ordinary least square (OLS) .

$$q_{ih} = k + B_i (M_{ih}) + E_{11} P_1 + E_{12} P_2 + \dots + E_{1n} P_n$$

Where

q_{ih} = Natural logarithm of the amount per capita of the product i bought for the household h .

M_h = Natural logarithm of income per capita of household h .

P_j = Natural logarithm of price.

For basic grains, direct and cross price elasticities were estimated using above equation, for the rest of the products only direct price elasticities were estimated because the majority of households only reported the consumption of one product.

The results obtained from individual estimations of the demand functions, are presented in Tables 1 to 30. The analysis of results appears in Section II.

Estimations were made by grouping households according to their urbanization level in auto-represented (homes located in the major cities), other urban center groups and rural, and within each sector they were grouped according to income level and region.

2. Elasticities of full demand matrix

A matrix of price and income elasticity was constructed for each income level using the direct price and income elasticity estimated for each product, the expenditure proportion of each one of the products and the money flexibility that had been calculated in the report "Elasticities of consumption expenditures in Honduras" and has an approximate value of -1.55, as well as the restrictions imposed by theory of the consumers behavior.

Restrictions can be summarized in the following form:

a) Homogeneity Condition

$$E_{i1} + E_{i2} + \dots + E_{iy} = 0 \quad i_1 = 1, \dots, h$$

b) Symmetry Relation

$$E_{ij} = W_i E_{jj} - W_j (E_{iy} E_{jy})$$

c) Cournot Aggregation

$$W_j E_{1j} + W_2 E_{2j} + \dots + W_n E_{nj} = -W_j$$

d) Engel Aggregation

$$W_1 E_{1y} + W_2 E_{2y} + \dots + W_n E_{ny} = 1$$

e) Frish Equations

$$E_{ii} = E_{iy} \left(W_i - \frac{1 - W_i E_{iy}}{\theta} \right)$$

$$E_{ij} = - E_{iy} W_j \left(1 + \frac{E_{jy}}{\theta} \right)$$

3. Construction of the Full Demand Matrix

The above restrictions were utilized in the following manner to obtain the full demand elasticities matrix of food products by income level.

a) The direct-price and income elasticities of each one of the products were estimated as explained above, (direct estimation by ordinary least square (ols)) the expenditure proportions were obtained from the " Encuesta de Ingresos, Gastos y Consumo de Alimentos en los Hogares de Honduras , 1977-79 ".

- b) Income - elasticity for total food (E_{ay}) was calculated as a weighted average of the income-elasticities for individual food commodities. The weights being the expenditure proportions of expenditure in each product.

$$W_1 E_{1y} + W_2 E_{2y} + \dots + W_n E_{ny}$$

- c) Income-elasticity of total non-food (E_{oy}) was derived by using the Engel's aggregation condition.

$$E_{oy} = 1 - \frac{W_a E_{ay}}{W_o}$$

- d) Direct-price elasticity for total food and total non-food were calculated by the relation

$$E_{ii} = - E_{iy} \left(W_i - \frac{1 - W_i E_{iy}}{\emptyset} \right)$$

- e) Cross elasticity all food with respect to non-food prices is obtained using the homogeneity restraint

$$E_{ao} + E_{aa} + E_{ay} = 0$$

- f) Cross elasticity of non-food with respect to all food prices was estimated by the symmetry relation

$$E_{oa} = \frac{W_a}{W_o} - E_{ao} - W_a (E_{oy} - E_{ay})$$

- g) Cross elasticities showing the effects of non-food prices on consumption of individual food were estimated by the relation

$$E_{io} = - E_{iy} W_o \left(1 + \frac{E_{cy}}{\emptyset} \right)$$

- h) Cross elasticities showing the effects individual food prices on non-food quantity, were also derived through the symmetry relation.

$$E_{oj} = \frac{W_j}{W_o} E_{jo} - W_j (E_{oy} - E_{jy})$$

- i) Cross elasticities showing the effect of all food prices on the consumption of individual food was obtained through the homogeneity restraint.

$$E_{ia} + E_{io} + E_{iy} = 0$$

- j) Cross elasticity showing the effect of individual commodity prices on all food quantity was obtained by applying the cournot restriction.

$$E_{aj} = - \frac{W_j + W_o E_{oj}}{W_a}$$

- k) Cross elasticity showing the effect of individual commodity prices on the consumption of another commodity was obtained in the following manner :

By applying the homogeneity condition to a row we find that:

$$E_{il} + \text{---} + E_{in} + E_{iy} = 0$$

As direct price and income elasticities are known, then the sum of cross elasticities is:

$$E_{il} + \text{---} + E_{in} = - (E_{iy} + E_{ii}) S$$

Nominating this sum by S, the following step is the distribution of S among remaining products.

Cross elasticity in the row is obtained by the relation

$$E_{ij} = - E_{iy} W_j \left(1 + \frac{E_{jy}}{\theta} \right)$$

It is possible though, that the sum of cross-price elasticities obtained in this way will not add to S, therefore such elasticities ought to be adjusted in such a way their sum be equal to S. Thus, the cross-price elasticities are taken only as proportional to.

$$" E_{iy} W_j \left(1 + \frac{E_{ij}}{\theta} \right) "$$

To develop the full demand matrix we start with the first row and obtain all the elasticities in that row, using these data and the symmetry relationship, the elasticities of the first column were estimated. This process was - repeated until the matrix was completed.

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CUADRO No. 1

ELASTICIDADES INGRESO, PRECIO DIRECTAS Y CRUZADAS DE GRANOS BASICOS
SEGUN ESTRATO DE INGRESO

PRODUCTO: MAIZ

SECTOR: AUTO REPRESENTADOS

INGRESO	CAN - TIDAD	P R E C I O			INGRESO	R ²
		MAIZ	FRIJOL	ARROZ		
0 a 100	MAIZ	- .603 (.496)	- .846 (.411)	.590 (.639)	.246 (.142)	.820
100 a 300	"	- .392 (.076)	.133 (.097)	-.511 (.263)	.414 (.043)	.207
300 a 500	"	- .288 (.061)	.039 (.009)	-.211 (.169)	.570 (.047)	.220
500 a 1000	"	- .304 (.048)	.084 (.073)	.162 (.138)	.563 (.037)	.267
1000 y Más	"	- .316 (.068)	.176 (.114)	.200 (.166)	.237 (.039)	.110

22

CUADRO No. 2
ELASTICIDADES INGRESO, PRECIO DIRECTAS Y CRUZADAS DE GRANOS BASICOS
SEGUN ESTRATO DE INGRESO

PRODUCTO: FRIJOL

SECTOR: AUTO REPRESENTADOS

INGRESO	CAN - TIDAD	P R E C I O			INGRESO	R ²
		MAIZ	FRIJOL	ARROZ		
0 a 100	FRIJOL	- .393 (.228)	- 1.65 (.242)	2.658 (0.662)	.263 (.083)	.931
100 a 300	"	.108 (.086)	- .532 (.104)	-.378 (.259)	.374 (.049)	.138
300 a 500	"	- .124 (.058)	- .227 (.080)	-.434 (.241)	.456 (.043)	.184
500 a 1000	"	.099 (.053)	- .377 (.076)	- .154 (.136)	.555 (.041)	.221
1000 y Más	"	- .179 (.065)	- .449 (.096)	- .214 (.153)	.261 (.037)	.173

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CUADRO No. 3

ELASTICIDADES INGRESO, PRECIO DIRECTAS Y CRUZADAS DE GRANOS BASICOS
SEGUN ESTRATO DE INGRESO

PRODUCTO: ARROZ

SECTOR: AUTO REPRESENTADOS

INGRESO	CAN - TIDAD	P R E C I O			INGRESO	R ²
		MAIZ	FRIJOL	ARROZ		
0 a 100	ARROZ	-1.517 (.734)	.909 (.897)	-1.859 (1.433)	.668 (.278)	.577
100 a 300	"	-.139 (.097)	.331 (.122)	-.500 (.310)	.535 (.058)	.180
300 a 500	"	.080 (.075)	-.210 (.102)	-.594 (.194)	.557 (.054)	.150
500 a 1000	"	-.069 (.064)	-.174 (.095)	-.891 (.165)	.515 (.049)	.154
1000 y Más	"	-.238 (.075)	-.406 (.116)	-.716 (.145)	.312 (.041)	.198

CUADRO No. 4

ELASTICIDADES PRECIO E INGRESO SEGUN ESTRATO DE INGRESO

SECTOR: AUTO REPRESENTADOS

ESTRATO DE INGRESO	C E R D O			R E S			P O L L O		
	PRECIO	INGRESO	R ²	PRECIO	INGRESO	R ²	PRECIO	INGRESO	R ²
0 a 100	---	---	---	- 1.126 (.433)	1.164 (.198)	.788	---	---	---
100 a 300	- .726 (.142)	.983 (.092)	.405	- .594 (.097)	1.027 (.060)	.410	- .238 (.127)	.932 (.108)	.337
300 a 500	- .558 (.103)	1.007 (.075)	.345	- .791 (.098)	.823 (.061)	.260	- .952 (.080)	.992 (.078)	.332
500 a 1000	- .997 (.130)	.821 (.064)	.288	- .670 (.096)	.761 (.048)	.255	- .114 (.058)	.783 (.055)	.298
1000 y Más	- .988 (.144)	.543 (.056)	.258	- .367 (.122)	.451 (.043)	.158	- .404 (.061)	.775 (.061)	.290

CUADRO No. 5

ELASTICIDADES PRECIO E INGRESO SEGUN ESTRATO DE INGRESO

SECTOR: AUTO REPRESENTADOS

ESTRATO DE INGRESO	P E S C A D O			H U E V O			L E C H E		
	PRECIO	INGRESO	R ²	PRECIO	INGRESO	R ²	PRECIO	INGRESO	R ²
0 a 100	-	-	-	- 2.493 (1.916)	1.071 (.234)	.684	-	-	-
100 a 300	- .265 (.240)	.878 (.159)	.357	- .886 (.310)	.735 (.060)	.254	- .971 (.328)	.865 (.110)	.258
300 a 500	- .507 (.125)	.837 (.110)	.419	- .965 (.232)	.703 (.057)	.207	- .668 (.272)	1.004 (.119)	.222
500 a 1000	- .554 (.105)	.698 (.098)	.324	- .789 (.140)	.660 (.047)	.213	-1.536 (.220)	.738 (.106)	.246
1000 y Más	- .663 (.094)	.584 (.084)	.405	- .985 (.121)	.284 (.038)	.152	- .961 (.321)	.458 (.102)	.128

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CUACRO No. 6
ELASTICIDADES INGRESO, PRECIO DIRECTAS Y CRUZADAS DE GRANOS BASICOS
SEGUN ESTRATO DE INGRESO

PRODUCTO: MAIZ

SECTOR : RESTO URBANO

INGRESO	CAN - TIDAD	P R E C I O			INGRESO	R ²		
		MAIZ	FRIJOL	ARROZ				
0	a	100	MAIZ	- .692 (.23)	- .274 (.275)	- .597 (.501)	.321 (.111)	.342
100	a	300	"	- .328 (.071)	.170 (.088)	- .865 (.247)	.577 (.039)	.359
300	a	500	"	- .215 (.092)	.140 (.127)	- .392 (.360)	.652 (.058)	.345
500	a	1000	"	- .172 (.089)	.248 (.140)	- .703 (.455)	.54 (.057)	.363
1000	y	Más	"	- .324 (.229)	.399 (.336)	-1.116 (1.00)	.408 (.109)	.422

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CUADRO No. 7

ELASTICIDADES INGRESO, PRECIO DIRECTAS Y CRUZADAS DE GRANOS BASICOS
SEGUN ESTRATO DE INGRESO

PRODUCTO: FRIJOL

SECTOR : RESTO URBANO

INGRESO	CAN - TIDAD	P R E C I O			INGRESO	R ²
		MAIZ	FRIJOL	ARROZ		
0 a 100	FRIJOL	.996 (.252)	- 1.904 (.309)	3.73 (1.429)	.513 (.127)	.377
100 a 300	"	-.102 (.095)	- .277 (.109)	- .305 (.311)	.481 (.048)	.183
300 a 500	"	.132 (.107)	- .385 (.148)	.419 (.438)	.283 (.075)	.085
500 a 1000	"	.216 (.160)	- .328 (.199)	.919 (.612)	.489 (.085)	.168
> 1000	"	-0.26 (.236)	- .509 (.373)	1.19 (.835)	0.232 (.111)	.224

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CUADRO No. 8

ELASTICIDADES INGRESO, PRECIO DIRECTAS Y CRUZADAS DE GRANOS BASICCS
SEGUN ESTRATO DE INGRESOS

PRODUCTO: ARROZ

SECTOR: RESTO URBANO

INGRESO	CAN - TIDAD	P R E C I O			INGRESO	R ²
		MAIZ	FRIJOL	ARROZ		
0 a 100	ARROZ	- .314 (.325)	- .488 (.404)	- 2.417 (1.430)	.284 (.214)	.360
100 a 300	"	- .117 (.110)	- .131 (.139)	- .472 (.373)	.524 (.063)	.171
300 a 500	"	.146 (.148)	.268 (.196)	- 1.200 (.549)	.608 (.087)	.165
500 a 1000	"	.159 (.168)	-.315 (.271)	- 2.237 (.812)	.587 (.102)	.177
1000 y Más	"	.296 (.305)	.709 (.519)	- 1.432 (.506)	.444 (.132)	.305

CUADRO No. 9

ELASTICIDADES PRECIO E INGRESO SEGUN ESTRATO DE INGRESO

SECTOR: RESTO URBANO

ESTRATO DE INGRESO	C E R D O			R E S			P O L L O		
	PRECIO	INGRESO	R ²	PRECIO	INGRESO	R ²	PRECIO	INGRESO	R ²
0 a 100	-	-	-	-.739 (.343)	.963 (.177)	.608	-.162 (.208)	1.754 (.243)	.936
100 a 300	-.401 (.141)	.917 (.098)	.357	-.367 (.098)	.967 (.074)	.350	-.281 (.131)	.339 (.199)	.217
300 a 500	-1.345 (.234)	.870 (.111)	.396	-.706 (.141)	.813 (.090)	.282	-.178 (.125)	.960 (.108)	.458
500 a 1000	-.870 (.256)	.784 (.140)	.228	-.544 (.211)	.937 (.110)	.267	-.150 (.144)	.964 (.146)	.317
1000 y Más	-.829 (.566)	.239 (.172)	.084	-.632 (.479)	.559 (.146)	.195	-.367 (.180)	.761 (.159)	.415

CUADRO No.10

ELASTICIDADES PRECIO E INGRESO SEGUN ESTRATO DE INGRESO

SECTOR: RESTO URBANO

ESTRATO DE INGRESO	P E S C A D O			H U E V O S			L E C H E		
	PRECIO	INGRESO	R ²	PRECIO	INGRESO	R ²	PRECIO	INGRESO	R ²
0 a 100	-	-	-	-.731 (.710)	.729 (.154)	.332	- 1.516 (.740)	1.222 (.208)	.521
100 a 300	-.398 (.223)	1.087 (.221)	.350	-1.238 (.314)	.864 (.069)	.311	- 1.192 (.321)	.809 (.109)	.196
300 a 500	-.529 (.519)	.892 (.251)	.282	-.970 (.287)	.782 (.100)	.242	- .690 (.419)	1.058 (.164)	.200
500 a 1000	-.687 (.177)	1.105 (.367)	.477	-1.126 (.479)	.873 (.109)	.280	- .533 (.399)	1.103 (.142)	.310
1000 y Más	-2.952 (1.265)	.372 (.334)	.465	-1.204 (.710)	.576 (.139)	.249	-1.724 (.838)	.522 (.185)	.248

CUADRO No. 11

ELASTICIDADES INGRESO, PRECIO DIRECTAS Y CRUZADAS DE GRANOS BASICOS
SEGUN ESTRATO DE INGRESO

PRODUCTO: MAIZ

SECTOR: RURAL

INGRESO	CAN - TIDAD	P R E C I O			INGRESO	R ²
		MAIZ	FRIJOL	ARROZ		
0 a 100	MAIZ	- .109 (.075)	- .117 (.079)	- .243 (.199)	.695 (.047)	.472
100 a 300	"	.077 (.048)	.084 (.056)	.248 (.162)	.490 (.034)	.257
300 a 500	"	- .326 (.090)	- .161 (.148)	-1.03 (.652)	.631 (.079)	.434
500 a 1000	"	- .348 (.315)	-1.08 (.561)	- .715 (1.184)	.704 (.261)	.556

AG

CUADRO No.12

ELASTICIDADES INGRESO, PRECIO DIRECTAS Y CRUZADAS DE GRANOS BASICOS
SEGUN ESTRATO DE INGRESO

PRODUCTO: FRIJOL

SECTOR: RURAL

INGRESO	CAN - TIDAD	P R E C I O			INGRESO	R ²
		MAIZ	FRIJOL	ARROZ		
0 a 100	FRIJOL	-0.077 (.079)	- .217 (.082)	- .386 (.266)	.476 (.052)	.272
100 a 300	"	- .082 (.054)	- .082 (.062)	- .261 (.148)	.505 (.037)	.224
300 a 500	"	- .149 (.108)	- .168 (.148)	- .858 (.674)	.552 (.079)	.352
500 a 1000	"	- .368 (.206)	- .401 (.386)	1.259 (1.043)	.234 (.185)	.694

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CUADRO No. 13

ELASTICIDADES INGRESO, PRECIO DIRECTAS Y CRUZADAS DE GRANOS BASICOS
SEGUN ESTRATO DE INGRESO

PRODUCTO: APROZ

SECTOR: RURAL

INGRESO	CAN - TIDAD	P R E C I O			INGRESO	R ²	
		MAIZ	FRIJOL	ARROZ			
0	a 100	ARROZ	- .245 (.134)	- .362 (.176)	- .244 (.245)	.815 (.075)	.473
100	a 300	"	.065 (.069)	- .141 (.086)	- .649 (.169)	.637 (.045)	.289
300	a 500	"	- .264 (.207)	.405 (.280)	-1.582 (1.123)	.484 (.139)	.193
500	a 1000	"	- .791 (.310)	.851 (.527)	-2.729 (1.583)	.508 (.263)	.457

ELASTICIDADES DEL P.C.I. E INGRESO SEGUN ESTRATO DE INGRESO

SECTOR: RURAL

ESTRATO DE INGRESO	H U E V O S			L E C H E		
	PRECIO	INGRESO	R ²	PRECIO	INGRESO	R ²
0 a 100	- .647 (.409)	.613 (.102)	.248	-1.623 (.498)	1.268 (.371)	.590
100 a 300	- .689 (.109)	.512 (.066)	.147	-1.001 (.520)	.763 (.166)	.167
300 a 500	-1.517 (.327)	.601 (.148)	.292	-1.801 (.684)	.713 (.322)	.263
500 a 1000	-.998 (.542)	1.218 (.283)	.922	-1.793 (1.215)	.734 (.720)	.180

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ELASTICIDADES INGRESO, PRECIO DIRECTAS Y CRUZADAS DE GRANOS BASICOS

SEGUN REGION

PRODUCTO: MAIZ

SECTOR: AUTO REPRESENTADOS

REGION	CAN - TIDAD	P R E C I O			INGRESO	R ²
		MAIZ	FRIJOL	ARROZ		
SANTA ROSA	MAIZ	- .262 (.148)	.087 (.182)	.533 (.481)	.152 (.041)	.097
SAN PEDRO SULA	"	- .393 (.076)	.108 (.105)	-.189 (.281)	.138 (.031)	.071
COMAYAGUA	"	- .381 (.137)	.305 (.206)	-1.062 (.437)	.251 (.053)	.213
TEGUCIGALPA	"	- .336 (.042)	.096 (.079)	.146 (.143)	.067 (.023)	.090
CHOLUTECA	"	- .124 (.107)	.076 (.142)	-1.823 (.568)	.141 (.042)	.117
JUTICALPA	"	- .158 (.115)	-0.050 (.147)	.441 (.422)	.102 (.038)	.054
CEIBA	"	-1.415 (.245)	.597 (.289)	.960 (.948)	.342 (.081)	.310
DANLI	"	- .092 (.086)	.249 (.225)	-.193 (.277)	.159 (.053)	.060

SEGUN REGION

PRODUCTO: FRIJOL

SECTOR: AUTO REPRESENTADOS

REGION	CAN - TIDAD	P R E C I O			INGRESO	R ²
		MAIZ	FRIJOL	ARROZ		
SANTA ROSA	FRIJOL	.598 (.167)	- .928 (.203)	- .669 (.533)	.089 (.050)	.129
SAN PEDRO SULA	"	.126 (.081)	-.134 (.104)	.248 (.234)	.206 (.035)	.066
COMAYAGUA	"	-.163 (.138)	- .320 (.200)	- .668 (.375)	.222 (.052)	.159
TEGUCIGALPA	"	-.055 (.051)	- .454 (.092)	- .203 (.148)	.185 (.029)	.088
CHOLUTECA	"	.140 (.120)	- .325 (.166)	- .859 (.658)	.112 (.051)	.061
JUTICALPA	"	.181 (.124)	- .193 (.148)	- .385 (.246)	.139 (.038)	.096
CEIBA	"	-.364 (.222)	- .424 (.240)	-1.185 (.740)	.096 (.068)	.086
DANLI	"	-.185 (.106)	- .336 (.257)	- .719 (.440)	.085 (.061)	.054

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ELASTICIDADES INGRESO, PRECIO DIRECTAS Y CRUZADAS DE GRANOS BASICOS

SEGUN REGION

PRODUCTO: APOZ

SECTOR: AUTO REPRESENTADOS

REGION	CAN - TIDAD	P R E C I O			INGRESO	R ²
		MAIZ	FRIJOL	ARROZ		
SANTA ROSA	ARROZ	- .373 (.177)	- .342 (.202)	- .496 (.391)	- .157 (.055)	.142
SAN PEDRO SULA	"	- .088 (.085)	- .388 (.112)	-1.008 (.246)	.271 (.034)	.136
COMAYAGUA	"	- .298 (.181)	.664 (.259)	- .585 (.490)	.510 (.069)	.298
TEGUCIGALPA	"	- .074 (.056)	-.145 (.095)	- .611 (.137)	.279 (.032)	.116
CHOLUTECA	"	.171 (.131)	-.265 (.171)	-1.411 (1.243)	.289 (.053)	.180
JUTICALPA	"	.277 (.128)	.175 (.162)	- .917 (.161)	.251 (.041)	.309
CEIBA	"	- .225 (.193)	.394 (.199)	- .983 (.626)	.095 (.056)	.063
DANLI	"	- .175 (.133)	- .845 (.304)	- .714 (.466)	.307 (.071)	.175

CUADRO No. 19

ELASTICIDADES PRECIO E INGRESO SEGUN REGION

SECTOR: AUTO REPRESENTADOS

REGION	C E R D O			R E S			P O L L O		
	PRECIO	INGRESO	R ²	PRECIO	INGRESO	R ²	PRECIO	INGRESO	R ²
SANTA ROSA	- .336 (.325)	.746 (.095)	.510	- .763 (.221)	.659 (.067)	.403	- .212 (.131)	.639 (.097)	.376
SAN PEDRO SULA	-1.327 (.124)	.604 (.047)	.378	- .577 (.097)	.619 (.036)	.309	- .204 (.071)	.654 (.066)	.241
COMAYAGUA	- .904 (.304)	1.102 (.130)	.501	- .680 (.195)	.748 (.082)	.376	- .362 (.164)	.783 (.127)	.383
TEGUCIGALPA	- .682 (.105)	.528 (.039)	.275	- .426 (.103)	.577 (.031)	.290	- .371 (.056)	.769 (.052)	.364
CHOLUTECA	- .335 (.236)	.560 (.115)	.196	- .711 (.174)	.696 (.078)	.339	- .599 (.142)	.848 (.144)	.312
JUTICALPA	- .264 (.228)	.471 (.090)	.215	- .913 (.195)	.613 (.060)	.402	- .166 (.151)	.475 (.141)	.242
CEIBA	-1.631 (.502)	.598 (.078)	.327	- .317 (.258)	.472 (.062)	.249	- .403 (.135)	.932 (.132)	.412
DANLI	- .693 (.419)	.854 (.129)	.385	- .618 (.216)	.762 (.094)	.283	- .552 (.219)	.608 (.212)	.172

ELASTICIDADES PRECIO E INGRESO SEGUN REGION

SECTOR: AUTO REPRESENTADOS

REGION	PESCADO			HUEVOS			L E C H E		
	PRECIO	INGRESO	R ²	PRECIO	INGRESO	R ²	PRECIO	INGRESO	R ²
SANTA ROSA	-.513 (.498)	.641 (.332)	.322	-.963 (.614)	.457 (.061)	.301	-.669 (.563)	.704 (.078)	.382
SAN PEDRO SULA	-.449 (.094)	.436 (.055)	.370	-.796 (.128)	.410 (.035)	.183	-1.851 (.307)	.610 (.091)	.292
COMAYAGUA	-.991 (.530)	1.061 (.292)	.472	-.804 (.589)	.655 (.087)	.323	-1.096 (.814)	.628 (.129)	.258
TEGUCIGALPA	-.789 (.080)	.532 (.054)	.536	-.972 (.145)	.362 (.026)	.222	-2.140 (.700)	.661 (.122)	.240
CHOLUTECA	-.638 (.245)	.799 (.133)	.472	-.920 (.730)	.643 (.065)	.378	-1.239 (.954)	.523 (.130)	.167
JUTICALPA	-	-	-	-1.848 (.947)	.520 (.072)	.250	-.472 (.427)	.491 (.077)	.218
CEIBA	-.423 (.397)	.386 (.142)	.113	-1.334 (.578)	.607 (.075)	.326	-1.093 (.756)	.385 (.166)	.112
DANLI	-	-	-	-2.396 (1.218)	.293 (.080)	.089	-.750 (.553)	.978 (.155)	.329

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ELASTICIDADES INGRESO, PRECIO DIRECTAS Y CRUZADAS DE GRANOS BASICOS
SEGUN REGION

PRODUCTO: FRIJOL
SECTOR: RESTO URBANO

REGION	CAN - TIDAD	P R E C I O			INGRESO	R ²
		MAIZ	FRIJOL	ARROZ		
OCCIDENTE	FRIJOL	.524 (.129)	- .510 (.150)	-.649 (.516)	.145 (.047)	.155
NORTE	"	.472 (.186)	- .927 (.643)	1.030 (.810)	.111 (.081)	.084
CENTRAL	"	-.293 (.200)	- .514 (.344)	-1.494 (.596)	.223 (.073)	.117
ORIENTAL	"	-.272 (.144)	- .239 (.151)	.714 (.459)	.122 (.051)	.084
SUR	"	-.189 (.101)	- .703 (.229)	.836 (.510)	.250 (.046)	.205
OLANCHO	"	-.154 (.141)	- .185 (.158)	-.560 (.669)	.194 (.051)	.085

CUADRO No. 23

ELASTICIDADES INGRESO, PRECIO DIRECTAS Y CRUZADAS DE GRANOS BASICOS
SEGUN REGION

PRODUCTO: ABE 2

SECTOR: RESTO URBANO

REGION	CAN - TIDAD	P R E C I O			INGRESO	R ²
		MAIZ	FRIJOL	ARROZ		
OCCIDENTE	ARROZ	- .164 (.165)	- .331 (.181)	- .651 (.621)	.166 (.071)	.105
NORTE	"	- .241 (.166)	.393 (.198)	-1.348 (.784)	.161 (.050)	.214
CENTRAL	"	- .368 (.208)	- .433 (.308)	- .724 (.656)	.384 (.081)	.159
ORIENTAL	"	- .180 (.160)	.295 (.186)	-2.105 (.592)	.194 (.060)	.129
SUR	"	.144 (.146)	.283 (.283)	- .654 (.494)	.557 (.059)	.345
OLANCHO	"	- .417 (.163)	- .238 (.177)	- .918 (.349)	.297 (.057)	.188

CUADRO No. 24

ELASTICIDADES PRECIO E INGRESO SEGUN REGION

SECTOR: RESTO URBANO

REGION	C E R D O			R E S			P O L L O		
	PRECIO	INGRESO	R ²	PRECIO	INGRESO	R ²	PRECIO	INGRESO	R ²
OCCIDENTE	-.380 (.360)	.297 (.206)	.148	-.607 (.252)	.519 (.088)	.348	-.221 (.221)	.424 (.174)	.252
NORTE	-1.259 (.266)	.563 (.073)	.378	-.348 (.174)	.767 (.068)	.441	-.145 (.122)	.597 (.099)	.360
CENTRAL	-1.260 (.356)	.530 (.134)	.271	-.569 (.178)	.743 (.090)	.357	-.266 (.164)	.894 (.170)	.381
ORIENTAL	-1.030 (.297)	.875 (.103)	.476	-.328 (.164)	.741 (.084)	.329	-.516 (.201)	.908 (.202)	.376
SUR	-.453 (.218)	.640 (.099)	.305	-.636 (.184)	.735 (.072)	.405	-.246 (.174)	.656 (.123)	.312
OLANCHO	-1.553 (.355)	.512 (.116)	.273	-.619 (.206)	.604 (.083)	.233	-.271 (.200)	.572 (.165)	.255

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CUADRO No. 25

ELASTICIDADES PRECIO E INGRESO SEGUN REGION

SECTOR: FESTO URBANO

REGION	PESCADO			HUEVOS			L E C H E		
	PRECIO	INGRESO	R ²	PRECIO	INGRESO	R ²	PRECIO	INGRESO	R ²
OCCIDENTE	-	-	-	- .585 (.280)	.639 (.072)	.370	- .790 (.419)	.610 (.096)	.300
NORTE	- .740 (.496)	.541 (.167)	.256	-2.386 (.819)	.468 (.065)	.226	-1.738 (1.055)	.732 (.142)	.238
CENTRAL	-	-	-	-1.773 (.528)	.510 (.082)	.279	-2.226 (.535)	.609 (.147)	.276
ORIENTAL	-	-	-	-1.212 (.951)	.508 (.079)	.241	-1.027 (.454)	.697 (.106)	.247
SUR	- .829 (.178)	.678 (.115)	.427	- .688 (.496)	.687 (.067)	.405	- .953 (.613)	.507 (.092)	.237
OLANCHO	-	-	-	-1.079 (.869)	.671 (.108)	.216	-1.099 (.482)	.561 (.136)	.144

CUADRO NO. 26

ELASTICIDADES INGRESO, PRECIO DIRECTAS Y CRUZADAS DE GRANOS BASICOS
SEGUN REGION

PRODUCTO: MAIZ

SECTOR: RURAL

REGION	CAN - TIDAD	P R E C I O			INGRESO	R ²
		MAIZ	FRIJOL	ARROZ		
OCCIDENTE	MAIZ	- .166 (.142)	.068 (.140)	.568 (.707)	.239 (.064)	.097
NORTE	"	- .313 (.156)	.341 (.232)	.803 (.511)	.388 (.064)	.217
CENTRAL	"	- .438 (.189)	.253 (.133)	-.428 (.493)	.106 (.044)	.132
ORIENTAL	"	- .175 (.106)	.181 (.114)	-.313 (.272)	.454 (.063)	.285
SUR	"	- .222 (.117)	.564 (.207)	-.531 (1.448)	.321 (.057)	.272
OLANCHO	"	- .161 (.098)	-.090 (.111)	-.440 (.250)	.175 (.046)	.189
LITORAL ATLANTICO	"	- .571 (.128)	-.210 (.153)	.699 (.702)	.326 (.102)	.197

CUADRO No. 27

EFECTOS DE LAS IMPUESTOS, PRECIO DIRECTAS Y CRUZADAS DE GRANOS BASICOS
SEGUN REGION

PRODUCTO: FRIJOL

SECTOR: RURAL

REGION	CAN - TIDAD	P R E C I O			INGRESO	R ²
		MAIZ	FRIJOL	ARROZ		
OCCIDENTE	FRIJOL	.184 (.137)	- .208 (.131)	- .494 (.399)	.193 (.079)	.077
NORTE	"	-.158 (.138)	- .322 (.217)	.577 (.435)	.247 (.056)	.157
CENTRAL	"	-.242 (.170)	- .186 (.184)	- .885 (.510)	.236 (.057)	.143
ORIENTE	"	-.260 (.130)	- .284 (.178)	.569 (.539)	.369 (.087)	.135
SUR	"	-.181 (.134)	- .277 (.193)	- .664 (.810)	.150 (.056)	.088
OLANCHO	"	-.360 (.147)	- .169 (.130)	- .504 (.292)	.317 (.066)	.204
LITORAL ATLANTICO	"	-.222 (.114)	- .386 (.134)	- .921 (.781)	.317 (.086)	.168

ELASTICIDADES PRECIO E INGRESO SEGUN REGION

SECTOR RURAL

REGION	H U E V O S			L E C H E		
	PRECIO	INGRESO	R ²	PRECIO	INGRESO	R ²
OCCIDENTE	- .268 (.263)	.452 (.156)	.187	-1.540 (.505)	1.241 (.327)	.476
NORTE	- .632 (.515)	.465 (.156)	.119	- .896 (.772)	.631 (.200)	.165
CENTRAL	- .682 (.245)	.496 (.068)	.275	- . -	- . -	- . -
ORIENTAL	-1.074 (.694)	.298 (.221)	.087	- . -	- . -	- . -
SUR	-1.014 (.289)	.601 (.071)	.327	- .932 (.674)	.553 (.141)	.236
OLANCHO	- .722 (.135)	.324 (.078)	.211	-2.801 (2.092)	.692 (.327)	.423
LITORAL ATLANTICO	- .805 (.213)	.532 (.148)	.267	-1.644 (.946)	.329 (.312)	.110

CUADRO No. 30

ELASTICIDADES PRECIO E INGRESO SEGUN REGION

SECTOR: RURAL

REGION	C E R D O			R E S		
	PRECIO	INGRESO	R ²	PRECIO	INGRESO	R ²
OCCIDENTE	--	--	--	--	--	--
NORTE	- .482 (.305)	.767 (.129)	.379	- .239 (.205)	.467 (.109)	.215
CENTRAL	- .894 (.466)	.600 (.189)	.608	-1.037 (.376)	.726 (.118)	.693
ORIENTAL	- .624 (.478)	.651 (.456)	.216	- .359 (.193)	.896 (.137)	.439
SUR	- .925 (.472)	.895 (.350)	.374	-1.549 (.408)	.577 (.172)	.496
OLANCHO	- .402 (.292)	.636 (.090)	.478	-1.808 (.862)	.702 (.220)	.417
LITORAL ATLANTICO	-1.292 (1.131)	.559 (.422)	.390	- .937 (.529)	.430 (.158)	.125

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CUADRO No. 11
 MATRIZ DE ELASTICIDADES DE LA DEMANDA
 DE LOS PRINCIPALES PRODUCTOS ALIMENTICIOS

SECTOR: AUTO REPRESENTADOS

Estrato de 100 < 300

PRODUCTO	MAIZ	FRIJOL	ARROZ	RES	CERDO	POLLO	PESCADO	HUEVOS	LECHE	TODOS ALIMENTOS	NO ALIMENTOS	E _{iy}
MAIZ	- .392	.01069	.00759	.00379	.00389	.00449	.00449	.00489	.00009	- .3521	- .0619	.414
FRIJOL	.0244	- .532	.0301	.0268	.0268	.0274	.0274	.0277	.0233	- .3181	- .0559	.374
ARROZ	.0069	.0272	.500	- .1651	- .1651	- .1660	- .1660	- .1656	- .1603	- .4550	- .0800	.535
RES	- .0439	- .0025	- .1542	- .594	- .0165	- .0181	- .0181	- .0191	- .0071	- .8735	- .1535	1.027
CERDO	- .0395	.0012	- .1629	- .0158	- .726	.0292	.0291	.0301	.0186	- .8360	- .1470	.983
POLLO	- .0342	.0035	- .1597	- .0149	.0309	- .238	- .1297	- .1308	- .1198	- .7927	- .1393	.932
PESCADO	- .0289	.0083	- .1711	- .0142	.0357	- .1394	- .265	- .0911	- .0810	- .7467	- .1313	.878
HUEVOS	- .0147	.0190	- .1892	- .0121	.0475	- .1550	- .0986	- .886	.6640	- .6251	- .1099	.735
TODOS ALIMENTOS	- .1015	- .0495	- .0511	- .0897	- .0811	- .0796	- .0702	- .0554	- .0253	- .7357	- .1293	.865
NO ALIMENTOS	- .0717	- .0376	- .0287	- .0180	- .0181	- .0200	- .0199	- .0211	- .0074	- .603	- .106	.709
W _i	.0830	.0421	.0372	.0452	.0420	.0426	.0390	.0341	.0142	- .243	- .935	1.178
										.3794	.6206	

FUENTE: Elaborado por el Proyecto Agrícola Nutricional.

CUADRO No. 32
 MATRIZ DE ELASTICIDADES DE LA DEMANDA
 DE LOS PRINCIPALES PRODUCTOS ALIMENTICIOS

SECTOR: AUTO REPRESENTADOS

Estrato de 300 < 500

PRODUCTO	MAIZ	FRIJOL	ARROZ	RES	CERDO	POLLO	PESCADO	HUEVOS	LECHE	TODOS ALIMENTOS	NO ALIMENTOS	E _{iy}
MAIZ	- .288	- .0238	- .0232	- .0267	- .0186	- .0187	- .0181	- .0208	- .0147	- .4526	- .1174	.570
FRIJOL	- .0408	- .227	- .0159	- .0188	- .0122	- .0123	- .0118	- .0141	- .0092	- .3621	- .0939	.456
ARROZ	- .0435	- .0181	- .594	.0425	.0345	.0347	.0341	.0367	.0308	- .4423	- .1147	.557
RES	- .0422	- .0203	.0156	- .791	.0374	.0377	.0367	.0407	.0319	- .6535	- .1695	.823
CERDO	- .0591	- .0270	.0205	.0565	- .558	- .0593	- .0581	- .0629	- .0522	- .7996	- .2074	1.007
POLLO	- .0584	- .0267	.0211	.0579	- .0588	- .952	.0768	.0815	.0709	- .7877	- .2043	.992
PESCADO	- .0631	- .0266	.0394	.0922	- .0799	.1144	- .507	- .1215	- .1126	- .6647	- .1723	.837
HUEVOS	- .0589	- .0219	.0361	.0878	- .0618	.1006	- .0931	- .965	.418	- .5582	- .1448	.703
LECHE	- .1003	- .0395	.0705	.1475	- .1449	.1966	- .2224	1.0215	- .668	- .7973	- .2067	1.004
TODOS ALIMENTOS	- .0985	- .0440	- .0509	- .1179	- .0764	- .0754	- .0471	- .0532	- .0273	- .590	- .153	.743
NO ALIMENTOS	- .0389	- .0219	- .0207	- .0274	- .0115	- .0119	- .0106	- .0160	- .0042	- .163	- .939	1.102
W _i	.0559	.0282	.0293	.0532	.0300	.0300	.0210	.0266	.0108	.2850	.7150	

FUENTE: Elaborado por el Proyecto Agrícola Nutricional.

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CUADRO No. 33
 MATRIZ DE ELASTICIDADES DE LA DEMANDA
 DE LOS PRINCIPALES PRODUCTOS ALIMENTICIOS

Estrato de 500 < 1000

SECTOR: AUTO REPRESENTADOS

PRODUCTO	MAIZ	FRIJOL	ARROZ	RES	CERDO	POLLO	PESCADO	HUEVOS	LECHE	TODOS ALIMENTOS	NO ALIMENTOS	E _{iy}
MAIZ	- .304	- .0153	- .0161	- .0221	- .0154	- .0147	- .0145	- .0155	- .0115	- .4291	- .1339	.563
FRIJOL	- .0296	- .377	- .0027	- .0086	- .0021	- .0015	- .0012	- .0022	.0019	- .4230	- .1320	.555
ARROZ	- .0276	- .0018	- .891	.0939	.0878	.0872	.0870	.0879	.0841	- .3925	- .1225	.515
RES	- .0235	- .0070	.0343	- .670	.0187	.0179	.0175	.0189	.0131	- .5801	- .1809	.761
CERDO	- .0308	- .0062	.0625	.0323	- .997	.0794	.0791	.0805	.0744	- .6258	- .1952	.821
POLLO	- .0318	- .0051	.0738	.0380	.0932	- .114	- .2179	- .2194	- .2136	- .5968	- .1862	.783
PESCADO	- .0325	- .0037	.0883	.0474	.1102	- .2524	- .554	.0349	.0298	- .5320	- .1660	.698
HUEVOS	- .0298	- .0038	.0795	.0473	.1007	- .2244	.0316	- .789	.2848	- .5031	- .1569	.660
LECHE	- .0539	- .0001	.1807	.0687	.2120	- .5216	.0608	.6698	-1.536	- .6040	- .1790	.783
TODOS ALIMENTOS	- .0750	- .0381	- .0386	- .1232	- .0693	- .0576	- .0456	- .0490	- .0241	- .5206	- .1624	.683
NO ALIMENTOS	- .0239	- .0123	- .0138	- .0253	- .0125	- .0113	- .0107	- .0127	- .0045	- .1270	- .9570	1.084
W _i	.0346	.0177	.0190	.0458	.0244	.0210	.0180	.0203	.0086	.2094	.7906	

FUENTE: Elaborado por el Proyecto Agrícola Nutricional.

CUADRO No. 34

MATRIZ DE ELASTICIDADES DE LA DEMANDA
DE LOS PRINCIPALES PRODUCTOS ALIMENTICIOS

Estrato de 100 < 300

SECTOR: RESTO URBANO

PRODUCTO	MAIZ	FRIJOL	ARROZ	RES	CERDO	POLLO	PESCADO	HUEVOS	LECHE	TODOS ALIMENTOS	NO ALIMENTOS	E_{iy}
MAIZ	- .328	- .1766	- .1683	- .1644	- .1668	- .1656	- .1610	- .1615	- .1601	-1.6523	1.0753	.577
FRIJOL	- .3426	- .2770	- .1119	- .1086	- .1106	- .1096	- .1058	- .1062	- .1050	-1.3774	.8964	.481
ARROZ	- .5142	- .1752	- .4720	- .0575	- .0597	- .0587	- .0545	- .0550	- .0537	-1.5005	.9765	.524
RES	- .4511	- .1616	- .0620	- .3670	- .3505	- .3485	- .3473	- .3416	- .3393	-2.7691	1.8021	.967
CERDO	- .3972	- .1432	- .0557	- .3022	- .4010	- .3373	- .3300	- .3307	- .3286	-2.6260	1.7090	.917
POLLO	- .7328	- .2433	- .0805	- .6154	- .6873	- .2810	.5566	.5569	.5561	- .9708	.6318	.339
PESCADO	- .5480	- .1950	- .0739	- .4327	- .4762	.3527	- .3980	- .6721	- .6695	-3.1128	2.0258	1.087
HUEVOS	- .7096	- .2440	- .0868	- .5730	- .6410	.4975	- .9155	- .1238	.3220	-2.4742	1.6102	.864
LECHE	- .9380	- .3173	- .1092	- .7718	- .8628	.6802	-1.2388	.4386	- .1192	-2.3167	1.5077	.809
TODOS ALIMENTOS	- .4670	- .2011	- .1395	- .2941	- .3232	- .0668	- .2655	- .1573	- .1094	- .6100	1.3163	.7063
NO ALIMENTOS	.1294	.0430	.0341	.1232	.1313	.0047	.1179	.0617	.0411	.6857	- .9354	1.1969
Wi	.1100	.0550	.0356	.0443	.0510	.0240	.0360	.0262	.0193	.4014	.5986	

FUENTE: Elaborado por el Proyecto Agrícola Nutricional.

CRUADRO No. 35
 MATRIZ DE ELASTICIDADES DE LA DEMANDA
 DE LOS PRINCIPALES PRODUCTOS ALIMENTICIOS

Estrato de 300 < 500

SECTOR: RESTO URBANO

PRODUCTO	MAIZ	FRIJOL	ARROZ	RES	CERDO	POLLO	PESCADO	HUEVOS	LECHE	TODOS ALIMENTOS	NO ALIMENTOS	E _i
MAIZ	- .215	- .0471	- .0403	- .0434	- .0399	- .0352	- .0380	- .0359	- .0326	- .5274	- .1246	.652
FRIJOL	- .0696	- .385	.0333	.0346	.0331	.0311	.0323	.0314	.0299	- .2289	- .0541	.283
ARROZ	- .0900	.0275	-1.200	.1236	.1268	.1312	.1286	.1306	.1299	- .4918	- .1162	.608
RES	- .0723	.0068	.0700	- .706	.0133	.0074	.0108	.0082	.0042	- .6576	- .1554	.813
CERDO	- .0828	.0087	.0864	.0134	-1.345	.1536	.1574	.1545	.1501	- .7037	- .1663	.870
POLLO	- .1119	.0176	.1373	.0066	.2293	- .178	- .2962	- .2929	- .2883	- .7765	- .1835	.960
PESCADO	- .0924	.0121	.1037	.0116	.1839	- .2277	- .529	- .0941	- .0896	- .7215	- .1705	.892
HUEVOS	- .1184	.0312	.1679	.0220	.2793	- .3405	- .1394	- .970	.4353	- .6326	- .1494	.782
LECHE	- .1444	.0278	.1895	- .0009	.3082	- .4024	- .1659	.5065	- .690	- .8558	- .2022	1.058
TODOS ALIMENTOS	- .1182	- .0397	- .0492	- .0952	- .0828	- .0579	- .0713	- .0432	- .0447	- .601	- .142	.743
NO ALIMENTOS	- .0433	- .0305	- .0197	- .0251	- .0192	- .0110	- .0158	- .0121	- .0066	- .183	- .935	1.118
Wi	.0669	.0334	.0290	.0472	.0791	.0258	.0333	.0219	.0186	.3152	.6848	

FUENTE: Elaborado por el Proyecto Agrícola Nutricional.

CUADRO No. 36
 MATRIZ DE ELASTICIDADES DE LA DEMANDA
 DE LOS PRINCIPALES PRODUCTOS ALIMENTICIOS
 Estrato de 500 < 1000

SECTOR: RESTO URBANO

PRODUCTO	MAIZ	FRIJOL	ARROZ	RES	CERDO	POLLO	PESCADO	HUEVOS	LECHE	TODOS ALIMENTOS	NO ALIMENTOS	E_{iy}
MAIZ	- .172	- .0309	- .0303	- .0336	- .0315	- .0279	- .0286	- .0279	- .0261	- .4088	- .1312	.540
FRIJOL	- .0592	- .328	.0032	.0063	.0043	.0011	.0017	.0011	- .0007	- .3702	- .1188	.489
ARROZ	- .0618	.0013	-2.237	.3136	.3112	.3075	.3080	.3075	- .3053	- .4444	- .1426	.587
RES	- .0427	- .0060	.1231	- .544	- .0532	- .0472	- .0483	- .0472	- .0438	- .7093	- .2277	.937
CERDO	- .0508	- .0028	.2033	- .0783	- .870	.0518	.0526	.0518	.0489	- .5935	- .1905	.784
POLLO	- .0674	- .0081	.2780	- .1070	.0670	- .150	- .2493	- .2483	- .2447	- .7298	- .2342	.964
PESCADO	- .0566	- .0108	.1805	- .0800	.0396	- .1691	- .687	- .0285	- .0246	- .8365	- .2685	1.105
HUEVOS	- .0719	- .0062	.3242	- .1192	.0809	- .2850	- .0422	-1.126	.5845	- .6609	- .2121	.873
LECHE	- .0884	- .0127	.3855	- .1447	.0859	- .3445	- .0514	- .7020	- .533	- .8350	- .2680	1.103
TODOS ALIMENTOS	- .0764	- .0366	- .0405	- .1340	- .0737	- .0610	- .1013	- .0492	- .0483	- .620	- .199	.819
NO ALIMENTOS	- .0263	- .0139	- .0127	- .0194	- .0151	- .0083	- .0094	- .0083	- .0045	- .118	- .938	1.056
Wi	.0382	.0193	.0193	.0466	.0290	.0208	.0312	.0180	.0149	.2373	.7627	

FUENTE: Elaborado por el Proyecto Agrícola Nutricional.

PRO No. 37

MATRIZ DE ELASTICIDADES DE LA DEMANDA
DE LOS PRINCIPALES PRODUCTOS ALIMENTICIOS

Estrato de 0 a < 100

SECTOR: RURAL

PRODUCTO	MAIZ	FRIJOL	ARROZ	RES	CERDO	HUEVOS	LECHE	TODOS ALIMENTOS	NO ALIMENTOS	E_{iy}
MAIZ	-.109	-.1329	-.0892	-.0764	-.1311	-.0871	-.0732	-.6989	.0039	.695
FRIJOL	-.2126	-.077	-.0363	-.0275	-.0651	-.0343	-.0254	-.4787	.0027	.476
ARROZ	-.4761	-.1324	-.244	-.0100	.0541	.0025	-.0137	-.8196	.0046	.815
RES	-1.6340	-.3320	-.0437	-1.012	.7625	.7082	.6912	-.8598	.0048	.855
CERDO	-.2166	-.0897	.0138	.0502	-.880	.1486	.1320	-.8417	.0047	.837
HUEVOS	-.6202	-.1442	.0139	.2469	.8338	-.647	-.2997	-.6165	.0035	.613
LECHE	-4.0756	-.7758	-.1701	1.7745	5.0607	-2.2096	-1.623	-1.2752	.0072	1.268
TODOS ALIMENTOS	-.2690	-.1192	-.0570	-.0139	-.2085	-.0351	-.0064	-.709	.004	.705
NO ALIMENTOS	-.2199	-.1370	-.0378	-.0086	-.1330	-.0327	-.0013	-.570	-1.008	1.578
W_i	.2524	.1252	.0505	.0121	.1830	.0343	.0047	.6622	.3378	

FUENTE: Elaborado por el Proyecto Agrícola Nutricional.

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CUADRO No. 39
 MATRIZ DE ELASTICIDADES DE LA DEMANDA
 DE LOS PRINCIPALES PRODUCTOS ALIMENTICIOS

Estrato de 100 a < 300

SECTOR: RURAL

PRODUCTO	MAIZ	FRIJOL	ARROZ	RES	CERDO	HUEVOS	LECHE	TODOS ALIMENTOS	NO ALIMENTOS	E_{iy}
MAIZ	- .077	- .0751	- .0652	- .0554	- .0754	- .0617	- .0509	- .4607	- .0293	.490
FRIJOL	- .1455	- .082	- .0531	- .0429	- .0635	- .0494	- .0384	- .4748	- .0302	.505
ARROZ	- .1942	- .0839	- .649	.0749	.1009	.0831	.0691	- .5989	- .0381	.637
RES	- .3271	- .1379	.1290	- .476	.0301	.0067	- .0117	- .7869	- .0501	.837
CERDO	- .1488	- .0679	.0474	.0111	- .720	.0903	.0734	- .7145	- .0455	.760
HUEVOS	- .2370	- .0986	.1268	.0152	.2670	- .689	.1343	- .4813	- .0307	.512
LECHE	- .8089	- .3242	.3883	- .0334	.7768	.5244	-1.001	- .7173	- .0457	.763
TODOS ALIMENTOS	- .1638	- .0870	- .0704	- .0434	- .1427	- .0441	- .0135	- .565	- .036	.601
NO ALIMENTOS	- .1443	- .0746	- .0472	- .0196	- .0756	- .0373	- .0071	- .405	- .967	1.372
Wi	.1537	.0806	.0584	.0311	.1080	.0406	.0102	.4826	.5174	

FUENTE: Elaborado por el Proyecto Agrícola Nutricional.

CUADRO No. 40
 MATRIZ DE ELASTICIDADES DE LA DEMANDA
 DE LOS PRINCIPALES PRODUCTOS ALIMENTICIOS

Estrato de 300 a < 500

SECTOR: RURAL

PRODUCTO	MAIZ	FRIJOL	ARROZ	RES	CERDO	HUEVOS	LECHE	TODOS ALIMENTOS	NO ALIMENTOS	E_{iy}
MAIZ	- .326	- .0360	- .0358	- .0358	- .0463	- .0309	- .0222	- .533	- .098	.631
FRIJOL	- .0593	- .149	- .0530	- .0530	- .0621	- .0486	- .0410	- .166	- .086	.552
ARROZ	- .0587	- .0542	-1.582	.3231	.3311	.3192	.3125	- .409	- .075	.484
RES	- .0589	- .0541	.3185	- .681	.0288	.0165	.0099	- .420	- .078	.498
CERDO	- .0479	- .0392	.1788	.0120	- .789	.0933	.0850	- .507	- .094	.601
HUEVOS	- .0732	- .0730	.4961	.0307	.2757	-1.517	.5447	- .316	- .058	.374
LECHE	- .1657	- .1687	1.1348	.0280	.5534	1.2855	-1.801	- .602	- .111	.713
TODOS ALIMENTOS	- .1286	- .0648	- .0554	- .0571	- .1144	- .0312	- .0196	- .471	- .087	.558
NO ALIMENTOS	- .0555	- .0332	- .0329	- .0329	- .0529	- .0235	- .0070	- .238	- .961	1.199
W_i	.0782	.0430	.0399	.0404	.0720	.0259	.0109	.3103	.6897	

FUENTES: Elaborado por el Proyecto Agrícola Nutricional.

SECTOR: AUTO REPRESENTADOS

ANÁLISIS DE SENSIBILIDAD
Estrato de 100 < 300

VARIABLE : W_A

W_A	E_{AY}	ϕ				
		-1.55	-1.40	-1.25	-1.10	-0.95
		K				
0.30	0.70	0.81	0.86	0.93	1.02	1.13
0.35	0.70	0.84	0.89	0.95	1.04	1.14
0.40	0.70	0.86	0.91	0.98	1.05	1.16
0.45	0.70	0.89	0.94	1.00	1.07	1.17
0.50	0.70	0.92	0.96	1.02	1.09	1.18

VARIABLE : E_{AY}

W_A	E_{AY}	ϕ				
		-1.55	-1.40	-1.25	-1.10	-0.95
		K				
0.30	0.50	0.85	0.91	0.98	1.07	1.19
0.30	0.60	0.83	0.88	0.96	1.04	1.16
0.30	0.70	0.81	0.86	0.93	1.02	1.13
0.30	0.80	0.79	0.84	0.91	0.99	1.10
0.30	0.90	0.77	0.82	0.88	0.96	1.07

FUENTE: Elaborado por el Proyecto Agrícola Nutricional.
eme.

ANÁLISIS DE SENSIBILIDAD

Estrato de 300 < 500

SECTOR: AUTO REPRESENTADOS

VARIABLE : W_A		ϕ				
		-1.55	-1.40	-1.25	-1.10	-0.95
W_A	E_{AY}	K				
0.15	0.75	0.72	0.78	0.86	0.96	1.08
0.20	0.75	0.75	0.81	0.88	0.97	1.09
0.25	0.75	0.77	0.83	0.90	0.99	1.10
0.30	0.75	0.80	0.85	0.92	1.00	1.11
0.35	0.75	0.82	0.88	0.99	1.02	1.13

VARIABLE : E_{AY}		ϕ				
		-1.55	-1.40	-1.25	-1.10	-0.95
W_A	E_{AY}	K				
0.15	0.35	0.76	0.83	0.91	1.01	1.15
0.15	0.45	0.75	0.82	0.90	1.00	1.13
0.15	0.55	0.74	0.80	0.88	0.98	1.11
0.15	0.65	0.73	0.79	0.87	0.97	1.10
0.15	0.75	0.72	0.78	0.86	0.96	1.08

FUENTE: Elaborado por el Proyecto Agrícola Nutricional.

eme.

ANÁLISIS DE SENSIBILIDAD
Estrato de 500 < 1000

SECTOR: AUTO REPRESENTADOS

VARIABLE : W _A		∅				
W _A	E _{AY}	-1.55	-1.40	-1.25	-1.10	-0.95
		K				
0.15	0.70	0.73	0.79	0.87	0.96	1.09
0.20	0.70	0.75	0.81	0.89	0.98	1.10
0.25	0.70	0.78	0.84	0.91	1.00	1.12
0.30	0.70	0.81	0.86	0.93	1.02	1.13
0.35	0.70	0.84	0.89	0.95	1.04	1.14

VARIABLE : E _{AY}		∅				
W _A	E _{AY}	-1.55	-1.40	-1.25	-1.10	-0.95
		K				
0.15	0.50	0.75	0.81	0.89	0.99	1.12
0.15	0.60	0.74	0.80	0.88	0.98	1.11
0.15	0.70	0.73	0.79	0.87	0.96	1.09
0.15	0.80	0.72	0.78	0.85	0.95	1.08
0.15	0.90	0.71	0.77	0.84	0.94	1.06

FUENTE: Elaborado por el Proyecto Agrícola Nutricional.
eme.

ANALISIS DE SENSIBILIDAD

Estrato de 100 < 300

SECTOR: RESTO URBANO

VARIABLE : W_A		ϕ				
W_A	E_{AY}	-1.55	-1.40	-1.25	-1.10	-0.95
		K				
0.30	0.70	0.81	0.86	0.93	1.02	1.13
0.35	0.70	0.84	0.89	0.95	1.04	1.14
0.40	0.70	0.86	0.91	0.98	1.05	1.16
0.45	0.70	0.89	0.94	1.00	1.07	1.17
0.50	0.70	0.92	0.96	1.02	1.09	1.18

VARIABLE : E_{AY}		ϕ				
W_A	E_{AY}	-1.55	-1.40	-1.25	-1.10	0.95
		K				
0.30	0.50	0.85	0.91	0.98	1.07	1.19
0.30	0.60	0.83	0.88	0.96	1.04	1.16
0.30	0.70	0.81	0.86	0.93	1.02	1.13
0.30	0.80	0.79	0.84	0.91	0.99	1.10
0.30	0.90	0.77	0.82	0.88	0.96	1.07

FUENTE: Elaborado por el Proyecto Agrícola Nutricional.
eme.

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ANALISIS DE SENSIBILIDAD

Estrato de 300 < 500

SECTOR: RESTO URBANO

VARIABLE : W_A		ϕ				
		-1.55	-1.40	-1.25	-1.10	-0.95
W_A	E_{AY}	K				
0.15	0.65	0.73	0.79	0.87	0.97	1.10
0.20	0.65	0.76	0.82	0.90	0.99	1.11
0.25	0.65	0.79	0.85	0.92	1.01	1.13
0.30	0.65	0.82	0.87	0.94	1.03	1.15
0.35	0.65	0.85	0.90	0.97	1.05	1.16

VARIABLE : E_{AY}		ϕ				
		-1.55	-1.40	-1.25	-1.10	-0.95
W_A	E_{AY}	K				
0.15	0.35	0.76	0.83	0.91	1.01	1.15
0.15	0.45	0.75	0.82	0.90	1.00	1.13
0.15	0.55	0.74	0.80	0.88	0.98	1.11
0.15	0.65	0.73	0.79	0.87	0.97	1.10
0.15	0.75	0.72	0.78	0.86	0.96	1.08

FUENTE: Elaborado por el Proyecto Agrícola Nutricional.

eme.

ANALISIS DE SENSIBILIDAD

Estrato de 500 < 1000

SECTOR: RESTO URBANO

VARIABLE : W_A		ϕ				
		-1.55	-1.40	-1.25	-1.10	-0.95
W_A	E_{AY}	K				
0.15	0.75	0.72	0.78	0.86	0.96	1.08
0.20	0.75	0.75	0.81	0.88	0.97	1.09
0.25	0.75	0.77	0.83	0.90	0.99	1.10
0.30	0.75	0.80	0.85	0.92	1.00	1.11
0.35	0.75	0.82	0.88	0.99	1.02	1.13

VARIABLE : E_{AY}		ϕ				
		1.55	-1.40	-1.25	-1.10	-0.95
W_A	E_{AY}	K				
0.15	0.35	0.76	0.83	0.91	1.01	1.15
0.15	0.45	0.75	0.82	0.90	1.00	1.13
0.15	0.55	0.74	0.80	0.88	0.98	1.11
0.15	0.65	0.73	0.79	0.87	0.97	1.10
0.15	0.75	0.72	0.78	0.86	0.96	1.08

FUENTE: Elaborado por el Proyecto Agrícola Nutricional.

eme.

CUADRO No. 46
ANALISIS DE SENSIBILIDAD
Estrato de 100 < 300

SECTOR: RURAL

VARIABLE : W_A		\emptyset				
W_A	E_{AY}	-1.55	-1.40	-1.25	-1.10	-0.95
		K				
0.30	0.60	0.83	0.88	0.96	1.04	1.16
0.35	0.60	0.86	0.91	0.98	1.07	1.18
0.40	0.60	0.89	0.94	1.01	1.09	1.20
0.45	0.60	0.92	0.97	1.03	1.11	1.22
0.50	0.60	0.95	1.00	1.06	1.14	1.24

VARIABLE : E_{AY}		\emptyset				
W_A	E_{AY}	-1.55	-1.40	-1.25	-1.10	-0.95
		K				
0.30	0.50	0.85	0.91	0.98	1.07	1.19
0.30	0.60	0.83	0.88	0.96	1.04	1.16
0.30	0.70	0.81	0.86	0.93	1.02	1.13
0.30	0.80	0.79	0.84	0.91	0.99	1.10
0.30	0.90	0.77	0.82	0.88	0.96	1.07

FUENTE: Elaborado por el Proyecto Agrícola Nutricional.
eme.

CUADRO No. 47
ANALISIS DE SENSIBILIDAD
Estrato de 300 < 500

SECTOR: RURAL

VARIABLE : W_A

W_A	E_{AY}	ϕ				
		-1.55	-1.40	-1.25	-1.10	-0.95
		K				
0.15	0.55	0.74	0.80	0.88	0.98	1.11
0.20	0.55	0.77	0.83	0.91	1.01	1.14
0.25	0.55	0.81	0.87	0.94	1.03	1.16
0.30	0.55	0.84	0.90	0.97	1.06	1.18
0.35	0.55	0.87	0.93	1.00	1.08	1.20

VARIABLE : E_{AY}

W_A	E_{AY}	ϕ				
		-1.55	-1.40	-1.25	-1.10	-0.95
		K				
0.15	0.35	0.76	0.83	0.91	1.01	1.15
0.15	0.45	0.75	0.82	0.90	1.00	1.13
0.15	0.55	0.74	0.80	0.88	0.98	1.11
0.15	0.65	0.73	0.79	0.87	0.97	1.10
0.15	0.75	0.72	0.78	0.86	0.96	1.08

FUENTE: Elaborado por el Proyecto Agrícola Nutricional.
eme.

CUADRO NO. 41
 ANALISIS DE SENSIBILIDAD
 Estrato de 500 < 1000

SECTOR: RURAL

VARIABLE : W_A

W_A	E_{AY}	\emptyset				
		-1.55	-1.40	-1.25	-1.10	-0.95
		K				
0.15	0.65	0.73	0.79	0.87	0.97	1.10
0.20	0.65	0.76	0.82	0.90	0.99	1.11
0.25	0.65	0.79	0.85	0.92	1.01	1.13
0.30	0.65	0.82	0.87	0.94	1.03	1.15
0.35	0.65	0.85	0.90	0.97	1.05	1.16

VARIABLE : E_{AY}

W_A	E_{AY}	\emptyset				
		1.55	-1.40	-1.25	-1.10	-0.95
		K				
0.15	0.25	0.77	0.84	0.92	1.02	1.16
0.15	0.35	0.76	0.83	0.91	1.01	1.15
0.15	0.45	0.75	0.82	0.90	1.00	1.13
0.15	0.55	0.74	0.80	0.88	0.98	1.11
0.15	0.65	0.73	0.79	0.87	0.97	1.10

FUENTE: Elaborado por el Proyecto Agrícola Nutricional.
 eme.

ESTUDIO DE LOS EFECTOS DE POLITICAS DE DESARROLLO AGRICOLA EN EL CONSUMO DE ALIMENTOS DE LA POBLACION CENTROAMERICANA

Condominio LA TORRE, 10o. Piso
4a. Calle 11-01
Tegucigalpa, D. C. - Honduras

TELEFONO: 22-8785

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" 2	RESUMEN DE LA DESCRIPCION DEL PROYECTO
" 3	SUGERENCIAS SOBRE TERMINOS DE REFERENCIA PARA EL ESTUDIO DE LOS EFECTOS DE POLITICAS DE DESARROLLO AGRICOLA PARA EL CONSUMO DE ALIMENTOS EN CENTRO - AMERICA. " DOCUMENTO DE TRABAJO "
" 4	PROGRAMA DE TRABAJO
" 5	INFORME TRIMESTRAL. PERIODO ABRIL A JUNIO, 1981
" 6	DOCUMENTACION PROGRAMA GENERACION DE MAPAS (PANMAPA)
" 7	INSTRUCTIVO SOBRE EL MANEJO DEL PROGRAMA DE GENERACION DEL MAPA DE HONDURAS.
" 8	PROGRAMA DE COMPUTACION ELECTRONICA PARA PRESENTACION VISUAL DE DATOS ESTADISTICOS.
" 9	INFORMACION BASICA PARA LOS MODELOS DE PROGRAMACION LINEAL, REGION SUR.
" 10	INFORME DEL CONSULTOR DR. BERNARDO MORALES F. SOBRE " ESTUDIO DE LOS EFECTOS DE POLITICAS DE DESARROLLO AGRICOLA PARA EL CONSUMO DE ALIMENTOS DE LA POBLACION CENTROAMERICANA "
" 11	INFORME DEL CONSULTOR DR. ROGER D. NORTON SOBRE " ESTUDIO DE LOS EFECTOS DE POLITICAS DE DESARROLLO AGRICOLA PARA EL CONSUMO DE ALIMENTOS DE LA POBLACION CENTROAMERICANA "
" 12	ESTRUCTURA MATEMATICA MODELO DE FINCA.
" 13	FIRST EVALUATION OF THE PROJECT. PREPARED BY. ERIC THORBECKE: TERRY ROE Y GRANT SCOBIE.
" 13 A	AYUDA MEMORIA SOBRE LOS RESULTADOS DE LAS REUNIONES PREPARATORIAS PARA LA PRIMERA EVALUACION.
" 14	NOTAS SOBRE EL ANALISIS DE LA DEMANDA DEL CONSUMIDOR EN EL PROYECTO SOBRE LOS EFECTOS DE POLITICAS AGRICOLAS EN EL CONSUMO DE ALIMENTOS. PREPARED BY: GRANT M. SCOBIE.

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- Documento No. 15 INFORME TRIMESTRAL PERIODO JULIO A SEPTIEMBRE DE 1981
- " 16 ENCUESTA NACIONAL SOBRE LAS CONDICIONES DE VIDA DE
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- " 32 EVALUATION REPORT. PREPARED BY: STANLEY R. JOHNSON.
- Año 1983
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PREPARED BY: ROBERTA VAN HAEFTEN; GARY SMITH; NUTRITION
ECONOMICS GROUPS. JUNE 1983.

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- Documento No. 42 CONSUMO DE ALIMENTOS E INGESTA DE NUTRIENTES POR
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